IBM Business Process Manager
Version 7.5.0

IBM Business Process Manager Standard Installation Guide

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

The IBM® Business Process Manager installer and configuration programs accommodate a variety of development and production scenarios. This roadmap guides you through the most common and widely used paths for installing and configuring IBM Business Process Manager Standard.

The roadmap includes sections for installation and configuration scenarios. These scenarios represent ways to achieve either a stand-alone or network deployment environment. Each section includes a table listing the activities to perform, with links to the instructions and notes about the result of completing each activity.

In general, installing the software means adding the product binaries from media or from a download site on to your system. In some instances, installing the software adds the product binaries and configures the software for use.

The sections in this roadmap describe the following scenarios:

- Typical installation.

  The **Typical installation** option installs the software and configures a stand-alone Process Center or Process Server profile. A Typical installation does not require you to create profiles separately using the Profile Management Tool or **manageprofiles** utility.

  The Typical installation option is the simplest and quickest method for installing and configuring the software.

  The Typical installation option is the ideal method for getting full Business Process Manager features and functionality (for Express, Standard, or Advanced configurations) on a single machine. See Installing IBM BPM Standard Process Server using the **Typical** option for details.
- Custom installation, followed by profile creation of one or more stand-alone profiles.

  The **Custom installation** option in this scenario installs the software on to your system and then runs the Profile Management Tool, allowing you more control over how to configure your software. If you are creating a stand-alone Process Center or Process Server environment that requires configuration features that are not available through the Typical installation path, create the stand-alone Process Center or Process Server profiles after the installation of the product binaries by using either the Profile Management Tool or the **manageprofiles** command-line utility.

  See Installing IBM BPM Standard Process Server using the **Custom installation** and configuring one or more stand-alone profiles.
- Custom installation, followed by profile creation of one or more deployment manager and custom (managed node) profiles.

  This installation and configuration scenario provides the capacity, scalability, and robustness that is generally required of a large-scale production environment. The type of configuration created through this path is known as a *network deployment configuration*, which is made up of a group of servers (known as clusters) that collaborate to provide workload balancing and failover. The servers are managed centrally, using a single administrative console known as the deployment manager.

  You can achieve a *standardized* network deployment configuration or a *customized* network deployment configuration:

  – A standardized network deployment configuration:

    The installer installs the software on to your system, and then you use the profile configuration programs (Profile Management Tool or **manageprofiles** command-line utility) to create and configure one or more deployment manager and custom (managed node) profiles and the Deployment Environment wizard to create a standards-based network deployment configuration.

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See Installing IBM BPM Standard using the **Custom installation** and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment

– A customized network deployment configuration:

  The installer installs the software on to your system, and then you use the profile configuration programs (Profile Management Tool or **manageprofiles** command-line utility) to create and configure one or more deployment manager and custom (managed node) profiles and the administrative console to create a customized network deployment configuration. See Installing IBM BPM Standard using the **Custom installation** and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment

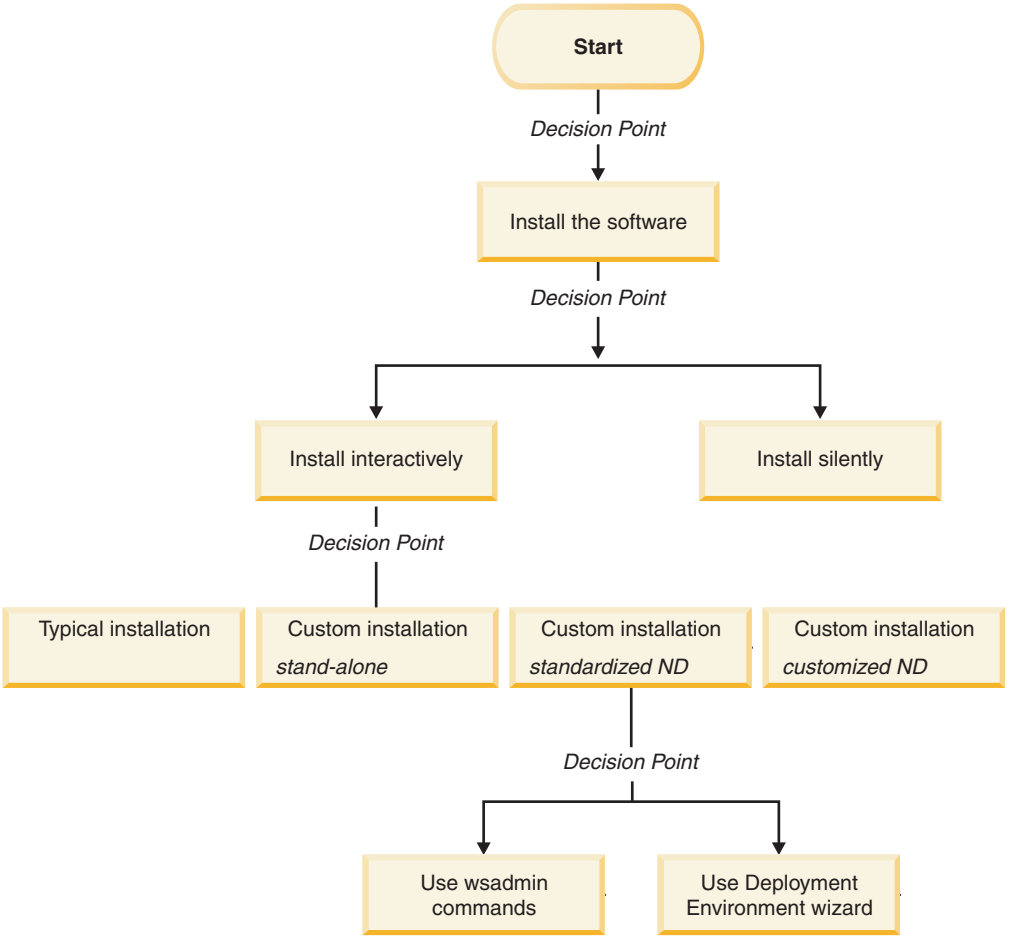
For conceptual information about network deployment, see Planning your deployment environment.

For information about topology patterns packaged with the software and supported by the Deployment Environment wizard, see Topologies and deployment environment patterns.

The process for installing IBM Business Process Manager requires that you make decisions related to your intended use of the product. The graphical user interface (GUI) used to install the code on to your system incorporates descriptive text on all of its panels, helping you select the options applicable to your intended use.

Use the information in the roadmap as a supplement to the GUI and to build your understanding of the installation and configuration procedures for a particular scenario, from its high-level tasks to the associated procedural information.

The following diagram illustrates the tasks of the installation and configuration scenarios.



Installing IBM BPM Standard using the Typical option

You can use the Typical installation option in the installer to install the software and configure a stand-alone profile automatically. In a Typical installation there is no need to run the Profile Management Tool or run **manageprofiles** after the installation.

This installation option will default the majority of settings but does allow you to specify the installation path and database type.

The Typical option is the quickest way to install and configure the software.

For information about installing the IBM BPM Standard using the **Typical** option, see Typical installation: IBM Business Process Manager Standard.

Installing IBM BPM Standard using the Custom installation and configuring one or more stand-alone profiles

You can use the Custom installation option in the installer to install the software and configure one or more stand-alone profiles using the Profile Management Tool or Typical installation: IBM Business Process Manager Standard command-line utility.

Table 1. Installing IBM BPM Standard using the Custom installation option and configuring one or more stand-alone profiles

Task	Where to find information	Result after completing the task
Install the software using the Custom installation option.	For information about installing *IBM BPM Standard* using the Custom installation option, see Custom installation: IBM Business Process Manager Standard: Process Server.	The custom installation for *IBM BPM Standard* installs the product binaries for Process Center, Process Designer and Process Server on to your system. The custom installation for *IBM BPM Standard* does not create s during the install.
Launch the Profile Management Tool.	If you did not launch the Profile Management Tool from the installer, you can do so now. See Starting the Profile Management Tool **Restriction:** You cannot use the Profile Management Tool to create profiles on BPM installations on 64-bit architectures except on the Linux on zSeries platform. Instead, proceed to the next step and use the **manageprofiles** command-line utility.	The Profile Management Tool is started and ready to use. Because data from the Process Center profile is used as input to the Process Server profile creation process, you should create your Process Center stand-alone profile first (before creating the Process Server stand-alone profile).
Install the Process Designer.	See Installing the Process Designer	You have installed Process Designer. For information about how to use Process Designer, see the following topics: • Hiring Sample Tutorial for IBM Process Designer • Authoring environments • Process development with the Process Center To continue configuring your system, see Create one or more Process Server stand-alone profiles
Create one or more Process Server stand-alone profiles.	Depending on how you want to create your Process Server stand-alone profiles, see one of the following topics: • Creating a Process Server stand-alone profile using the Profile Management Tool • Creating a Process Server stand-alone profile using the manageprofiles utility	The stand-alone server environment is now configured and ready to use.

Installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment

You can use the Custom installation option in the installer to install the software and use the Profile Management Tool or **manageprofiles** command-line utility to configure one or more deployment manager and custom (managed node) profiles. After profile creation you can use the Deployment Environment wizard to generate a *standardized network deployment environment*.

The software includes several templates of *topology patterns*. These topology patterns provide the construct for standardized network deployment environments. You implement these patterns by using the Deployment Environment wizard.

The patterns and templates included with the software are designed to address a broad spectrum of business process management scenarios.

The decision on which pattern to select from the Deployment Environment wizard depends on the planned usage of your environment (i.e., proof of concept, testing or production) and the processing capabilities (such as high-availability and failover processing) required by your enterprise.

The installation and configuration scenario described in this section assumes your business needs and requirements can be met by one of the standardized topology patterns included with the software. If you have a scenario that cannot be addressed by the patterns and templates included with the software, you can create a customized network deployment environment using the administrative console. For information see "Installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment" on page 7.

Table 2. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND

Task	Where to find information	Result after completing the task
Install the software using the Custom installation option.	For information about installing IBM Business Process Manager using the Custom installation option, see Custom installation: IBM Business Process Manager Standard	The custom installation for *IBM BPM Standard* installs the product binaries for Process Center and Process Designer on to your system. Process Server functionality is part of Process Center, but does not include Advanced Process Server functionality. For example, components for Business Process Choreographer, Business Rules, and Business Space are not part of IBM BPM Standard. You can now begin the profile creation process. The Profile Management Tool for IBM BPM standard does not support importing a database design document.
Launch the Profile Management Tool.	If you did not launch the Profile Management Tool from the installer, you can do so now. See Starting the Profile Management Tool **Restriction:** You cannot use the Profile Management Tool to create profiles on BPM installations on 64-bit architectures except on the Linux on zSeries platform. Instead, proceed to the next step and use the **manageprofiles** command-line utility.	The Profile Management Tool is ready to use.
Create a deployment manager profile.	Depending on how you want to create your profiles, see one of the following topics: • Creating Process Center deployment manager profiles using the Profile Management Tool • Creating Process Center deployment manager and custom profiles using manageprofiles	You have a deployment manager profile. This profile defines your environment and it contains command files, configuration files, and log files. A deployment manager is a server that manages operations for a logical group, or cell, of other servers. The deployment manager is the central location for administering the servers and clusters.
Start the Deployment Manager and verify that the start operation was successful.	For information about how to start the deployment manager, see Starting deployment managers	The deployment manager server is started.

Table 2. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND (continued)

Task	Where to find information	Result after completing the task
Create the custom (managed node) profile or profiles.	This task assumes that you **are not federating nodes** as part of the profile creation process. It assumes that you will set parameters in the Profile Management Tool or **manageprofiles** command for *federating nodes later* (after creating the custom (managed node) profiles.) Depending on how you want to create your profiles, see one of the following topics: • Creating Process Center custom profiles (managed nodes) using the Profile Management Tool • Creating Process Center deployment manager and custom profiles using manageprofiles Repeat this task for each managed node.	You have your custom (managed node) profiles. These nodes are managed by and administered from the deployment manager. You can now federate the node into the Process Center deployment manager cell. The managed node contains a node agent and can contain managed servers. In a managed node, you can configure and run managed servers.
Federate the custom (managed) node to the deployment manager.	See Federating custom nodes to a deployment manager for instructions about how to use the **addNode** command to federate the Process Center custom node or nodes into the Process Center deployment manager cell.	The custom profile is federated into the deployment manager.
Using the Deployment Environment wizard, create the network deployment configuration.	For information about how to use the Deployment Environment wizard, see • Creating the Process Center deployment environment using a pattern	As part of this task you need to address any deferred configuration items and then generate the Process Center deployment environment. You have created your Process Center network deployment environment.

Table 2. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND (continued)

Task	Where to find information	Result after completing the task
Create a cell for Process Server.	To run Process Server, you must create a separate cell. This involves the same sequence of steps, except you create a Process Server deployment manager and Process Server custom (managed nodes) and then use the Deployment Environment wizard to create the Process Server deployment environment, as described in the following topics: • Creating Process Server deployment manager profiles using the Profile Management Tool • Creating Process Server custom profiles (managed nodes) using the Profile Management Tool • Creating Process Server deployment manager and custom profiles using manageprofiles – Federating custom nodes to a deployment manager • Creating the Process Server deployment environment using a pattern As part of this task you need to address any deferred configuration items and then generate the Process Server deployment environment.	You have created your Process Server network deployment environment.
Perform manual database configuration steps.	You must complete additional database configuration steps before starting the clusters in your deployment environment. For information about these additional steps, see Completing the database configuration for your network deployment environment	You have completed the required manual database configuration activities for the network deployment environment.
Load the database with system information.	See Loading the database with system information for information about how to run the bootstrap utility. Windows bootstrapProcessServerData.bat Linux UNIX bootstrapProcessServerData.sh You must run the bootstrap utility prior to the first startup of a cluster member.	You have loaded the database with system information prior to successfully starting the Process Server / Process Center.

Installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment

The topology patterns packaged with the software and implemented using the Deployment Environment wizard are intended to address a broad spectrum of business processing requirements. However, if you

have scenario that the topology patterns do not address sufficiently, you can use the administrative console to create a customized network deployment environment. The table below lists the steps you would perform in such a scenario.

Note: This scenario is intended for users who have an advanced understanding of how to configure product components and functionality using the administrative console. Before you embark on the installation and configuration scenario described in this section, consider using the Deployment Environment wizard to create your network deployment environment.

Note: Command assistance is available for a subset of administrative console actions. When available, command assistance displays the wsadmin scripting command for the last console action you performed. You can then use this data to create wsadmin scripts that automate certain administrative tasks. For more information on command assistance, see Administrative console actions with command assistance.

Table 3. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND

Task	Where to find information	Result after completing the task
Install the software and configure the required profiles.	Complete the tasks listed in "Installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment" on page 4 up to the task *Using the Deployment Environment wizard, create the network deployment configuration*. Instead of using the Deployment Environment wizard, you will create a customized deployment environment manually using the administrative console.	The custom installation for *IBM BPM Standard* installs the product binaries for Process Center and Process Designer on to your system. Process Server functionality is part of Process Center, but does not include Advanced Process Server functionality. For example, components for Business Process Choreographer, Business Rules, and Business Space are not part of IBM BPM Standard. You have created the deployment manager and custom managed nodes and have federated the nodes into the deployment manager cell. You can now use the administrative console to create servers, server clusters, and the components that will comprise your network deployment environment.
Create and configure servers and clusters using the administrative console.	See Creating and configuring servers and clusters using the administrative console	You have created the servers and server clusters for your environment.
Configure a server or cluster as a Process Server.	For information about using the administrative console to configure your server or server cluster as a Process Server, see Configuring a server or cluster as a Process Server. You can also configure a server or cluster as a Process Server using wsadmin. See configureProcessServer command.	You have configured the servers or server clusters as Process Servers.

Table 3. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND (continued)

Task	Where to find information	Result after completing the task
Configure the Performance Data Warehouse component on a server or cluster.	For information about using the administrative console to configure Performance Data Warehouse on a server or cluster, see Configuring the Performance Data Warehouse component on a server or cluster . You can also configure Performance Data Warehouse on a server or cluster using wsadmin. See configurePerfDW command.	You have configured Performance Data Warehouse on the Process Server.
Set up the Messaging Service.	For information about using the administrative console to configure the Messaging Service, see *Setting up the messaging server environment*.	You have set up the messaging server environment.
Configure the JNDILookup web service.	For information about using the administrative console to configure the JNDILookup web service, see *Configuring the JNDILookup Web Service*.	You have configured the JNDILookup Web Service.
Configure extended messaging resources.	For information about using the administrative console to configure extended messaging resources, see Configuring extended messaging resources.	You have configured the extended messaging resources.
Load the database with system information.	See Loading the database with system information for information about how to run the bootstrap utility. Windows bootstrapProcessServerData.bat Linux UNIX bootstrapProcessServerData.sh You must run the bootstrap utility prior to the first startup of a cluster member.	You have loaded the database with system information prior to successfully starting the Process Server / Process Center.

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.

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

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

Table 5. Profile configuration as part of installation: IBM Business Process Manager Standard

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

Table 6. Profile configuration as part of installation: IBM Business Process Manager: Process Server

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

Table 7. Profile configuration as part of installation: IBM Business Process Manager Advanced

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

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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 if 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. So, 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. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system.

Any scenario where you are not using DB2 Express for your **Typical** install is considered to be a **Typical** install 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. See Configuring an existing database during a typical installation for details. 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.

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Chapter 4. Preparing to install and configure the software

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

Before preparing to install and configure the software, you should have created a plan for the deployment environment that you want to create. For more information, see: Planning for IBM Business Process Manager

Table 8. 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 yourIBM Business Process Manager installation.
Review the contents of the installation media	Depending on your IBM BPM configuration, see one of the following topics: • IBM Business Process Manager Advanced product package • IBM Business Process Manager Standard product package • IBM Business Process Manager Express product package	You are familiar with the contents on the installation media
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.

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Table 8. 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.	If not already the case, 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. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system. **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 http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=/com.ibm.db2.luw.qb.server.doc/doc/c0057140.html for a list of the kernel requirements. You can locate the current values by parsing the output of the **ipcs -l** command.

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.

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: Depending on your requirements, you might select one of three different configurations for IBM Business Process Manager. 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

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:

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- 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
- 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 V7.5, including IBM Integration Designer V7.5 (previously WebSphere® Integration Developer) and IBM Process Designer V7.5, and prior releases.

Task	Supported?
Deployment from WebSphere Integration Developer version 6.1.0, 6.1.2. 6.2.0 or 7.0.0 to IBM Business Process Manager V7.5.	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 V7.5. 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 V7.5. .
Running IBM Business Process Manager V7.5 artifacts on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0 or 7.0.	No. Applications authored with IBM Integration Designer V7.5 cannot be published to or installed on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0 or 7.0 (any prior release) servers. Applications authored with WebSphere Integration Developer 6.1.0, 6.1.2, 6.2.0 or 7.0 and then generated in IBM Integration Designer V7.5 cannot be published to or installed on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0 or 7.0 servers. Applications generated using **`serviceDeploy`** from IBM Business Process Manager V7.5 servers cannot be installed on WebSphere Process Server 6.1.0, 6.1.2, 6.2.0 or 7.0.0 servers.

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

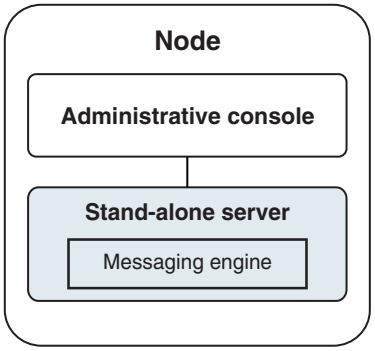


Figure 1. A stand-alone environment

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 (qesb). 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.

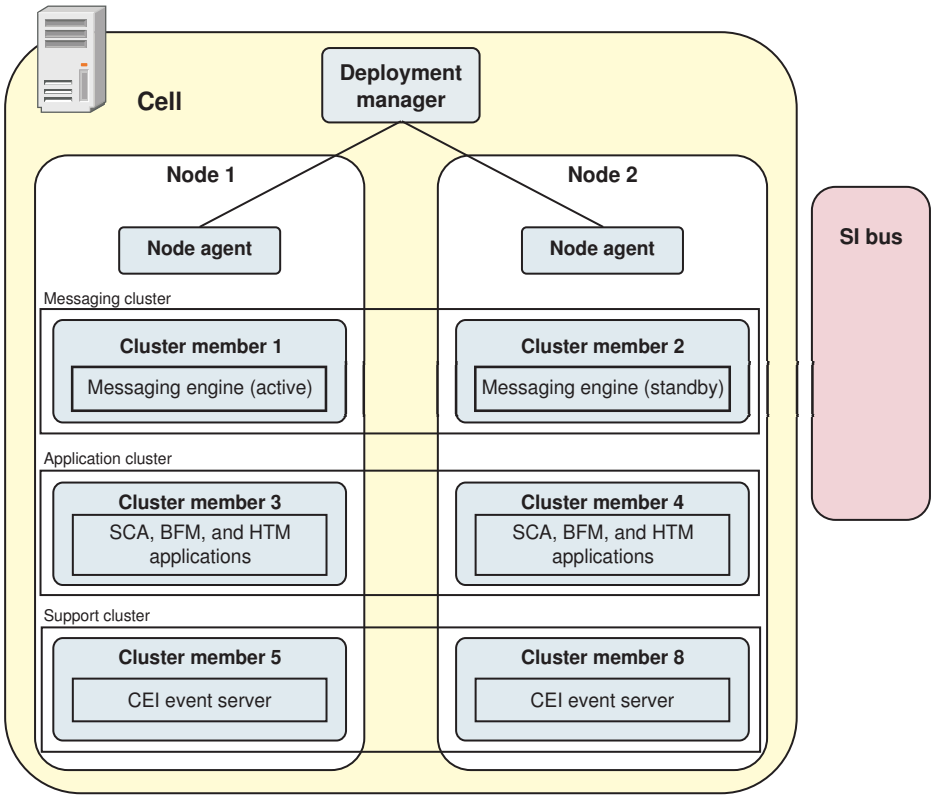


Figure 2. A network deployment environment

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 environment

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

Table 9. Choice of stand-alone or network deployment environment 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.

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.

Table 10. Profile configuration as part of installation: IBM Business Process Manager Express

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

Table 11. Profile configuration as part of installation: IBM Business Process Manager Standard

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

Table 12. Profile configuration as part of installation: IBM Business Process Manager: Process Server

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Typical using Launchpad	*Process Server only*	No	Yes	Not Applicable

Table 12. Profile configuration as part of installation: IBM Business Process Manager: Process Server (continued)

Type of installation	Creates stand-alone Profile?	Profile Management Tool optionally started?	First Steps Console optionally started?	Features available for selection from Installation Manager?
Custom	Optionally A feature allows you to create Process Server and or WebSphere ESB profiles for Unit Test Environment (UTE) only	Yes	No	Yes

Table 13. Profile configuration as part of installation: IBM Business Process Manager Advanced

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

Planning a 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 29.
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.

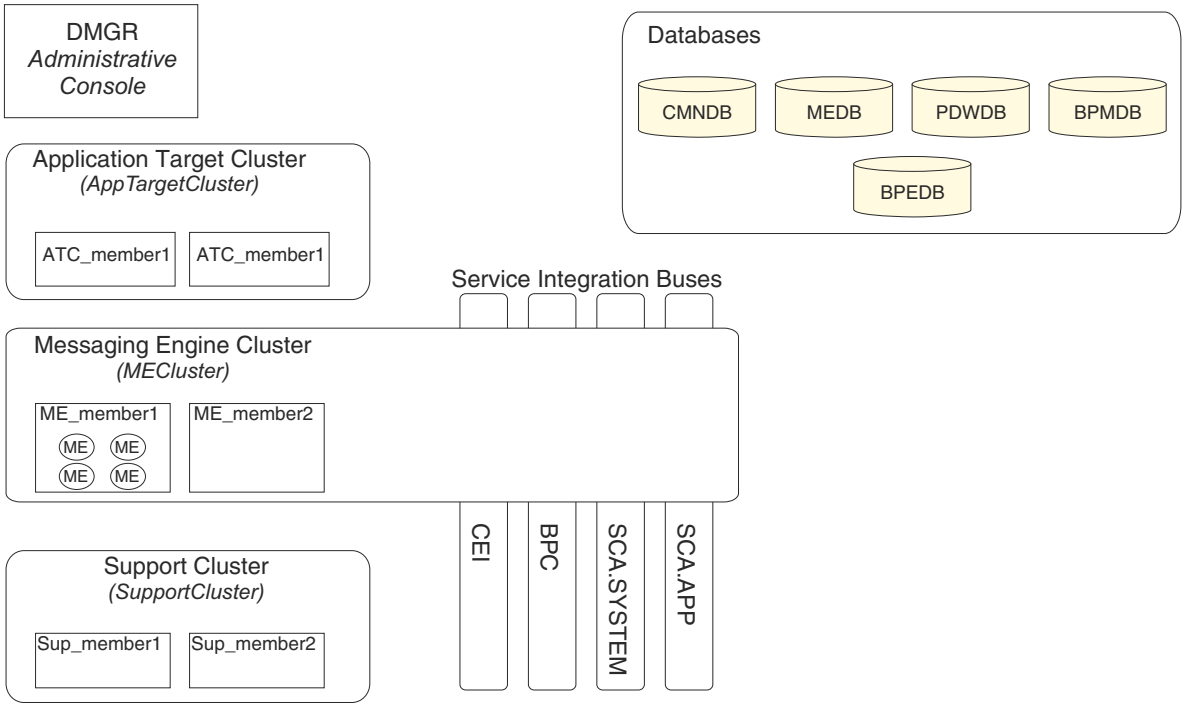
The business rules are not tied to the Supporting infrastructure cluster. In fact, business rules can exist and work everywhere in the cell. The business rules administrative function (performed from the Business Rules Manager) can be deployed on the Supporting Infrastructure cluster (in a three cluster 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 Space, and Business Rules Manager 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 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 39
Selecting an appropriate topology for your deployment environment depends upon several factors.

"Topology patterns and supported product features" on page 41
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

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.

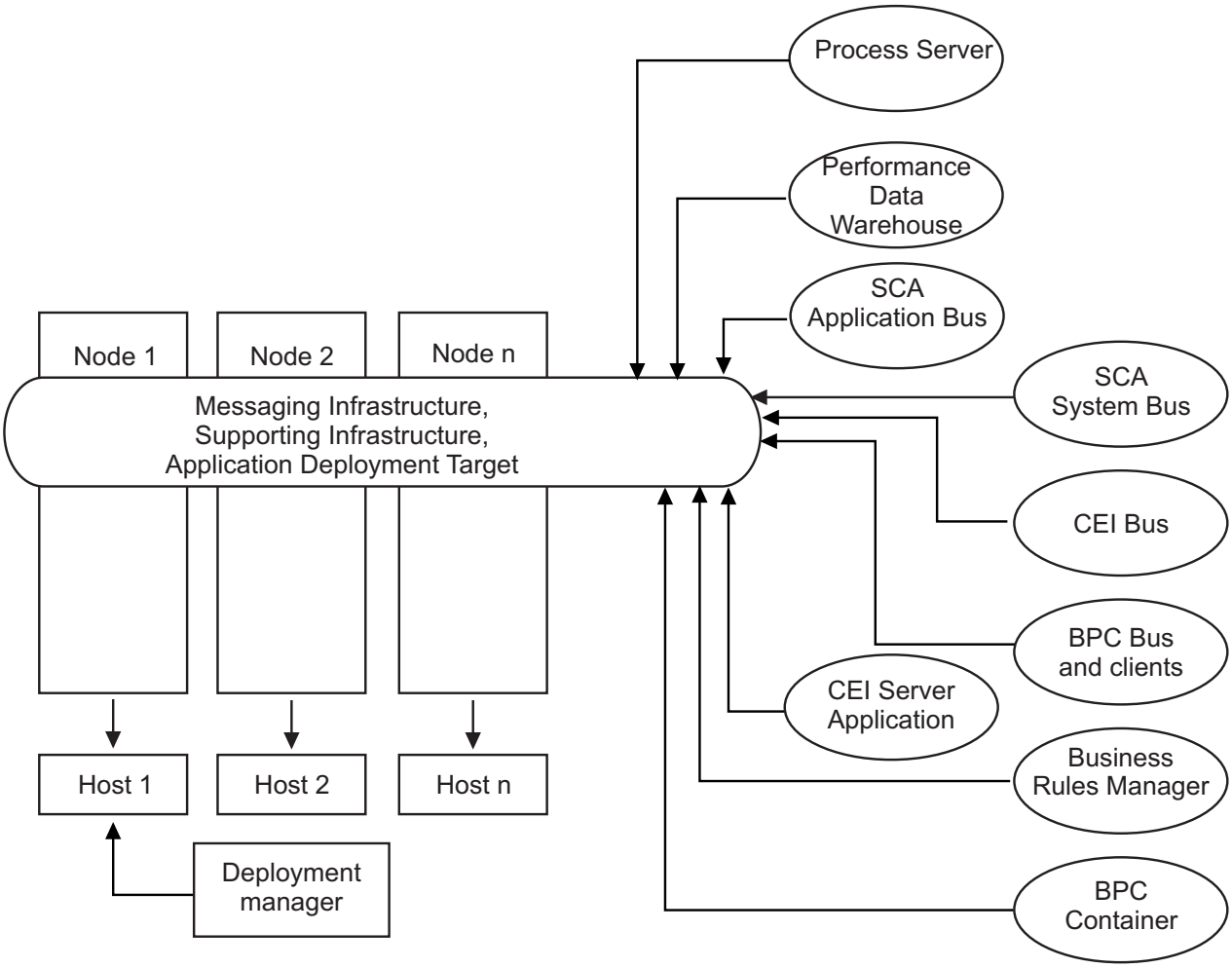
From an administrative and scalability perspective, the Single Cluster topology pattern has advantages. A single cluster where each member runs all the IBM Business Process Manager components are simpler to administer. Instead of several server instances in multiple clusters, you have a single cluster 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 components run on a single cluster:

- Service Component Architecture (SCA) application bus members
- SCA system bus members
- Business Process Choreographer bus members
- Business Process Choreographer components such as the Business Process Choreographer Explorer
- Business Process Choreographer container
- CEI bus members
- CEI server
- Business Rules manager
- Application deployment target

  You configure the application deployment target to support SCA applications and Business Process Choreographer components.

See the following graphical representation of the 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.

Messaging infrastructure cluster:

- Service Component Architecture (SCA) application bus members
- SCA system bus members
- Business Process Choreographer bus members
- CEI bus members

Application deployment target cluster:

- CEI server application
- Business Rules manager
- Business Process Choreographer components such as the Business Process Choreographer Explorer
- Application deployment target

  You configure the application deployment target to support SCA applications and Business Process Choreographer components.

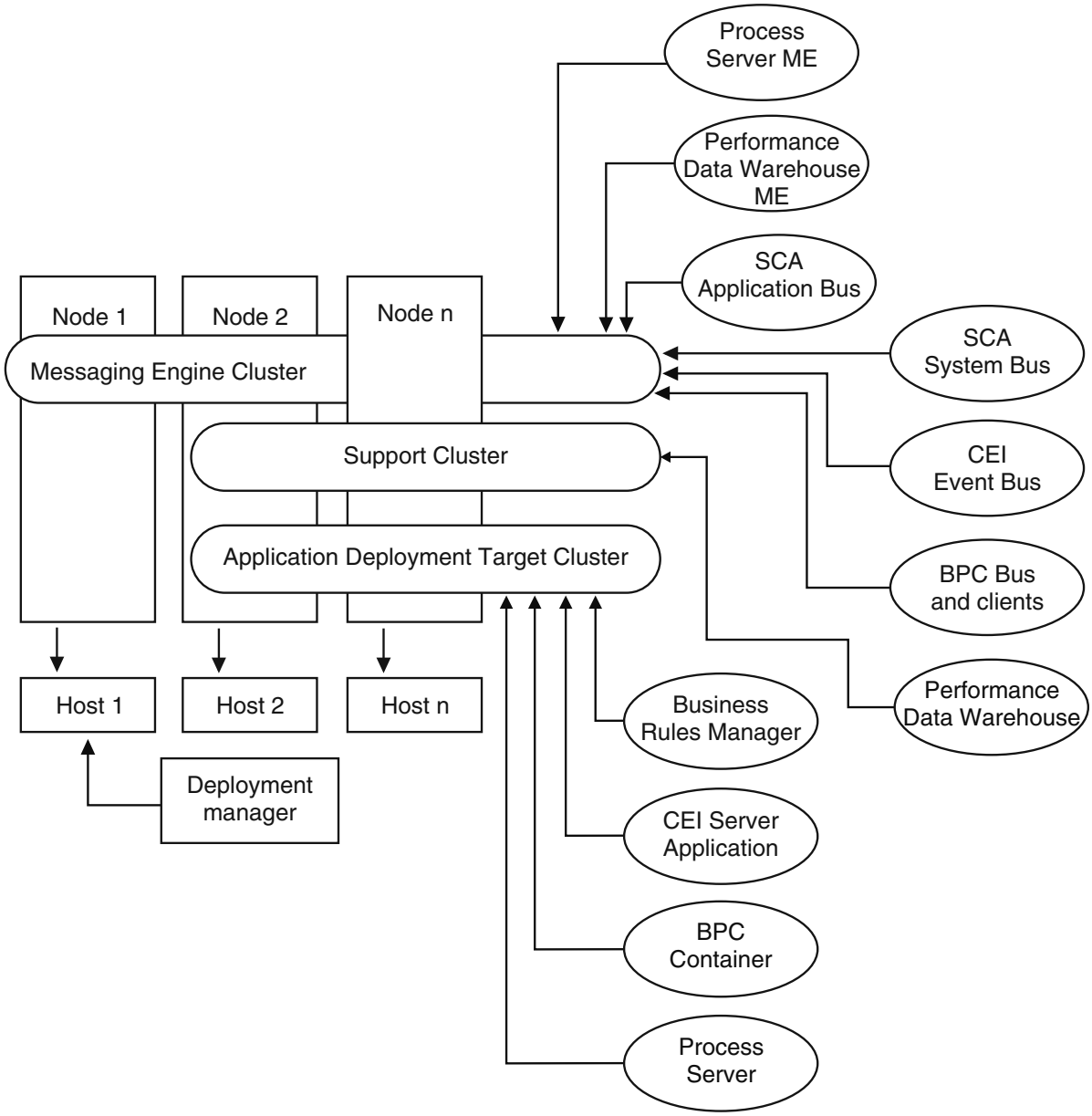


Figure 3. Remote Messaging topology pattern

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, resources are allocated to the cluster that handles the highest loads. This topology pattern is the most flexible and versatile, and is preferred by most users (except for z/OS). The components are divided among the three clusters.

For many customers with large computing infrastructures, the Remote Messaging and Remote Support topology pattern is the preferred environment. The hardware requirements for distributed platforms are

more intensive. However, you have greater flexibility in adjusting and tuning memory usage for the Java virtual machines (JVMs) when you have three or more clusters with multiple members performing specific functions.

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 provide the most 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.

As with the Remote Messaging topology pattern, the Remote Messaging and Remote Support topology pattern provides an ideal environment for long-running business processes, state machines, human tasks, and asynchronous interactions (including JMS and MQ/JMS bindings).

Because the application target cluster runs your business integration applications only, performance tuning and diagnostics are much 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.

Messaging infrastructure cluster:
- Service Component Architecture (SCA) application bus members
- SCA system bus members
- Business Process Choreographer bus members
- CEI bus members

Supporting infrastructure cluster:
- CEI server application
- Business Rules manager
- Business Process Choreographer components such as the Business Process Choreographer Explorer

Application deployment target cluster:
- Application deployment target

  You configure the application deployment target to support SCA applications and Business Process Choreographer components.
- Business Process Choreographer container

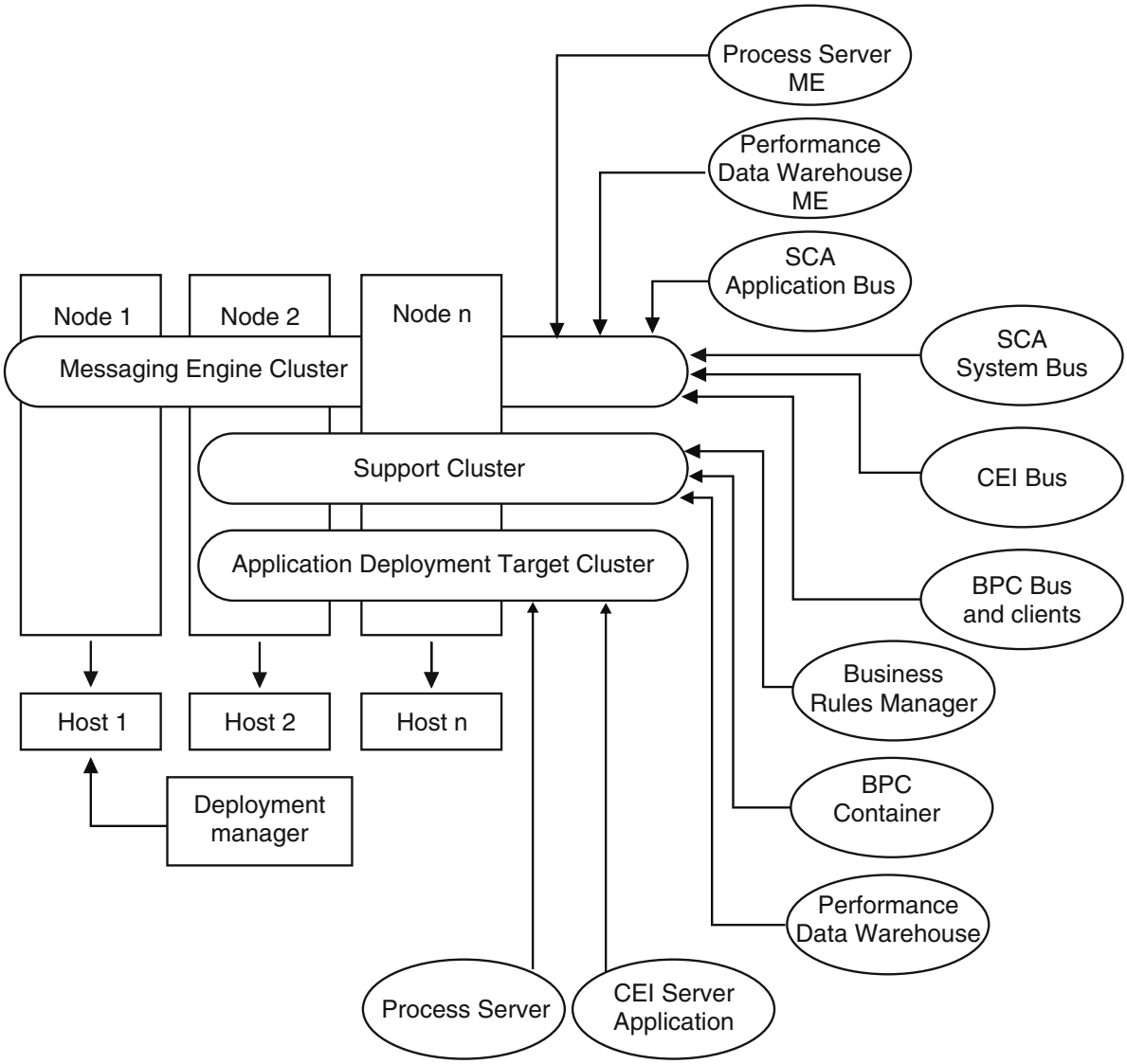


Figure 4. Remote Messaging and Remote Support topology pattern

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.

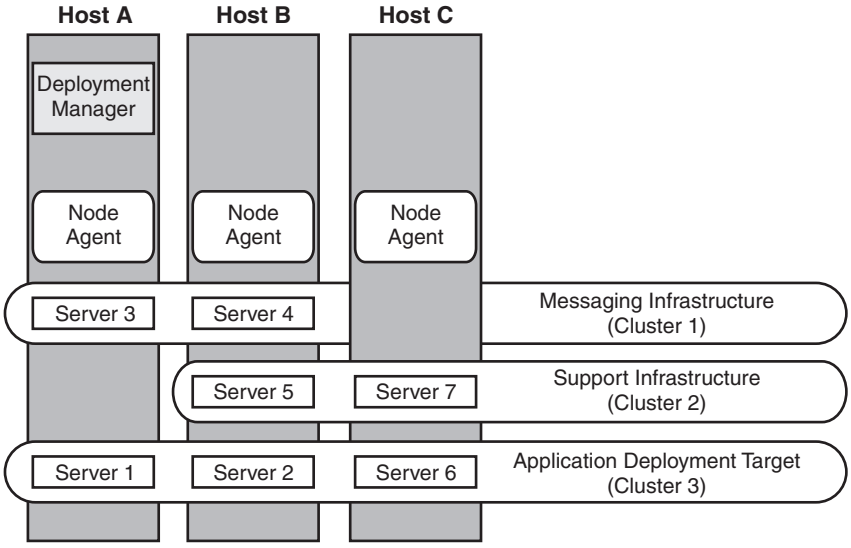


Figure 5. Resource allocation example

Remote Messaging, Remote Support, and Web topology pattern

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

Remote Messaging, Support and Web topology pattern is the recommended starting topology for IBM Business Process Manager Advanced.

Note: Do not use this pattern for a Standard configuration unless it includes IBM Business Monitor.

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.

Application deployment cluster:

- Application deployment target

  You configure the application deployment target to support SCA applications and Business Process Choreographer components.
- Business Process Choreographer container

Messaging infrastructure cluster:

- SCA application bus members
- SCA system bus members
- Business Process Choreographer bus members
- Common Event Interface (CEI) bus members

Supporting infrastructure cluster:

- CEI server application
- IBM Cognos Business Intelligence, for dimensional view of data

Web application cluster:

- Business Rules manager
- Business Process Choreographer Explorer

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.

See the following graphical representation of a Remote Messaging, Support and Web topology.

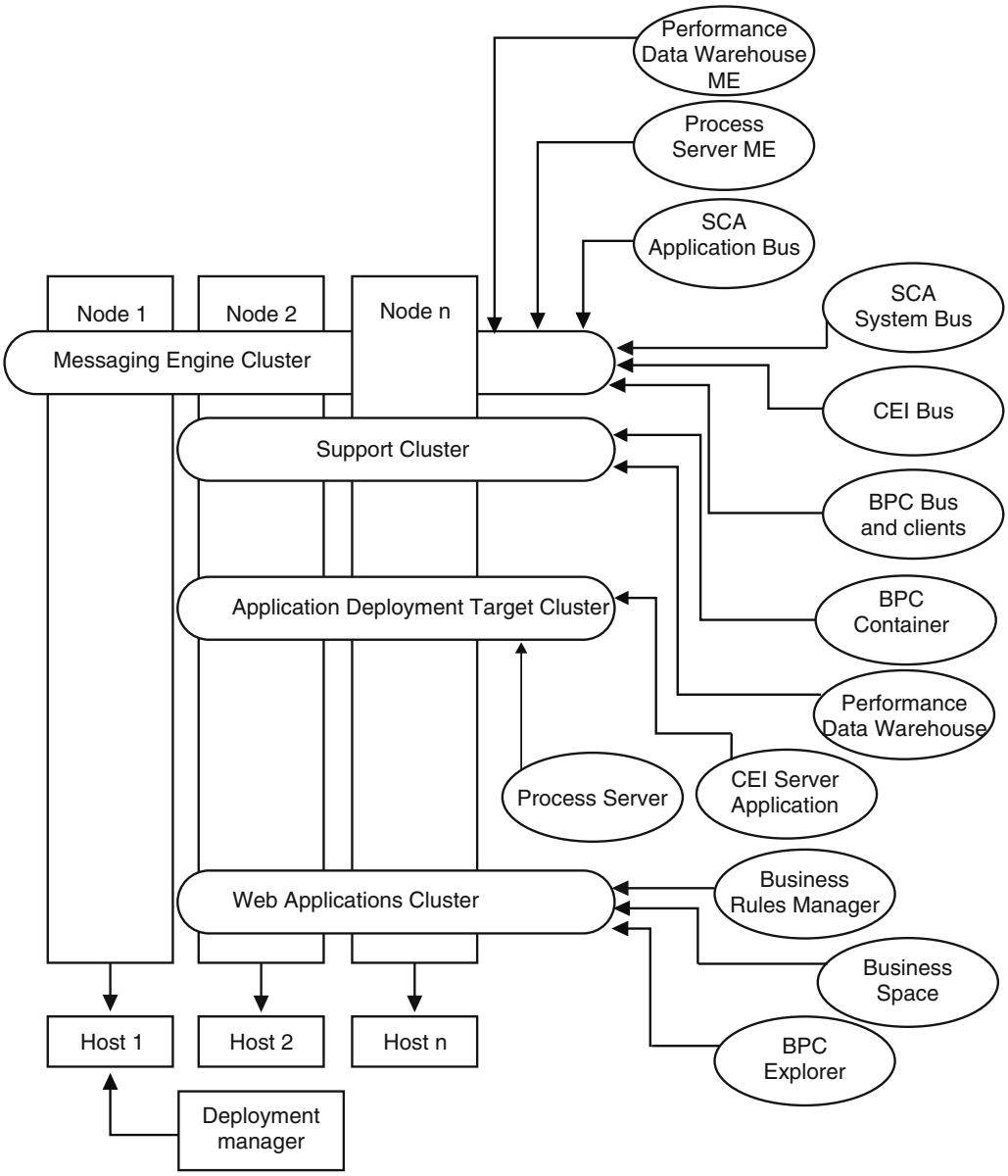


Figure 6. Remote Messaging, Support and Web pattern

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 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 V7.5 configuration capabilities

Follow these tips regarding IBM-supplied topologies.

- For an IBM Process Server deployment environment, these topologies work best:
  - Remote Messaging, Remote Support, and Web - Four-cluster topology pattern

    Note: Do not use this pattern for a Standard configuration unless it includes IBM Business Monitor.
  - Remote Messaging and Remote Support - Three-cluster topology pattern
- For an IBM Process Center deployment environment, these topologies work best:
  - Single Cluster topology pattern
  - Remote Messaging - Two-cluster topology pattern

The pattern that you choose for your Process Server or Process Center network deployment environment must be based upon your unique requirements.

As you plan for your production environment, consider carefully the advantages and disadvantages of each of the common topology patterns.

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 14. Considerations for selecting a topology for your deployment environment

	Topology Pattern			
Consideration	**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	One cluster for applications and for the support infrastructure One cluster for messaging	One cluster for applications One cluster for the support infrastructure One cluster for the support infrastructure	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)

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.

"Topologies of a network deployment environment" on page 29
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.

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

The following table shows the relationship between the topology patterns and product features.

Table 15. 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 15. 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 Space, and Business Rules Manager).	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.

The following table shows the components for each of the different configurations.

Table 16. IBM Business Process Manager components

Component	Advanced	WebSphere ESB	Standard	Express
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		
Business Process Choreographer	X			
Business Process Choreographer messaging engine (service integration bus)	X			
Business Process Choreographer event collector	X			
Business Process Choreographer Explorer	X			

Related concepts:

"Considerations for selecting a topology" on page 39
Selecting an appropriate topology for your deployment environment depends upon several factors.

"Topologies of a network deployment environment" on page 29
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. For information on creating a database design file, see Creating database design files by using the database design tool.
- 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.

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/Process Center cluster to work with a web server” on page 307.

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 (qesb) 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.

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.

For more information about the database design tool, see Creating database design files using the database design tool.

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 `procsry` and `pctrsry` 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 and Business Process Choreographer tables.
  - Use the design file that was created using the database design tool (DDT). See Creating database design files by using the database design tool.
- 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). See Creating database design files by using the database design tool.

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 17 on page 47 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. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system.

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 http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=/com.ibm.db2.luw.qb.server.doc/doc/c0057140.html 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 Instance user name and password: `bpminst` and `bpminst1`
- Linux Fenced user name and password: `bpmfenc` and `bpmfenc1`
- Linux Administration server (DAS) user name and Password: `bpmadmin` and `bpmadmin1`
- Windows Administrative user name and Password: `bpmadmin` and `bpmadmin1`

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 17.

Table 17. Supported database types, their associated dbType values and restrictions

Supported database	dbType value	Restrictions and notes
DB2 Express	DB2_UNIVERSAL	Used as the default database type for a stand-alone profile.
DB2® Universal	DB2_UNIVERSAL	
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 **createDB.sh** script. The installation wizard is not able to create a database of this type. .
Microsoft SQL Server	DataDirect Connect JDBC 4.0 = MSSQLSERVER_DATADIRECT 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 can 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. See “Configuring XA transactions for Microsoft SQL Server” on page 227.
Oracle	ORACLE	The installation wizard is not able to create a database of this type for Oracle.

A second parameter used in file path and file naming conventions is *feature*, which indicates which of the various databases is under consideration. Table 18 on page 48 lists the databases and the associated *feature* parameter.

Table 18. 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 49
The following table lists both the JDBC drivers that are shipped with your installation and those that are supported by 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
- Common database - CMNDB
- Performance Data Warehouse - PDWDB

If you have two installations of IBM Business Process Manager Advanced 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:

- You are using the Custom installation path for the IBM Business Process Manager Advanced Process Server image. 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 table lists both the JDBC drivers that are shipped with your installation and those that are supported by the product.

The following JDBC drivers are shipped with the installation image.

Table 19. Shipped JDBC drivers and locations

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 distributed and z/OS.
	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 JDBC drivers are also supported, but are not included with the installation image.

Table 20. Supported JDBC drivers and locations

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

Related concepts:

"Supported database types" on page 46
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

Identifying required database administrator tasks

If you want to perform some types of database creation and configuration tasks in IBM Business Process Manager, you must be a database administrator (DBA).

Database selection

Choosing how to configure your database

Database privileges and security considerations

- "Database privileges" on page 51
- Identifying necessary security authorizations

Profile creation

- Prerequisites for creating or augmenting profiles
- Creating a stand-alone environment
- Configuring the software after a Custom installation to create one or more Deployment manager and Custom (managed node) profiles
-

  Tip: If you use the deployment environment feature, you can use a database other than the default database server as your database product. The user ID that you provide for the **User name to authenticate with the database** field on the database configuration panels must have DBA privileges.

Database configuration

- Create the database and tables before profile creation or augmentation
  - Creating database design files by using the database design tool
- Create the database and tables after profile creation or augmentation
  - Creating the Common database and tables after profile creation or augmentation
  - Creating database design files by using the database design tool
- "Planning to configure the messaging engine database" on page 67

Relevant links

- Configuring Business Space

Nonadministrative user considerations

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

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 nonadministrative user, you have the following choices:

- Before installing the product, install a DB2 server separately. For information about installing DB2 as a nonadministrative or nonroot user, see
  - Windows Required user accounts for installation of DB2 server products (Windows)
- Logon as an administrator and use the product installer to install the DB2 server alone. Grant special permission to the nonadministrative user. Then logon as the nonadministrative user and install the product using the installed DB2 server.

Note: If you choose to use the DB2 Express database included (and optionally installed) with the product, you must meet the following criteria:

- Uninstall any other versions of DB2 from the system
- Install IBM Business Process Manager as a nonadministrative or nonroot user

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 21. Database privileges

Header	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 22 on page 52 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 23 on page 53 for detailed DB2 for z/OS database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.

Table 21. Database privileges (continued)

Header	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 24 on page 54 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 25 on page 55 for detailed SQL Server database privileges for IBM Business Process Manager and WebSphere Enterprise Service Bus components.

Table 22 describes additional DB2 database privileges for IBM Business Process Manager components.

Table 22. 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
Business Process Choreographer	CREATE TABLE, ALTER TABLE, CREATE VIEW, CREATE TABLESPACE, CREATE USER, CREATE PROCEDURE	SELECT, UPDATE, DELETE, INSERT

Table 22. Detailed DB2 database privileges (continued)

Component	Installation privileges	Runtime privileges
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 • 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 above 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 23 describes additional DB2 for z/OS database privileges for IBM Business Process Manager components.

Table 23. 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
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

Table 23. Detailed DB2 for z/OS database privileges (continued)

Component	Installation privileges	Runtime privileges
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 • 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 above 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**.

Table 24 describes 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 24. 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

Table 24. Detailed Oracle database privileges (continued)

Component	Installation privileges	Runtime privileges
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.
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
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 25 describes additional SQL Server database privileges for IBM Business Process Manager components.

Table 25. Detailed SQL Server 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
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 25. Detailed SQL Server 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
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	CREATE TABLE, SELECT, INSERT, UPDATE, ALTER LOCK TABLE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE INDEXTYPE, 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
Performance Data Warehouse	CREATE TABLE, SELECT, INSERT, UPDATE, ALTER LOCK TABLE, DELETE TABLE, DROP TABLE, CREATE INDEX, CREATE INDEXTYPE, 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

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

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:

Linux UNIX Windows *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 a 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.

Linux UNIX Windows

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 26 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 26. install_root default directory

Default *install_root* **for root or Administrator users**	**Default** *install_root* **for nonroot users**
AIX `/opt/IBM/BPM/v7.5`	AIX *user_home*`/IBM/BPM/v7.5`
Linux `/opt/ibm/BPM/v7.5`	Linux *user_home*`/ibm/BPM/v7.5C:\IBM\BPM\v7.5`
Windows `C:\IBM\BPM\v7.5`	Windows `C:\IBM\BPM\v7.5`

Table 27 shows the default installation directory for a profile named *profile_name* for both root (Administrator) and nonroot users.

Table 27. profile_root default directory

Default *profile_root* **for root or Administrator users**	**Default** *profile_root* **for nonroot users**
AIX `/opt/IBM/BPM/v7.5/profiles/`*profile_name*	AIX *user_home*`IBM/BPM/v7.5/profiles/`*profile_name*
Linux `/opt/ibm/BPM/v7.5/profiles/`*profile_name*	Linux *user_home*`/ibm/BPM/v7.5/profiles/`*profile_name*
Windows `C:\IBM\BPM\v7.5\profiles\`*profile_name*	Windows `C:\IBM\BPM\v7.5\profiles\`*profile_name*

Table 28 shows the DB2 Express install location. DB2 Express is installed under the same directory as IBM Business Process Manager.

Table 28. DB2 Express default directory

Default DB2 Express binary location	**Database Instance location**
Linux `/opt/ibm/BPM/v7.5/DB2`	Linux Database instance is created under the `bpminst` user. For example: *user_home*`/bpminst`
Windows `C:\IBM\BPM\v7.5\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\v7.5\` 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 29 shows the default installation root directory in such a case for both root (Administrator) and nonroot users.

Table 29. 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`

Table 29. 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. (continued)

Default *install_root* **for root or Administrator users**	**Default** *install_root* **for nonroot users**
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 30. 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 Installation Manager

Table 31 shows two default directories related to the Installation Manager tool.

The directories under **Installation directory** are the defaults (per platform) into which the launchpad application installs Installation Manager.

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 31. 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

Table 31. Installation Manager default installation directories (continued)

Defaults for root or Administrator users	Defaults for nonroot users
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

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 32 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 32. Databases that are required by individual components

Server component	Database (default name)	Notes
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.
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, which provides a common interface for application users to create, manage, and integrate web interfaces across a range of IBM products.

Table 32. Databases that are required by individual components (continued)

Server component	Database (default name)	Notes
Common Event Infrastructure (CEI)	EVENT (stores events)	CEI database configuration is not supported by the Profile Management Tool or the **manageprofile** command-line utility. 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.
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.

Table 32. Databases that are required by individual components (continued)

Server component	Database (default name)	Notes
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.

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 IBM Business Process Manager common database is used by the following product components:

- 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 and Business Process Choreographer tables.
  - Use the design file that was created using the database design tool (DDT). See Creating database design files by using the database design tool.
- 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). See Creating database design files by using the database design tool.

Supported database types

The common database can use the following database products:

Table 33. 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 33. 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 (DataDirect)	
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 "Users and schemas for databases" and "Database 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 34, you must use the Profile Management Tool to create your deployment manager.

Table 34. 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

Table 34. Installer options (continued)

Option	Databases you can use
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 35 lists the databases supported by typical (default) profiles and customized profiles.

Table 35. 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 62
Customized: all other profiles	Any of the "Supported database types" on page 62

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 36. 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 37. 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. For more information, see "Configuring the common database using the Profile Management Tool".

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 38. 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 (DataDirect)	

Table 38. Supported database products (continued)

Database Types	Considerations
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 "Users and schemas for databases" and "Database 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 **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.

Related information:

Configuring messaging engine and server behavior when a data store connection is lost

Planning to configure the logger mediation database tables for WebSphere Enterprise Service Bus

You can find logger mediation database table specifications for WebSphere ESB. The specifications contain information about supported database types, script names and their locations, profile creation configuration actions, schema upgrades, and user ID privileges.

The logger mediation database tables are used by the Message Logger mediation primitive in WebSphere ESB. The Message Logger primitive stores message information in the common database. The common database is the default for the WebSphere ESB logger mediation database, but you can use an external database. During the profile augmentation phase, the system creates the *ESB_MESSAGE_LOGGER_QUALIFIER* variable, which is set to the value of the chosen common database schema qualifier.

The database is created automatically for a stand-alone configuration. You can use Data Definition Language (DDL) files to use additional databases for a stand-alone server configuration or for a network deployment environment.

For a stand-alone configuration that uses a DB2 for z/OS database, or for a managed node or deployment manager in a network deployment configuration, you must create the WebSphere ESB database and storage groups first. Then you can run the configuration script for IBM Process Server for z/OS.

Supported database types

The WebSphere ESB logger mediation 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 (DataDirect)	

Table 39. Supported database products (continued)

Database Types	Considerations
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 "Users and schemas for databases" and "Database privileges".

Database Management Service (DBMS) instances

The common database is used for both stand-alone environments and network deployment environments at cell scope. However, you can manually create as many other instances as you require. Each message logger mediation primitive can be configured to use a different data source and therefore a different database.

Configuration actions during profile creation

For the stand-alone profiles and deployment manager profiles, the WebSphere ESB logger profile executes the **createTable** common database script in the common database. For more information, see "Common database specifications".

Stand-alone profile
In a default stand-alone environment, a DB2 database named `EsbLogMedDB` is automatically created.

Network deployment environment
The default WebSphere ESB database is not automatically selected during network deployment profile creation. You must select the default database or one of the supported databases.

SQL scripts

The **createTable_ESB.sql** SQL script is located in the *install_root*/dbscripts/CommonDB/*DBTYPE* directory.

The **createMessageLoggerResource.jacl** and **removeMessageLoggerResource.jacl** scripts are located in the *install_root*/bin directory, and can be used to create or delete tables in the requested database type.

JDBC provider

The common database JDBC provider and data source are used by default:

Data source name:
- **WPS DataSource**

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

You can configure the Message Logger mediation to use a different data source.

Restrictions

There are no known restrictions.

Tables

The WebSphere ESB logger mediation database uses the MSGLOG table in the common database. However, you can choose not to use the common database, and use an external database instead.

Exported scripts

The database scripts are exported to the *install_root*/dbscripts/CommonDB/*DBTYPE*/*dbName* directory.

Schema upgrade scripts

No schema upgrade involved for MSGLOG table. When you migrate to IBM Business Process Manager V6.1, IBM Business Process Manager continues to use the MessageLogger databases used in prior releases. There is no support to migrate this data into the IBM Business Process Manager common database.

If you want to maintain a single location for message information, you can perform one of the following tasks:

- Manually move the data from the old database to the new database
- Continue to use the old database
- Use the **createMessageLoggerResource.jacl** script to move the data.

Additional database configuration information

The topics in this section provide additional database configuration information for IBM Business Process Manager.

Users and schemas for databases

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 and 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 40. Scenario: Single user ID or schema

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

Table 40. Scenario: Single user ID or schema (continued)

Database tables	Default database name with DB2	User ID or schema name
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 desired 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 41. 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 42. 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 execute 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

Schema name	User ID to select, insert, update, and delete schemas
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 43. 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.

JDBC providers

You can use JDBC providers to interact applications with relational databases.

Applications use JDBC providers to interact with relational databases. The JDBC provider supplies the specific JDBC driver implementation class for access to a specific type of database. To create a pool of connections to that database, you associate a data source with the JDBC provider. Together, the JDBC provider and the data source objects are functionally equivalent to the Java EE Connector Architecture (JCA) connection factory, which provides connectivity with a non-relational database.

Refer to the examples of both Typical stand-alone environment setup and Typical deployment environment setup in the previous topic.

For more information on JDBC providers, see “JDBC providers” in the WebSphere Application Server information center.

Data sources for IBM Business Process Manager

Data sources provide a link between applications and relational databases. The data sources that you use are affected by whether you set up a stand-alone environment or a network deployment environment.

Applications use a data source to obtain connections to a relational database. A data source is analogous to the Java EE Connector Architecture (JCA) connection factory, which provides connectivity to other types of enterprise information systems (EIS).

A data source is associated with a Java Database Connectivity (JDBC) provider, which supplies the driver implementation classes that connect with a specific type of database. Application components interact directly with the data source to obtain connection instances to your database. The connection pool that corresponds to each data source provides connection management.

You can create multiple data sources with different settings, and associate them with the same JDBC provider. For example, you might use multiple data sources to access different databases within the same database application. In IBM Business Process Manager, JDBC providers must implement one or both of the following data source interfaces. Use these interfaces to run the application in a single-phase or two-phase transaction protocol.

ConnectionPoolDataSource
A data source that supports application participation in local and global transactions, except two-phase commit transactions. When a connection pool data source is involved in a global transaction, the transaction manager does not provide transaction recovery. The application is responsible for providing the backup recovery process if multiple resource managers are involved.

The following tables provide examples of typical stand-alone environment setups and typical deployment environment setups:

Table 44. Typical stand-alone environment setup

Datasource	Component	Scope	JNDI Name
WBI DataSource	CommonDB	Node	jdbc/WPSDB
SCA Application Bus ME data source	SCA ME	Server	jdbc/com.ibm.ws.sib/nlNode01.server1-SCA.APPLICATION.localhostNode01Cell.Bus
event	CEI	Server	jdbc/cei
CEI ME data source	CEI ME	Server	jdbc/com.ibm.ws.sib/nlNode01.server1-CEI.*cellName*.BUS

Table 45. Typical deployment environment setup

Datasource	Component	Scope	JNDI Name
WBI DataSource	CommonDB	Cell	jdbc/WPSDB
SCA Application Bus ME data source	SCA ME	Cluster	jdbc/com.ibm.ws.sib/clusterone-SCA.APPLICATION.enduranceTestCell01.Bus
event	CEI	Cluster	jdbc/cei
CEI ME data source	CEI ME	Cluster	jdbc/com.ibm.ws.sib/clusterone-CEI.*cellName*.BUS

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 46. 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	X

Table 47. 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
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*.

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).

Preparing to install and configure the software

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

Before preparing to install and configure the software, you should have created a plan for the deployment environment that you want to create. For more information, see: Planning for IBM Business Process Manager

Table 48. 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 yourIBM Business Process Manager installation.
Review the contents of the installation media	Depending on your IBM BPM configuration, see one of the following topics: • IBM Business Process Manager Advanced product package • IBM Business Process Manager Standard product package • IBM Business Process Manager Express product package	You are familiar with the contents on the installation media
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.

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Table 48. 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.	If not already the case, 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. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system. **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 http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=/com.ibm.db2.luw.qb.server.doc/doc/c0057140.html for a list of the kernel requirements. You can locate the current values by parsing the output of the **ipcs -l** command.

Preparing operating systems for product installation

Before you can install IBM Business Process Manager Standard, 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 Standard.
- Ensure that your user login provides access to your DB2 or Oracle database commands.
- Complete additional tasks specific to your operating system.

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.

Note: However, please note the following points related to the WebSphere Application Server installation:

- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5.1 uses IBM Installation Manager to install and does not use InstallShield Multiplatform (ISMP). Ignore any prerequisite instructions that refer specifically to running ISMP.
- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5.1 uses IBM Installation Manager to install fix packs and interim fixes and does not use the WebSphere Update Installer. Ignore any prerequisite instructions that refer specifically to running the WebSphere Update Installer.

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&wv=1 .

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

1. If you are installing 32-bit WebSphere Application Server on a 64-bit operating system, ensure that the appropriate 32-bit libraries are installed on your 64-bit system.
2. If you are planning to install portlet-based dashboards, set the maximum number of open files using the following command before installing WebSphere Portal or portlet-based dashboards:

   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.
3. Set the **umask** value to 022 using the following command:

   umask 022
4. Ensure that you have Mozilla Firefox installed at version 3.5.x.x or higher.
5. 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:

     ```
     chgdev  -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.)**.
6. Complete the steps to Tune 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.

Note: However, please note the following points related to the WebSphere Application Server installation:

- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5.1 uses IBM Installation Manager to install and does not use InstallShield Multiplatform (ISMP). Ignore any prerequisite instructions that refer specifically to running ISMP.

- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5.1 uses IBM Installation Manager to install fix packs and interim fixes and does not use the WebSphere Update Installer. Ignore any prerequisite instructions that refer specifically to running the WebSphere Update Installer.

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).

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and 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:

1. Add the following lines, in the below 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
```

2. Add the following lines to the end of `/etc/security/limits.conf`:

```
# - 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
```

3. Reboot your system.

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

1. If you are installing 32-bit WebSphere Application Server on a 64-bit operating system, ensure that the appropriate 32-bit libraries are installed on your 64-bit system.
2. If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6 as a root user, follow the previous instructions and skip this step. Otherwise, increase the maximum number of open files to at least 8800. The default setting is usually not enough. You can check your current maximum number of open files by using **ulimit -n** to see the maximum number of open files. The following example shows the maximum number of open files being increased to 8800. Linux
   a. Open `/etc/security/limits.conf`.
   b. Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:

      *** hard nofile** ***8800***

      *** soft nofile** ***8800***
   c. Save and close the file.

d. Log off and log in again.

For more information about this setting, run **man limits.conf** or see the Preparing the operating system for product installation topic 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.

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.

Note: However, please note the following points related to the WebSphere Application Server installation:

- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5 uses IBM Installation Manager to install and does not use InstallShield Multiplatform (ISMP). Ignore any prerequisite instructions that refer specifically to running ISMP.

- The WebSphere Application Server Network Deployment V7.0 that is installed by IBM Business Process Manager V7.5 uses IBM Installation Manager to install fix packs and interim fixes and does not use the WebSphere Update Installer. Ignore any prerequisite instructions that refer specifically to running the WebSphere Update Installer.

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 Solaris systems: http://www-01.ibm.com/support/docview.wss?uid=swg24027719

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

1. If you are installing 32-bit WebSphere Application Server on a 64-bit operating system, ensure that the appropriate 32-bit libraries are installed on your 64-bit system.
2. If you are planning to install portlet-based dashboards, set the maximum number of open files using the following command before installing WebSphere Portal or portlet-based dashboards:

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

   umask 022
4. Complete the steps to Tune 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, you must have administrative privileges (Administrator user) and must not have an existing DB2 database server on the system 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. Complete the below steps for the installation of WebSphere Application Server.
   a. Download and install a Web browser. You must install a Web browser if you want to use the launchpad application. If your system does not have a default browser or the browser has been corrupted or installed incorrectly, then you might experience errors when trying to open various hyperlinks in the installation wizard panels.
   b. If you are installing 32-bit WebSphere Application Server on a 64-bit operating system, ensure that the appropriate 32-bit libraries are installed on your 64-bit system.
   c. Stop all WebSphere Application Server-related Java processes on the machine where you are installing the product.
   d. Stop any Web server process such as the IBM HTTP Server.
   e. Stop all instances of the **process_spawner.exe** program. You can skip this step if the **process_spawner.exe** does not exist.The **process_spawner.exe** is a required binary for the

WebSphere Application Server to function properly. The **process_spawner.exe** is not intended to be called directly and is a core functionality of the WebSphere Application Server on Windows.

f. Provide adequate disk space. The amount of disk space required varies with the number of features or products installed. If you are installing the product using the installation wizard, the installation summary panel indicates the approximate amount of disk space required based on the features and products you have selected.If you plan to migrate applications and the configuration from a previous version, verify that the application objects have enough disk space. As a rough guideline, plan for space equal to 110 percent of the size of the applications.

g. Verify that prerequisites and corequisites are at the required release levels. Although the installation wizard checks for prerequisite operating system patches, review the prerequisites on the Supported hardware and software website if you have not done so already. Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

The WebSphere Application Server installation uses an IBM Installation Manager wizard. You can use the graphical interface of the wizard. You can also use the wizard in silent mode. If you are installing remotely and want to use the installation wizard, then you must use a connection mechanism that supports the use of graphics. If your connection does not support the use of graphics, then install the product silently.

To run the install successfully, you must have write permissions to the **USER_HOME** directory. If you do not have permission to write to **USER_HOME**, then be aware of the following install limitations:

- The Profile Management Tool GUI will not function due to a requirement to write to **USER_HOME**. You must use the **manageprofiles** on the command-line to manage profiles instead.

2. Complete the steps to Tune 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 if 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. So, 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. To install DB2 Express, you must have administrative privileges (Administrator or root user) and must not have an existing DB2 database server on the system.

Any scenario where you are not using DB2 Express for your **Typical** install is considered to be a **Typical** install 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. See Configuring an existing database during a typical installation for details. 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.

Installing IBM Business Process Manager

Installing IBM Business Process Manager involves acquiring the software and then installing the software files: prerequisite software, the database product to be used by IBM Business Process Manager, and the IBM Business Process Manager software.

IBM Business Process Manager Standard product package

Learn how to acquire IBM Business Process Manager and what software is supplied in its media packs and downloadable electronic installation images.

How to acquire IBM Business Process Manager

You can obtain the product code in any of the following ways:

- From the product media packs, which include CD-ROM and DVD media.
- From the Passport Advantage® site, where licensed customers can download installation images. For more information about the images available for download, see the Passport Advantage download document.

To buy the software, contact your IBM representative or IBM reseller, or visit the IBM Business Process Manager home page at and select the *How to buy* link in the left column.

Software supplied with IBM Business Process Manager

Each media pack includes software that you need to install IBM Business Process Manager, to set up your IBM Business Process Manager environment, and to assemble and deploy applications. Also included in each media pack are optional supplemental software programs that provide value and tool support for your production and development environments.

Table 49 lists the software that is provided with the IBM Business Process Manager product. Not every software program is supplied on every platform.

Table 49. Software supplied with IBM Business Process Manager

Software	Description
IBM Business Process Manager	IBM Business Process Manager is a comprehensive BPM platform giving you visibility and insight to manage business processes. It scales smoothly and easily from an initial project to a full enterprise-wide program. IBM Business Process Manager harnesses complexity in a simple environment to break down silos and better meet customer needs.
WebSphere Application Server Network Deployment	The industry's premier Java-based application platform, integrating enterprise data and transactions for the dynamic e-business world. The Network Deployment version, upon which IBM Business Process Manager is built, delivers a rich application deployment environment with application services that provide enhanced capabilities for transaction management, as well as the security, performance, availability, connectivity, and scalability expected from the WebSphere family of products. This configuration also enables clustering, edge-of-network services, Web services enhancements, and high availability for distributed configurations. For more information about WebSphere Application Server Network Deployment, see theWebSphere Application Server Network Deployment information center.
Feature Pack for XML	Provides the XML programming model standards. Delivers new functions and support for industry standards.
IBM Business Process Manager Help System built on Eclipse	The IBM Business Process Manager Help System is an Eclipse- and browser-based help system packaged for installation with IBM Business Process Manager. IBM Business Process Manager documentation is packaged for download as Eclipse document plug-ins, and can be viewed using this help system. Both the help system and document plug-in format are based on an open source approach developed by the Eclipse Project.

Media packs supplied with IBM Business Process Manager

Seven media packs are available for IBM Business Process Manager. Each media pack contains the product media applicable to a specific operating environment.

Note: Each media pack contains an IBM Business Process Manager V7.5 Quick Start CD. This CD-ROM contains the IBM Business Process Manager Quick Start Guide in all available translations.

See the following sections for detailed contents per platform:

- "AIX media pack"
- "Linux x86 media pack"
- "Linux on System z media pack" on page 88
- "Solaris media pack" on page 89
- "Windows media pack" on page 89

AIX media pack

The IBM Business Process Manager for AIX media pack contains IBM Business Process Manager content for both 32-bit and 64-bit platforms. Table 50 shows the content for 32-bit and 64-bit platforms.

Table 50. Contents of AIX media pack for 32-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for AIX	Two DVDs (or four images) contain the following installable components: • IBM Business Process Manager in the `WBI` directory • (64-bit only) IBM IBM Process Server Help System in the `IEHS` directory • Migration tool in the `Migration` directory • WebSphere Application Server Network Deployment (V7.0) in the `WAS` directory. • Feature Pack for XML Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.
WebSphere Application Server Network Deployment V7.0 Supplements for AIX on PowerPC® 32-bit	Two CD-ROMs contain the following installable components: • (32-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment V7.0 Supplements for AIX on PowerPC 64-bit	Two CD-ROMs contain the following installable components: • (64-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • Web Server Plug-ins • Migration tool

Linux x86 media pack

The IBM Business Process Manager for Linux x86 media pack contains IBM Business Process Manager content for both 32-bit and 64-bit platforms. Table 51 on page 88 shows the content for both 32-bit and 64-bit platforms.

Table 51. Contents of Linux x86 media pack for 32-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for Linux x86	Two DVDs (or four images) contain the following installable components: • IBM Business Process Manager in the `WBI` directory • (32-bit only) IBM IBM Process Server Help System in the `IEHS` directory • Migration tool in the `Migration` directory • WebSphere Application Server Network Deployment (V7.0) in the `WAS` directory. • DB2 Express • Feature Pack for XML Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.
WebSphere Application Server Network Deployment V7.0 Supplements for Linux x86 Intel 32-bit	Two CD-ROMs contain the following installable components: • (32-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment V7.0 Supplements for Linux x86 AMD 64-bit	Two CD-ROMs contain the following installable components: • (64-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • Web Server Plug-ins • Migration tool

Linux on System z® media pack

The IBM Business Process Manager for Linux on System z media pack contains IBM Business Process Manager content for both 31-bit and 64-bit platforms. Table 52 shows the content for both 31-bit and 64-bit platforms.

Table 52. Contents of Linux on System z media pack for 31-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for Linux on System z	Two DVDs (or four images) contain the following installable components: • IBM Business Process Manager in the `WBI` directory • Migration tool in the `Migration` directory • WebSphere Application Server Network Deployment (V7.0) in the `WAS` directory. • Feature Pack for XML Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.

Table 52. Contents of Linux on System z media pack for 31-bit and 64-bit platforms (continued)

Media label	How supplied
WebSphere Application Server Network Deployment V7.0 Supplements for Linux on System z 31-bit	Two CD-ROMs contain the following installable components: • IBM HTTP Server • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment V7.0 Supplements for Linux on System z 64-bit	Two CD-ROMs contain the following installable components: • IBM HTTP Server • Web Server Plug-ins • Migration tool

Solaris media pack

The IBM Business Process Manager for Solaris media pack contains IBM Business Process Manager content for SPARC 32-bit and 64-bit platforms. Table 53 shows the content for both SPARC 32-bit and 64-bit platforms.

Table 53. Contents of Solaris media pack for SPARC 32-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for Solaris on SPARC	Two DVDs (or four images) contain the following installable components: • IBM Business Process Manager in the `WBI` directory • WebSphere Application Server Network Deployment (V7.0) • Feature Pack for XML Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.
WebSphere Application Server Network Deployment V7.0 Supplements for Solaris SPARC 32-bit	Two CD-ROMs contain the following installable components: • (32-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment V7.0 Supplements for Solaris SPARC 64-bit	Two CD-ROMs contain the following installable components: • (64-bit only) Application Client for WebSphere Application Server • IBM HTTP Server • Web Server Plug-ins • Migration tool

Windows media pack

The IBM Business Process Manager for Windows media pack contains IBM Business Process Manager content for both 32-bit and 64-bit platforms. Table 54 on page 90 shows the content for both 32-bit and 64-bit platforms.

Table 54. Contents of Windows media pack for 32-bit and 64-bit platforms

Media label	How supplied
IBM Business Process Manager V7.5 for Windows	Two DVDs (or four images) contain the following installable components: • IBM Business Process Manager in the `WBI` directory • (32-bit only) IBM Process Server Help System in the `IEHS` directory • WebSphere Application Server Network Deployment (V7.0) • DB2 Express • Feature Pack for XML Use the Launchpad application in the root directory to install and view information about any of the installable components on the *IBM Business Process Manager V7.5 DVD* and *WebSphere Application Server Network Deployment Supplements V7.0* CDs.
WebSphere Application Server Network Deployment V7.0 Supplements for Windows on Intel 32-bit	Two CD-ROMs contain the following installable components: • Application Client for WebSphere Application Server • IBM HTTP Server • Web Server Plug-ins • Migration tool
WebSphere Application Server Network Deployment V7.0 Supplements for Windows AMD 64-bit	One CD-ROM contains the following installable components: • IBM HTTP Server • Web Server Plug-ins • Migration tool

Limited use of IBM Tivoli® Federated Identity Manager by WebSphere customers can be accessed at Tivoli Federated Identity Manager for WebSphere Application Server Network Deployment.

Installing IBM Business Process Manager Standard

You install the software interactively from the launchpad program or silently by running Installation Manager in silent installation mode. In silent mode, the installation wizard does not display a graphical interface, but reads your responses from a response file.

Roadmap: Installing and configuring IBM Business Process Manager Standard

The IBM Business Process Manager installer and configuration programs accommodate a variety of development and production scenarios. This roadmap guides you through the most common and widely used paths for installing and configuring IBM Business Process Manager Standard.

The roadmap includes sections for installation and configuration scenarios. These scenarios represent ways to achieve either a stand-alone or network deployment environment. Each section includes a table listing the activities to perform, with links to the instructions and notes about the result of completing each activity.

In general, installing the software means adding the product binaries from media or from a download site on to your system. In some instances, installing the software adds the product binaries and configures the software for use.

The sections in this roadmap describe the following scenarios:

- Typical installation.

  The **Typical installation** option installs the software and configures a stand-alone Process Center or Process Server profile. A Typical installation does not require you to create profiles separately using the Profile Management Tool or **manageprofiles** utility.

The Typical installation option is the simplest and quickest method for installing and configuring the software.

The Typical installation option is the ideal method for getting full Business Process Manager features and functionality (for Express, Standard, or Advanced configurations) on a single machine. See Installing IBM BPM Standard Process Server using the **Typical** option for details.

- Custom installation, followed by profile creation of one or more stand-alone profiles.

  The **Custom installation** option in this scenario installs the software on to your system and then runs the Profile Management Tool, allowing you more control over how to configure your software. If you are creating a stand-alone Process Center or Process Server environment that requires configuration features that are not available through the Typical installation path, create the stand-alone Process Center or Process Server profiles after the installation of the product binaries by using either the Profile Management Tool or the **manageprofiles** command-line utility.

  See Installing IBM BPM Standard Process Server using the **Custom installation** and configuring one or more stand-alone profiles.

- Custom installation, followed by profile creation of one or more deployment manager and custom (managed node) profiles.

  This installation and configuration scenario provides the capacity, scalability, and robustness that is generally required of a large-scale production environment. The type of configuration created through this path is known as a *network deployment configuration*, which is made up of a group of servers (known as clusters) that collaborate to provide workload balancing and failover. The servers are managed centrally, using a single administrative console known as the deployment manager.

  You can achieve a *standardized* network deployment configuration or a *customized* network deployment configuration:

  – A standardized network deployment configuration:

    The installer installs the software on to your system, and then you use the profile configuration programs (Profile Management Tool or **manageprofiles** command-line utility) to create and configure one or more deployment manager and custom (managed node) profiles and the Deployment Environment wizard to create a standards-based network deployment configuration. See Installing IBM BPM Standard using the **Custom installation** and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment

  – A customized network deployment configuration:

    The installer installs the software on to your system, and then you use the profile configuration programs (Profile Management Tool or **manageprofiles** command-line utility) to create and configure one or more deployment manager and custom (managed node) profiles and the administrative console to create a customized network deployment configuration. See Installing IBM BPM Standard using the **Custom installation** and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment

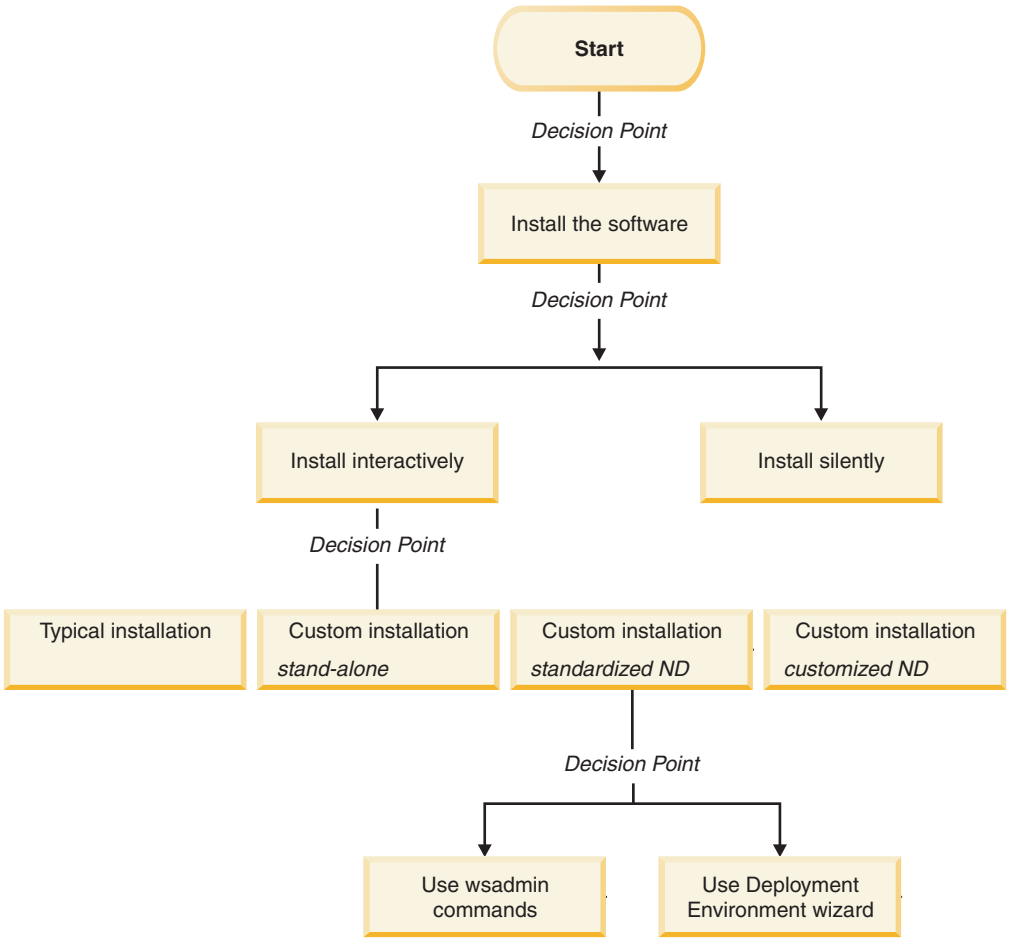
  For conceptual information about network deployment, see Planning your deployment environment.

  For information about topology patterns packaged with the software and supported by the Deployment Environment wizard, see Topologies and deployment environment patterns.

The process for installing IBM Business Process Manager requires that you make decisions related to your intended use of the product. The graphical user interface (GUI) used to install the code on to your system incorporates descriptive text on all of its panels, helping you select the options applicable to your intended use.

Use the information in the roadmap as a supplement to the GUI and to build your understanding of the installation and configuration procedures for a particular scenario, from its high-level tasks to the associated procedural information.

The following diagram illustrates the tasks of the installation and configuration scenarios.



Installing IBM BPM Standard using the Typical option

You can use the Typical installation option in the installer to install the software and configure a stand-alone profile automatically. In a Typical installation there is no need to run the Profile Management Tool or run **manageprofiles** after the installation.

This installation option will default the majority of settings but does allow you to specify the installation path and database type.

The Typical option is the quickest way to install and configure the software.

For information about installing the IBM BPM Standard using the **Typical** option, see Typical installation: IBM Business Process Manager Standard.

Installing IBM BPM Standard using the Custom installation and configuring one or more stand-alone profiles

You can use the Custom installation option in the installer to install the software and configure one or more stand-alone profiles using the Profile Management Tool or Typical installation: IBM Business Process Manager Standard command-line utility.

Table 55. Installing IBM BPM Standard using the Custom installation option and configuring one or more stand-alone profiles

Task	Where to find information	Result after completing the task
Install the software using the Custom installation option.	For information about installing *IBM BPM Standard* using the Custom installation option, see Custom installation: IBM Business Process Manager Standard: Process Server.	The custom installation for *IBM BPM Standard* installs the product binaries for Process Center, Process Designer and Process Server on to your system. The custom installation for *IBM BPM Standard* does not create s during the install.
Launch the Profile Management Tool.	If you did not launch the Profile Management Tool from the installer, you can do so now. See Starting the Profile Management Tool **Restriction:** You cannot use the Profile Management Tool to create profiles on BPM installations on 64-bit architectures except on the Linux on zSeries platform. Instead, proceed to the next step and use the **manageprofiles** command-line utility.	The Profile Management Tool is started and ready to use. Because data from the Process Center profile is used as input to the Process Server profile creation process, you should create your Process Center stand-alone profile first (before creating the Process Server stand-alone profile).
Install the Process Designer.	See Installing the Process Designer	You have installed Process Designer. For information about how to use Process Designer, see the following topics: • Hiring Sample Tutorial for IBM Process Designer • Authoring environments • Process development with the Process Center To continue configuring your system, see Create one or more Process Server stand-alone profiles
Create one or more Process Server stand-alone profiles.	Depending on how you want to create your Process Server stand-alone profiles, see one of the following topics: • Creating a Process Server stand-alone profile using the Profile Management Tool • Creating a Process Server stand-alone profile using the manageprofiles utility	The stand-alone server environment is now configured and ready to use.

Installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment

You can use the Custom installation option in the installer to install the software and use the Profile Management Tool or **manageprofiles** command-line utility to configure one or more deployment manager and custom (managed node) profiles. After profile creation you can use the Deployment Environment wizard to generate a *standardized network deployment environment*.

The software includes several templates of *topology patterns*. These topology patterns provide the construct for standardized network deployment environments. You implement these patterns by using the Deployment Environment wizard.

The patterns and templates included with the software are designed to address a broad spectrum of business process management scenarios.

The decision on which pattern to select from the Deployment Environment wizard depends on the planned usage of your environment (i.e., proof of concept, testing or production) and the processing capabilities (such as high-availability and failover processing) required by your enterprise.

The installation and configuration scenario described in this section assumes your business needs and requirements can be met by one of the standardized topology patterns included with the software. If you have a scenario that cannot be addressed by the patterns and templates included with the software, you can create a customized network deployment environment using the administrative console. For information see "Installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment" on page 7.

Table 56. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND

Task	Where to find information	Result after completing the task
Install the software using the Custom installation option.	For information about installing IBM Business Process Manager using the Custom installation option, see Custom installation: IBM Business Process Manager Standard	The custom installation for *IBM BPM Standard* installs the product binaries for Process Center and Process Designer on to your system. Process Server functionality is part of Process Center, but does not include Advanced Process Server functionality. For example, components for Business Process Choreographer, Business Rules, and Business Space are not part of IBM BPM Standard. You can now begin the profile creation process. The Profile Management Tool for IBM BPM standard does not support importing a database design document.
Launch the Profile Management Tool.	If you did not launch the Profile Management Tool from the installer, you can do so now. See Starting the Profile Management Tool **Restriction:** You cannot use the Profile Management Tool to create profiles on BPM installations on 64-bit architectures except on the Linux on zSeries platform. Instead, proceed to the next step and use the **manageprofiles** command-line utility.	The Profile Management Tool is ready to use.
Create a deployment manager profile.	Depending on how you want to create your profiles, see one of the following topics: • Creating Process Center deployment manager profiles using the Profile Management Tool • Creating Process Center deployment manager and custom profiles using manageprofiles	You have a deployment manager profile. This profile defines your environment and it contains command files, configuration files, and log files. A deployment manager is a server that manages operations for a logical group, or cell, of other servers. The deployment manager is the central location for administering the servers and clusters.
Start the Deployment Manager and verify that the start operation was successful.	For information about how to start the deployment manager, see Starting deployment managers	The deployment manager server is started.

Table 56. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND (continued)

Task	Where to find information	Result after completing the task
Create the custom (managed node) profile or profiles.	This task assumes that you **are not federating nodes** as part of the profile creation process. It assumes that you will set parameters in the Profile Management Tool or **manageprofiles** command for *federating nodes later* (after creating the custom (managed node) profiles.) Depending on how you want to create your profiles, see one of the following topics: • Creating Process Center custom profiles (managed nodes) using the Profile Management Tool • Creating Process Center deployment manager and custom profiles using manageprofiles Repeat this task for each managed node.	You have your custom (managed node) profiles. These nodes are managed by and administered from the deployment manager. You can now federate the node into the Process Center deployment manager cell. The managed node contains a node agent and can contain managed servers. In a managed node, you can configure and run managed servers.
Federate the custom (managed) node to the deployment manager.	See Federating custom nodes to a deployment manager for instructions about how to use the **addNode** command to federate the Process Center custom node or nodes into the Process Center deployment manager cell.	The custom profile is federated into the deployment manager.
Using the Deployment Environment wizard, create the network deployment configuration.	For information about how to use the Deployment Environment wizard, see • Creating the Process Center deployment environment using a pattern	As part of this task you need to address any deferred configuration items and then generate the Process Center deployment environment. You have created your Process Center network deployment environment.

Table 56. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized ND (continued)

Task	Where to find information	Result after completing the task
Create a cell for Process Server.	To run Process Server, you must create a separate cell. This involves the same sequence of steps, except you create a Process Server deployment manager and Process Server custom (managed nodes) and then use the Deployment Environment wizard to create the Process Server deployment environment, as described in the following topics: • Creating Process Server deployment manager profiles using the Profile Management Tool • Creating Process Server custom profiles (managed nodes) using the Profile Management Tool • Creating Process Server deployment manager and custom profiles using manageprofiles – Federating custom nodes to a deployment manager • Creating the Process Server deployment environment using a pattern As part of this task you need to address any deferred configuration items and then generate the Process Server deployment environment.	You have created your Process Server network deployment environment.
Perform manual database configuration steps.	You must complete additional database configuration steps before starting the clusters in your deployment environment. For information about these additional steps, see Completing the database configuration for your network deployment environment	You have completed the required manual database configuration activities for the network deployment environment.
Load the database with system information.	See Loading the database with system information for information about how to run the bootstrap utility. Windows bootstrapProcessServerData.bat Linux UNIX bootstrapProcessServerData.sh You must run the bootstrap utility prior to the first startup of a cluster member.	You have loaded the database with system information prior to successfully starting the Process Server / Process Center.

Installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized network deployment environment

The topology patterns packaged with the software and implemented using the Deployment Environment wizard are intended to address a broad spectrum of business processing requirements. However, if you

have scenario that the topology patterns do not address sufficiently, you can use the administrative console to create a customized network deployment environment. The table below lists the steps you would perform in such a scenario.

Note: This scenario is intended for users who have an advanced understanding of how to configure product components and functionality using the administrative console. Before you embark on the installation and configuration scenario described in this section, consider using the Deployment Environment wizard to create your network deployment environment.

Note: Command assistance is available for a subset of administrative console actions. When available, command assistance displays the wsadmin scripting command for the last console action you performed. You can then use this data to create wsadmin scripts that automate certain administrative tasks. For more information on command assistance, see Administrative console actions with command assistance.

Table 57. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND

Task	Where to find information	Result after completing the task
Install the software and configure the required profiles.	Complete the tasks listed in "Installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Standardized network deployment environment" on page 4 up to the task *Using the Deployment Environment wizard, create the network deployment configuration*. Instead of using the Deployment Environment wizard, you will create a customized deployment environment manually using the administrative console.	The custom installation for *IBM BPM Standard* installs the product binaries for Process Center and Process Designer on to your system. Process Server functionality is part of Process Center, but does not include Advanced Process Server functionality. For example, components for Business Process Choreographer, Business Rules, and Business Space are not part of IBM BPM Standard. You have created the deployment manager and custom managed nodes and have federated the nodes into the deployment manager cell. You can now use the administrative console to create servers, server clusters, and the components that will comprise your network deployment environment.
Create and configure servers and clusters using the administrative console.	See Creating and configuring servers and clusters using the administrative console	You have created the servers and server clusters for your environment.
Configure a server or cluster as a Process Server.	For information about using the administrative console to configure your server or server cluster as a Process Server, see Configuring a server or cluster as a Process Server. You can also configure a server or cluster as a Process Server using wsadmin. See configureProcessServer command.	You have configured the servers or server clusters as Process Servers.

Table 57. Steps for installing IBM BPM Standard using the Custom installation and configuring one or more deployment manager and custom (managed node) profiles - Customized ND (continued)

Task	Where to find information	Result after completing the task
Configure the Performance Data Warehouse component on a server or cluster.	For information about using the administrative console to configure Performance Data Warehouse on a server or cluster, see Configuring the Performance Data Warehouse component on a server or cluster . You can also configure Performance Data Warehouse on a server or cluster using wsadmin. See configurePerfDW command.	You have configured Performance Data Warehouse on the Process Server.
Set up the Messaging Service.	For information about using the administrative console to configure the Messaging Service, see *Setting up the messaging server environment*.	You have set up the messaging server environment.
Configure the JNDILookup web service.	For information about using the administrative console to configure the JNDILookup web service, see *Configuring the JNDILookup Web Service*.	You have configured the JNDILookup Web Service.
Configure extended messaging resources.	For information about using the administrative console to configure extended messaging resources, see Configuring extended messaging resources.	You have configured the extended messaging resources.
Load the database with system information.	See Loading the database with system information for information about how to run the bootstrap utility. Windows bootstrapProcessServerData.bat Linux UNIX bootstrapProcessServerData.sh You must run the bootstrap utility prior to the first startup of a cluster member.	You have loaded the database with system information prior to successfully starting the Process Server / Process Center.

Typical installation: IBM Business Process Manager Standard

Windows

Use the Typical installation option to install IBM Business Process Manager Standard in environments for development, quality assurance, and non-clustered staging and production. This installation option sets most settings by default, but does allow you to specify the installation path and database type.

Understand the usage scenarios for a Typical installation to make sure that the installation environment that is created by this option will meet your needs. Typically, you should select the Typical option to maintain a personal copy of IBM Business Process Manager on your system. In this way, you can develop integration services or business processes locally, or you can contribute artifacts via the export and import functions in the product. A Typical install is also recommended for proof of concept work and for learning about the features and functions of the product.

Important: For typical installations, the product's bit architecture must match the system's bit architecture. If you are on a 32 bit system, a 32 bit version of the product will be installed. If you are on a 64 bit system, a 64 bit version of the product will be installed. If you need to install a 32 bit product on a 64 bit system, you must use the Custom installation option.

Tip: To use an existing database server rather than the embedded DB2 Express database, prepare the configuration information for DB2, Microsoft SQL Server, or Oracle before you begin this procedure. To use this option, you must ensure that your databases have already been created. For DB2, the databases must be created with at least a 32K page size.

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and 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.

Windows

Important: 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**.

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

This task describes the procedure for installing IBM Business Process Manager Standard using the Typical install option from the launchpad.

- A Typical installation creates a typical stand-alone profile for IBM Process Center or IBM Process Server.
- A Typical installation can install DB2 Express if an existing database is not specified. DB2 Express is available only for Windows and Linux 32 and 64 bit systems, and the user must be the administrator or root user and must not have another DB2 product installed.
- A Typical installation automatically populates the database.
- Windows For Windows operating system, an Advanced Process Center installation automatically installs IBM Process Designer.
- A Typical installation creates shortcuts for Process Center Administrative Console, Playback Server Administrative Console, Process Designer, and WebSphere Administrative Console.

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.
   a. 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 step 2. If autorun is not enabled on your workstation, proceed to step 1b.
   b.

      If autorun is not enabled: If autorun is not enabled on your workstation, enter one of the following commands to start the launchpad manually:

      - Linux UNIX *mount_point*`/launchpad.sh`
      - Windows (from a command line) *DVD_root*`\launchpad.exe`
2. Click **Typical installation** on the Welcome page.
3. Select to install either the **Process Center** or the **Process Server**. The Process Center is a shared development environment that is used to build process applications. The Process Center includes the Process Designer development tool. The Process Server is the location where process applications are deployed.
4. If you selected to install the Process Center, specify the **Hostname** and installation **Location**, and click **Next**.

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

5. If you selected to install the **Process Server**, specify the **Hostname**, **Location** for the installation, environment **Type** and **Name**, and **Hostname** and **Port** of the Process Center that this server will connect. If you select **Use this server offline**, the **Hostname** and **Port** fields will be disabled.

   Attention: If you are installing DB2 Express, your installation location cannot contain NL strings.
6. Click **Next**.
7. Select a database:
   - If you install an embedded DB2 Express database, the database will be installed and fully configured. The default values are:
     - Linux Instance user name and password: `bpminst` and `bpminst1`
     - Linux Fenced user name and password: `bpmfenc` and `bpmfenc1`
     - Linux Administration server (DAS) user name and Password: `bpmadmin` and `bpmadmin1`
     - Windows Administrative user name and Password: `bpmadmin` and `bpmadmin1`

     Important: If the default password does not comply with the password policy on your operating system (such as Windows 2008), you must use Custom Installation instead of Typical Installation so that you can specify a password that meets the password policy on your system.

     Restriction: User names must not contain National Language Strings (NLS).
   - If you use an existing database, click the **Setup instructions** link for database-specific field descriptions. See "Configuring an existing database during a typical installation" on page 101 for the required field values.
8. Click **Next**.
9. Verify the installation options and then click on the link to read the license agreement and then click the check box to accept the license agreement.
10. Click **Install Software**.

Important:

If you receive the following warning message during the prerequisite checking, follow the platform-specific steps below to increase the **ulimit** number.

```
Current system has detected a lower level of ulimit than the recommended value of 8799. Please increase the ulimit numb
Shutdown your installer. If you are a root user open a command prompt and issue ulimit -n 8799 and then restart the ins
```

a. Set the maximum number of open files using the following command: AIX
   1) Open `/etc/security/limits`.
   2) Edit or add the **`default`** section and include this line:

      nofiles = ***8800***
   3) Save and close the file.
   4) Log off and log in again.

   Linux
   1) Open `/etc/security/limits.conf`.
   2) Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:

      *** hard nofile** ***8800***

      *** soft nofile** ***8800***
   3) Save and close the file.

4) Log off and log in again.

Solaris

1) Open `/etc/system` and add the following line to the end of the file:
   set rlim_fd_max=20000
2) Save and close the file.
3) Log off and log in again.

b. Restart the computer.
c. Restart the installer.

The result of a Typical installation is a fully functional Process Center or Process Server. If you install a Process Center on Windows you will also have a Process Designer installed. The Typical installation creates either a Process Center or a Process Server profile and optionally allows you to launch the first steps console after a successful completion.

Launch the first steps console to verify your installation, start or stop the server, access the administrative console, access the process center console, start the Profile Management Tool, and access the product documentation.

Configuring an existing database during a typical installation:

Use the information in this topic to determine the correct database values for configuring your existing database during a typical installation.

If you are planning to use an existing database server during a typical installation of IBM Business Process Manager Standard, you must confirm that the databases already exist and that they are empty. For DB2, the databases must be created with at least a 32K page size.

From the following list, select the database that you are using:

- Table 58 lists the database configuration fields for DB2
- Table 59 lists the database configuration fields for Microsoft SQL Server
- Table 60 on page 102 lists the database configuration fields for Oracle

Table 58. 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.
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.
Process Server database	Enter the name for the Process Server database.
Performance Data Warehouse database	Enter the name for the Performance Data Warehouse database.

Table 59. Required database configuration fields for Microsoft SQL Server

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.

Table 59. Required database configuration fields for Microsoft SQL Server (continued)

Field	Action needed
Process Center/Process Server database name	Enter the correct Process Center or Process Server database name.
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.

Table 60. Required database configuration fields for Oracle

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.
Process Center/Process Server database name	Enter the correct Process Center or Process Server database name.
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.

Custom installation: Standard

Use the Custom installation option to install IBM Business Process Manager Standard if your deployment environment requires additional cluster nodes or if your business requires complex deployment environment and database topologies.

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and 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.

Windows 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**.

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

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.
   - 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 step 2 If autorun is not enabled on your workstation, enter one of the following commands to start the launchpad manually:
     - Linux UNIX *mount_point*`/launchpad.sh`
     - Windows (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 one of the following commands to start the launchpad:
        - Linux UNIX *extract_directory*`/launchpad.sh`
        - Windows (from a command line) *extract_directory*`\launchpad.exe`
2. Click **Custom installation** on the Welcome page.
3. Optional: Click **Help System installation** to Install the product Help System and documentation on your computer. The Help System is an Eclipse framework for displaying the documentation. After the installation, you can display the documentation in stand-alone mode or in server mode. This option is only supported on Windows XP 32 bit, Linux 32 bit, and AIX 32 bit.
4. Click **Install as administrative user** to install as an administrative user. If you are in the Administrator group on Windows, or if you are a root user on Linux or UNIX systems, 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 Standard, the required WebSphere Application Server Network Deployment and Feature Pack for XML, are automatically installed.
6. From the Installation Manager, select the **IBM Business Process Manager Standard V7.5** package.
7. Optional: Select IBM DB2 Express to install and use an embedded DB2 Express database.
8. Click **Next** to continue.

Attention: If you receive any of the following error messages during the prerequisite check, address the product incompatibility issues, click **Back**, fix the problem, and click **Next** to continue:

- If you selected to install DB2 Express and DB2 is already installed on this system, you will receive the following error message:

  ```
  DB2 is already installed on this system. Either uninstall existing DB2 or deselect DB2 Express from being installed.
  ```

- If you select to install any of the IBM Business Process Manager V7.5 products to the same WebSphere Application Server location as any other IBM Business Process Manager V7.5 or equivalent, prior release products, you will receive the following error message:

  ```
  IBM Business
  Process Manager V7.5 can not coexist with the following offerings:
  ```

  Installation Manager lists all incompatible offerings for your reference.

9. On the Install Packages page, select the fix packs to be installed and click **Next**.

   Important:

   If you receive the following warning message during the prerequisite checking, follow the platform-specific steps below to increase the **ulimit** number.

   ```
   Current system has detected a lower level of ulimit than the recommended value of 8799. Please increase the ulimit numb
   Shutdown your installer. If you are a root user open a command prompt and issue ulimit -n 8799 and then restart the ins
   ```

   a. Set the maximum number of open files using the following command: AIX

      1) Open `/etc/security/limits`.
      2) Edit or add the **`default`** section and include this line:

         nofiles = ***8800***
      3) Save and close the file.
      4) Log off and log in again.

      Linux

      1) Open `/etc/security/limits.conf`.
      2) Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:

         *** hard nofile** ***8800***

         *** soft nofile** ***8800***
      3) Save and close the file.
      4) Log off and log in again.

      Solaris

      1) Open `/etc/system` and add the following line to the end of the file:

         set rlim_fd_max=20000
      2) Save and close the file.
      3) Log off and log in again.

   b. Restart the computer.

   c. Restart the installer.

10. 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**.
11. Select a location for the shared resources directory and a location for the Installation Manager and click **Next**.
12. On the Location page, the **Create new package group** option is selected by default. Click **Next** to continue. 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 such a warning, go to the product support web pages and obtain the latest maintenance packages to apply after installation. Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

Attention: If you are installing DB2 Express, your install location cannot contain National Language Strings (NLS).

13. On the Features page, select the package features that you want to install. Installation Manager automatically enforces any dependencies with other features and display updated download size and disk space requirements for the installation.
14. Optional: To see the dependency relationships between features, select the **Show Dependencies** check box.
15. When you are finished selecting features, click **Next** to continue.
16. Optional: If you selected to install and use an embedded DB2 Express database, specify the DB2 administrative **User name** and **Password** on the Common Configurations page. The default values are:
    - Linux Instance user name and password: `bpminst` and `bpminst1`
    - Linux Fenced user name and password: `bpmfenc` and `bpmfenc1`
    - Linux Administration server (DAS) user name and Password: `bpmadmin` and `bpmadmin1`
    - Windows Administrative user name and Password: `bpmadmin` and `bpmadmin1`

    Important: If the default password does not comply with the password policy on your operating system (such as Windows 2008), you must use Custom Installation instead of Typical Installation so that you can specify a password that meets the password policy on your system.

    Restriction: User names must not contain National Language Strings (NLS).
17. 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.
18. 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 launch the Profile Management Tool when you finish or select **None** to complete the installation.
    c. Click **Finish** to close the Installation Manager.

Launch the first steps console to verify your installation, start or stop the server or deployment manager, access the administrative console, start the Profile Management Tool, and access the product documentation.

Installing IBM Business Process Manager Standard silently

You can install the IBM Business Process Manager Standard product package in *silent* installation mode. When you install in silent mode, the user interface is not available.

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

Related information:

Installing silently with Installation Manager

Recording a response file with Installation Manager

Installing IBM Business Process Manager Standard silently using the command line:

You can install IBM Business Process Manager Standard using the command line.

Before you install IBM Business Process Manager Standard, 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.

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and 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.

If you receive the following warning message during the prerequisite checking, follow the platform-specific steps below to increase the **ulimit** number.

```
Current system has detected a lower level of ulimit than the recommended value of 8799. Please increase the ulimit number t
Shutdown your installer. If you are a root user open a command prompt and issue ulimit -n 8799 and then restart the install
```

1. Set the maximum number of open files using the following command: AIX
   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 and log in again.

   Linux
   a. Open `/etc/security/limits.conf`.
   b. Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:
      * **hard nofile** *8800*
      * **soft nofile** *8800*
   c. Save and close the file.
   d. Log off and log in again.

   Solaris
   a. Open `/etc/system` and add the following line to the end of the file:
      set rlim_fd_max=20000
   b. Save and close the file.
   c. Log off and log in again.
2. Restart the computer.
3. Restart the installer.

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
- Feature Pack for XML

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.

To silently install IBM Business Process Manager Standard, complete the following steps:

1. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.
2. 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**.

   Windows

   ```
   extract_directory\imcl install list_of_product_IDs -acceptLicense -installationDirectory location -repositories repos
   ```

   UNIX Linux

   ```
   extract_directory/imcl install list_of_product_IDs -acceptLicense -installationDirectory location -repositories repos
   ```

   where:

   - *list_of_product_IDs* is a list of the IDs for the products and features you want to install. The syntax is *productID,feature,feature*, with multiple products separated by spaces.

Table 61. Product IDs

Product	Product ID
IBM BPM Standard	com.ibm.ws.WBPMSTD
WebSphere Application Server Network Deployment	com.ibm.websphere.ND.v70,core.feature,samples,import.productProviders (includes all required features)
Feature Pack for XML	com.ibm.websphere.XML.v10
Installation Manager	com.ibm.cic.agent,agent_core,agent_jre
DB2 for Linux 32-bit	com.ibm.ws.DB2EXP97.linuxia32
DB2 for Linux 64-bit	com.ibm.ws.DB2EXP97.linuxia64
DB2 for Windows 32-bit	com.ibm.ws.DB2EXP97.winia32
DB2 for Windows 64-bit	com.ibm.ws.DB2EXP97.winia64

   - *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 names 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.

Table 62. Keys

Key	Description
user.select.64bit.image	If you are installing on a 64-bit operating system, add the following line exactly: `user.select.64bit.image,,com.ibm.websphere.ND.v70=true` The default value is false.
user.db2.admin.username	Windows only. User name with authority to access the DB2 database. The default value is bpmadmin.
user.db2.admin.password	Windows only. Password for the user name above. The default value is bpmadmin1.
user.db2.port	Port for the DB2 database. The default value is 50000.
user.db2.instance.username	Linux and UNIX only. DB2 instance user name. The default value is bpminst.
user.db2.instance.password	Linux and UNIX only. Password for the user name above. The default value is bpminst1.
user.db2.fenced.username	Linux and UNIX only. Fenced user name. The default value is bpmfenc.
user.db2.fenced.password	Linux and UNIX only. Password for the user name above. The default value is bpmfenc1.
user.db2.das.username	Linux and UNIX only. Administration server (DAS) user name. The default value is bpmadmin.
user.db2.das.password	Linux and UNIX only. Password for the user name above. The default value is bpmadmin1.

- *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 products that are listed and writes a log file to the directory that you specified.

The following example installs IBM Business Process Manager Standard with a test environment, WebSphere Application Server Network Deployment, Feature Pack for XML, and DB2 for Windows 32-bit on Windows.

```
imcl install com.ibm.ws.WBPMSTD com.ibm.websphere.ND.v70,core.feature,samples,import.productProviders.feature,import.config
```

Related reference:

Command-line arguments for imcl

Installing IBM Business Process Manager Standard silently using a response file:

You can install IBM Business Process Manager Standard by creating a response file and then running a command to use that response file to install the product.You must install silently from an electronic installation image (not a DVD).

Before you install IBM Business Process Manager Standard, 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.

If you are planning to install IBM Business Process Manager using DB2 Express with Red Hat Enterprise Linux 6, you must have administrative privileges (root user), must not have an existing DB2 database server on the system, and 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.

If you receive the following warning message during the prerequisite checking, follow the platform-specific steps below to increase the **ulimit** number.

```
Current system has detected a lower level of ulimit than the recommended value of 8799. Please increase the ulimit numbe
Shutdown your installer. If you are a root user open a command prompt and issue ulimit -n 8799 and then restart the insta
```

1. Set the maximum number of open files using the following command: AIX
   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 and log in again.

   Linux
   a. Open `/etc/security/limits.conf`.
   b. Locate the **nofile** parameter and increase the value. If a line containing the **nofile** parameter does not exist, add the following lines to the file:
      *** hard nofile** ***8800***
      *** soft nofile** ***8800***
   c. Save and close the file.
   d. Log off and log in again.

   Solaris
   a. Open `/etc/system` and add the following line to the end of the file:
      set rlim_fd_max=20000
   b. Save and close the file.
   c. Log off and log in again.
2. Restart the computer.
3. Restart the installer.

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
- Feature Pack for XML

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.

To silently install IBM Business Process Manager Standard, complete the following steps:

1. Read and accept the license terms before installing. Adding **-acceptLicense** to the command line means that you accept all licenses.
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. You can also create a response file by recording your actions in Installation Manager. When you record a response file, the selections that you make in Installation Manager are stored in an XML file. When you run Installation Manager in silent mode, Installation Manager uses the data in the XML response file to perform the installation.

   Important: Verify that the repository locations at the top of the sample response file point to the correct location in your environment.
4. 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 or Root user: Windows

   ```
   extract_directory\IM\installc.exe -acceptLicense input
   extract_directory\responsefiles\productID\template_response.xml -log preferred_log_location\silent_install.log
   ```

   UNIX Linux

   ```
   extract_directory/IM/installc -acceptLicense input
   extract_directory/responsefiles/productID/template_response.xml -log preferred_log_location/silent_install.log
   ```

   Nonadministrator/nonroot user: Windows

   ```
   extract_directory\IM\userinstc.exe -acceptLicense input
   extract_directory\responsefiles\productID\template_response.xml -log preferred_log_location\silent_install.log
   ```

   UNIX Linux

   ```
   extract_directory/IM/userinstc -acceptLicense input
   extract_directory/responsefiles/productID/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.

Related information:

Installing silently with Installation Manager

Recording a response file with Installation Manager

Upgrading configurations

Upgrade a configuration of IBM Business Process Manager by using IBM Installation Manager to install the new configuration over a previously installed configuration in the same package group.

The configuration you want to upgrade must have been installed using Installation Manager. Before you perform the upgrade, shut down any servers or network deployment environments.

The supported product upgrade paths are:

- IBM Business Process Manager Express to IBM Business Process Manager Standard
- IBM Business Process Manager Express to IBM Business Process Manager Advanced
- IBM Business Process Manager Standard to IBM Business Process Manager Advanced

There are no upgrade paths to or from the IBM Business Process Manager Advanced - Process Server configuration.

Note: When you perform a configuration upgrade, any existing IBM Business Process Manager profiles are left unchanged.

1. Start the Installation Manager.
2. Click **File** > **Preferences** > **Repositories** and browse to the repository that contains the new configuration package. Click **Add Repository**.
3. From the Installation Manager welcome page, click **Install**.
4. On the Install Packages page, select the configuration that you want to install.
5. Click **Next** to continue.
6. 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**.
7. On the Install Location page, select the package group that contains the configuration that you want to upgrade.
8. On the Summary page, review your choices before installing the 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.
9. 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. Close the Installation Log window to continue.
   b. Select **Profile Management Tool** to launch the Profile Management Tool when you finish, or select **None** to complete the installation.
   c. Click **Finish** to close the Installation Manager.

Uninstalling IBM Business Process Manager

You can remove IBM Business Process Manager interactively or silently.

Uninstalling IBM Business Process Manager Standard interactively:

The Uninstall option in the Installation Manager enables you to uninstall packages from a single installation location. You can also uninstall all the installed packages from every installation location.

To uninstall the packages, you must log in to the system using the same user account that you used to install the product packages. A package cannot be uninstalled when another package has a dependency on it, unless the dependent package is also selected to be uninstalled.

1. Close the programs that you installed using Installation Manager.
2. Stop all running servers.
3. Start the Installation Manager. On the Start page, click **Uninstall**. Windows On Windows, you can also click **Start** > **Programs** > **IBM** > **IBM Business Process Manager Standard** > **Uninstall**.
4. On the Uninstall Packages page, select IBM Business Process Manager Standard and associated packages and click **Next**. Windows If you selected **Start** > **Programs** > **IBM** > **IBM Business Process Manager Standard** > **Uninstall** in the previous step, IBM Business Process Manager Standard is pre-selected for uninstallation on the Uninstall Packages page.
5. On the Summary page, review the list of packages that will be uninstalled and then click **Uninstall**. After the uninstallation finishes, the Complete page opens.
6. Click **Finish** to exit the wizard.

When IBM Business Process Manager Standard is uninstalled, all profiles that are augmented to IBM Business Process Manager Standard are removed, including any WebSphere Application Server profiles that are augmented to IBM Business Process Manager Standard.

If you plan to reinstall IBM Business Process Manager Standard, and databases were created in the previous install, the databases must be dropped before you can create a new profile. See Reinstallation cannot create new profile.

Linux If you plan to reinstall IBM Business Process Manager Standard, you must delete the remaining DB2 Express entries in the `/etc/service` file. This is necessary because the new installation requires that port `50000` be available. Search the `/etc/service` file and remove any references to DB2 Express and port `50000`. For example:

```
db2c_bpminst 50000/tcp
```

or

```
db2c_db2inst1 50000/tcp
```

Uninstalling IBM Business Process Manager silently:

You can use the command-line mode of the Installation Manager to uninstall IBM Business Process Manager.

Close all programs that you installed using the Installation Manager.

To uninstall, you must log in to the system using the same user account that you used to install.

To silently uninstall IBM Business Process Manager, complete the following steps:

1. Open a command prompt, and change directories to the `/eclipse/tools` directory under Installation Manager.

   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**.
2. Make the appropriate replacements and run the following command:

   ```
   imcl uninstall list_of_product_IDs -installationDirectory installationDirectory -log logLocation
   ```

   a. Replace ***list_of_product_IDs*** with a list of the IDs for the products you want to uninstall, separated by spaces.

Table 63. Product IDs

Product	Product ID
IBM BPM Standard	com.ibm.ws.WBPMSTD
WebSphere Application Server Network Deployment	com.ibm.websphere.ND.v70
Feature Pack for XML	com.ibm.websphere.XML.v10
Installation Manager	com.ibm.cic.agent
DB2 for Linux 32-bit	com.ibm.ws.DB2EXP97.linuxia32
DB2 for Linux 64-bit	com.ibm.ws.DB2EXP97.linuxia64
DB2 for Windows 32-bit	com.ibm.ws.DB2EXP97.winia32
DB2 for Windows 64-bit	com.ibm.ws.DB2EXP97.winia64

   b. Replace ***installationDirectory*** with the location where you installed the product.
   c. Replace ***logLocation*** with the location and file name to log the information.

Installation Manager uninstalls the list of products and writes a log file to the directory that you specified.

The following example uninstalls IBM Business Process Manager, WebSphere Application Server Network Deployment, Feature Pack for XML, and DB2 for Windows 32-bit from Windows.

```
C:\Program Files\IBM\Installation Manager\eclipse\tools>imcl uninstall com.ibm.ws.WBPMSTD com.ibm.websphere.ND.v70 com.ib
```

Configuring IBM Business Process Manager Standard

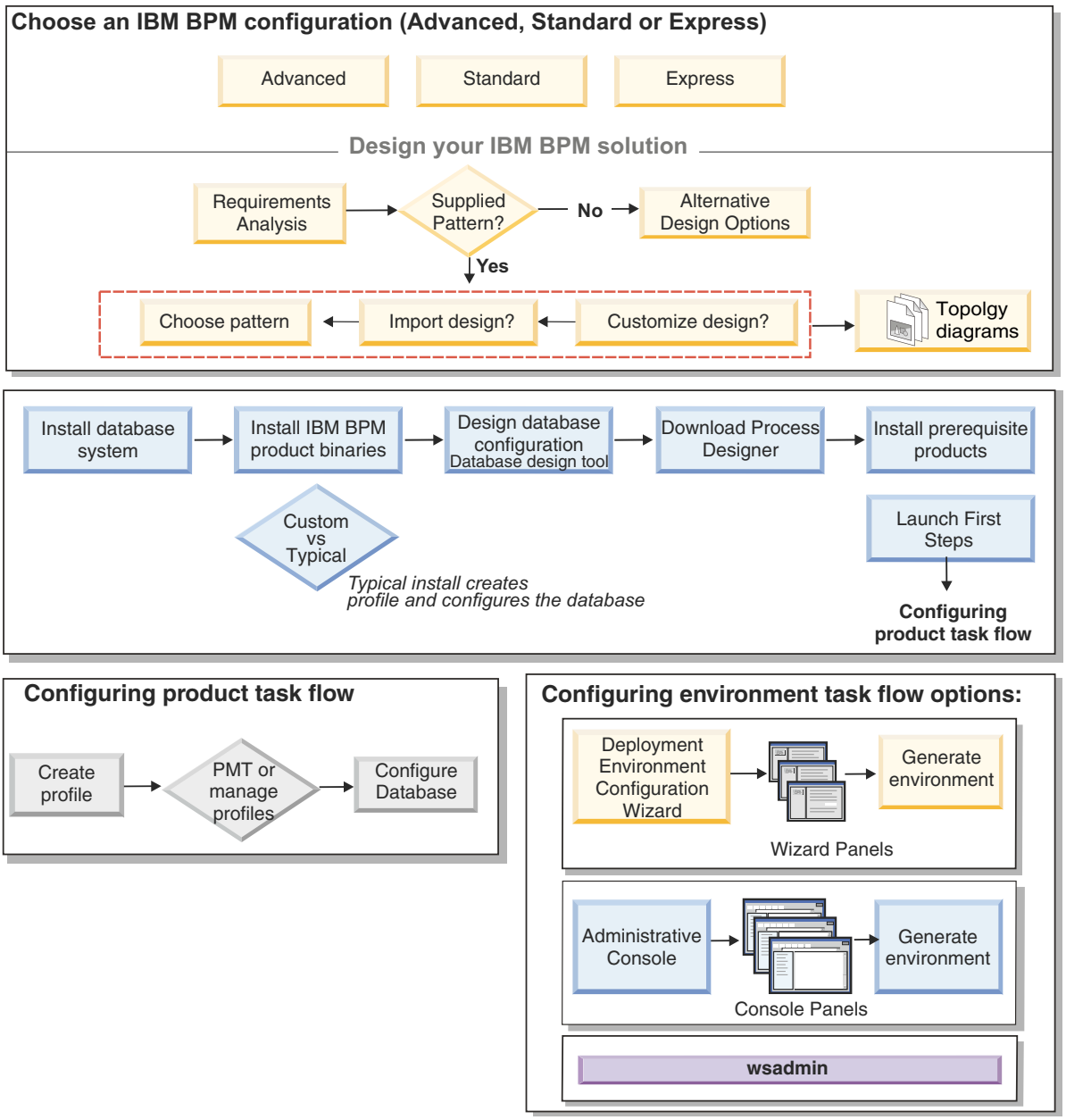
You can configure IBM Business Process Manager to form a stand-alone or network deployment environment.

The configurations (Advanced, Standard, or Express) provide different levels of business process management functionality. For example, Business Process Choreographer functionality is available only for IBM Business Process Manager Advanced. For a full description of IBM Business Process Manager Standard configurations, see IBM Business Process Manager, Version 7.5 configuration capabilities.

The configuring phase consists of two types of tasks: product configuration tasks and environment configuration tasks. Product configuration tasks are for setting up the product profiles and configuring the database, while environment configuration tasks are for setting up and generating the deployment environment.

One of the environment configuration tasks is creating the clusters of the deployment environment. Clusters in a deployment environment require specific tables, schemas, and user permissions based on the functional purpose of the cluster. For example, a deployment environment could include both a messaging infrastructure cluster and an application deployment target cluster. The messaging infrastructure cluster accesses messaging engine database tables and the application deployment target cluster accesses Business Process Choreographer database tables.

Figure 7 on page 114 illustrates the task flow for planning, installing, and configuring the product and the environment.



You can create the product databases before installing the product, after installing the product (but before profile creation), or after you create the profiles.

Figure 7. Task flow for planning, installing, and configuring the product and the environment

Creating and augmenting profiles

After you install the product, you must create one or more profiles to define the runtime environment.

Configuration prerequisites and considerations

Before you configure the software for IBM Business Process Manager, review the prerequisites and other considerations.

Prerequisites for creating or augmenting profiles:

Before creating or augmenting a profile, you must ensure that a series of prerequisites have been met.

- You must have an existing installation of IBM Business Process Manager. If you do not, see Installing and configuring IBM Business Process Manager for installation procedures.
- If you are not the user ID who installed the product, you must have write permission to selected directories within the IBM Business Process Manager installation. See "Granting write permission of files and directories to nonroot users for profile creation" on page 116 for instructions on how to obtain these permissions. You must create your profiles in a directory other than *install_root*/profiles.
- Windows

  To install or 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 run be executed from the install_root\bin\ProfileManagement directory:

  ```
  runas /user:MyAdminName /env pmt.bat
  ```

  Non-administrative users are prompted for the administrator password.
- Windows

  To install or 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 -create -templatePath install_root/profileTemplates/BPM/default.procsvr"
  ```

  Non-administrative users are prompted for the administrator password.
- You must know the type of profile you want to create or augment. For more information about profiles, see Profiles.
- You must follow the correct procedure to create or augment the profile:
  - If you want to create profiles for a IBM Business Process Manager stand-alone configuration, see Creating stand-alone profiles using the Profile Management Tool.

    The documentation includes information about creating process center profiles and process server profiles.
  - If you want to create profiles for a IBM Business Process Manager network deployment configuration, see Creating deployment manager profiles using the Profile Management Tool.
  - If you want to augment an existing profile into a IBM Business Process Manager profile, see one of the following topics:

    Important: A profile that you plan to augment cannot define a managed node that is already federated.

    - To augment stand-alone server profiles, see Augmenting Process Server stand-alone server profiles or Augmenting Process Center stand-alone server profiles
    - To augment profiles for a network deployment environment configuration, see Augmenting profiles in a network deployment configuration or Augmenting profiles in a network deployment configuration
- You cannot use the Profile Management Tool to create or augment profiles on IBM Business Process Manager installations on 64-bit architectures except on the Linux on zSeries platform. To create or augment profiles on other 64-bit architectures, you can use the **manageprofiles** command-line utility.

  Note: You can use the Profile Management Tool on these architectures if you use a IBM Business Process Manager 32-bit installation.

- You must shut down any servers associated with a profile you plan to augment.
- You must review Planning your topology for information about reserved terms and issues that you must consider when naming your profile, node, host, server (if applicable), and cell (if applicable).
- You must have enough disk and temporary space to create or augment the new profile. For information about space requirements, see IBM Business Process Manager detailed system requirements at
  - For Advanced configuration: http://www.ibm.com/software/integration/business-process-manager/advanced/sysreqs/
  - For Standard configuration: http://www.ibm.com/software/integration/business-process-manager/standard/sysreqs/
  - For Express configuration: http://www.ibm.com/software/integration/business-process-manager/express/sysreqs/

  and select the link to your version of IBM Business Process Manager.

Related concepts:

"Database prerequisites for creating or augmenting profiles" on page 118
Before creating or augmenting a profile, you must ensure that a series of database prerequisites have been met.

Granting write permission of files and directories to nonroot users for profile creation:

The product installer (who can be a root/Administrator 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.

The following example task shows how to create a group that is authorized to create profiles.

Throughout this text, the terms "installer" and "product installer" refer to the user ID that installed IBM Business Process Manager.

Restriction: IBM Business Process Manager does not support changing ownership of existing profiles from the product installer to nonroot users. Thus, profile augmentation by nonroot users of profiles owned by another user is not supported.

Nonroot users create their own profiles so that they can 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.

Restriction: An ease-of-use limitation exists for nonroot users who create profiles. 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 nonroot 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, then certain directories and files were created. Because these directories and files were created, skip the steps in this topic that create these directories and files. If no profile was previously created, then you must complete the steps to create the required directories and files. In most cases, a profile has been created previously.

Steps the product installer must perform to grant appropriate permissions

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/Administrator or nonroot user.)
2. Using operating system commands, perform the following steps:
   - Create a group named profilers, which will contain all users who can create profiles.
   - Create a user named user1, who can create profiles.
   - Add users product_installer and user1 to the profilers group.
3. Linux UNIX Log off and log back on as the installer to pick up the new group.
4. Create the following directories as the installer if no profile exists:
   - Linux UNIX Create the ***install_root*/logs/manageprofiles** directory:

     `mkdir install_root/logs/manageprofiles`

     Windows 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`
   - Linux UNIX Create the ***install_root*/properties/fsdb** directory:

     `mkdir install_root/properties/fsdb`

     Windows 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. As the installer, follow directions for your operating system to create the profileRegistry.xml file if no profile exists. For this example, the file paths are:

   Linux UNIX

   `install_root/properties/profileRegistry.xml`

   Windows

   `install_root\properties\profileRegistry.xml`

   Follow instructions for your operating system to 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.

   Linux UNIX The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory .

```
export WASHOME=/opt/IBM/WebSphere/
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
```

   Linux Issue the following additional commands:

```
chgrp profilers $WASHOME/properties/Profiles.menu
chmod  g+wr $WASHOME/properties/Profiles.menu
```

Windows The following example assumes that the variable **$WASHOME** is the IBM Business Process Manager root installation directory . 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 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:

Linux UNIX *install_root*/**properties/profileRegistry.xml_LOCK**

Windows *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.

Result

The installer created the **profilers** group and gave the group proper permissions to certain directories and files to create profiles. These directories and files are the only ones in the installation root of IBM Business Process Manager to which a nonroot user needs to write to create profiles.

What to do next

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.

A nonroot user ID can manage multiple profiles. The same nonroot user ID can manage an entire profile, whether it is the deployment manager profile, a profile that contains the servers and the node agent, or a custom profile. A different user ID can be used for each profile in a cell, whether global security or administrative security is enabled or disabled. The user IDs can be a mix of root and nonroot user IDs. For example, the root user might manage the deployment manager profile, while a nonroot user might manage a profile that contains servers and the node agent, or vice versa. However, typically, a root user or a nonroot user can manage all profiles in a cell.

The nonroot user can use the same tasks to manage a profile that the root user uses.

Database prerequisites for creating or augmenting profiles:

Before creating or augmenting a profile, you must ensure that a series of database prerequisites have been met.

The following prerequisites relate to product databases:

- Database administrator (DBA) privileges are required for the database configuration panels that are part of creating a deployment manager profile.

  If the user ID does not have DBA privileges, use this workaround:

  1. Install the product without creating a profile.
  2. Use the Profile Management Tool to create the deployment manager and the custom profiles using the Advanced path for all. Do not use the Typical path. Do not create database tables as part of the profile creation process.
  3. Federate the custom profiles to the deployment manager.
  4. Using the administrative console, create the required deployment environment. See Creating a deployment environment using a pattern for more information.

- Linux UNIX If you plan to use DB2 Universal Database™:

  You must run the **db2profile** script to set the required DB2 environment that is used to invoke the DB2 commands, which are used during profile creation. Add the **db2profile** script to the /etc/profile directory:

  ```
  vi /etc/profile and add below lines:

  export PATH=/opt/IBM/db2/V9.7/bin:$PATH
  . /home/db2inst1/sqllib/db2profile
  ```

  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 to the /etc/group administrative groups:

  ```
  vi /etc/group and update below lines:

  dasadm:|;101:dasusr1,db2inst1,root
  db2iadm:|:102;root
  db2fadm:|:103;db2fenc1,root
  ```

  Typical profile creation Exceptions:

  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.

  When DB2 database manager is down or not running...

  SQL1032N  No start database manager command was issued.  SQLSTATE=57019
  ```

Related concepts:

"Prerequisites for creating or augmenting profiles" on page 115
Before creating or augmenting a profile, you must ensure that a series of prerequisites have been met.

Starting the Profile Management Tool

Before you start the Profile Management Tool, be aware of the restrictions and ensure that certain prerequisites are met. You can start the Profile Management Tool in several ways, depending on the platform on which it is running.

Restrictions:

- You cannot use the Profile Management Tool to create or augment profiles on IBM Business Process Manager installations on 64-bit architectures except on the Linux on zSeries platform. To create profiles on other 64-bit architectures, you can use the **manageprofiles** command-line utility. For information about using the **manageprofiles** command-line utility, see "Creating profiles using the manageprofiles command-line utility" on page 165. You can also use the Profile Management Tool on IBM Business Process Manager 32-bit installations on these architectures.
- Vista Windows 7 **Restriction for nonadministrative users with multiple instances:** 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 either install the product by themselves or be given permission to access the other product instances.

Linux UNIX Windows 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, then 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. Run the following command:

- Linux UNIX *install_root*/java/bin/java -Duser.language=*locale install_root*/bin/ProfileManagement/startup.jar
- Windows *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 on a Linux system, type the following command:

```
install_root/java/bin/java -Duser.language=de install_root/  \
bin/ProfileManagement/startup.jar
```

Starting the tool on all platforms

Start the tool on any platform from the First steps console. See Starting the First steps console: IBM Business Process Manager Standard for how to start the First steps console.

Starting the tool on Linux and UNIX platforms

Linux UNIX You can start the tool on Linux and UNIX platforms by running the command *install_root*/bin/ProfileManagement/pmt.sh

Linux On Linux platforms only, you can also use operating system menus to start the Profile Management Tool. For example, click *Linux_operating_system_menus_to_access_programs* > **IBM WebSphere** > *your_product* > **Profile Management Tool**.

Starting the tool on Windows platforms

Windows You can use the following methods to start the tool on Windows platforms:

- Run the command *install_root*\bin\ProfileManagement\pmt.bat

Creating stand-alone profiles after a custom installation

After you perform a Custom installation, you can use the Profile Management Tool or the **manageprofiles** command-line utility to create a stand-alone server profile.

Choose one of the links below for information about creating profiles using the Profile Management Tool or the **manageprofiles** command-line utility.

Related concepts:

"Using the manageprofiles command" on page 165
You can achieve the same configurations that you set up using Profile Management Tool and Deployment Environment by using the manageprofiles command-line utility and wsadmin.

Related tasks:

"Creating Process Server stand-alone profiles using manageprofiles" on page 170
Use the **manageprofiles** command-line utility to create Process Server stand-alone profiles for IBM Business Process Manager Standard .

Creating Process Server stand-alone profiles using the Profile Management Tool:

You can use the Profile Management Tool to create the profile for a stand-alone environment. The stand-alone environment functions independently from all other servers and is managed from its own administrative console.

Federating Process Server stand-alone profiles is not supported in version 7.5.

- Review Prerequisites for creating or augmenting profiles.
- Solaris 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
  ```

Tip: Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create profiles, as described in Configuring the software using command-line utilities and wsadmin.

Use the procedure in this task topic if you are creating a stand-alone *Process Server* profile for IBM Business Process Manager Standard. The steps describe both **Typical profile creation** and **Advanced profile creation** options.

1. Start the Profile Management Tool. For methods to start this tool, see Starting the Profile Management Tool. The Welcome page displays.
2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.
3. In the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the configuration for which you are creating the profile and expand the section. .

   For example, if you are creating profiles for IBM BPM Advanced, select the option for **IBM BPM Advanced, Process Server Stand-alone** profile and click **Next**. If you are creating profiles for IBM BPM Standard, select the option for **IBM BPM Standard, Process Server Stand-alone** profile and click **Next**. If you are creating profiles for IBM BPM Express, select the option for **IBM BPM Express, Process Server Stand-alone** profile and click **Next**

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.

5. On the Profile Creation Options page, create the stand-alone profile using one of the following options:

   Typical profile creation
   Creates a profile with default configuration settings.

   Advanced profile creation
   Creates a profile using the configuration values you specify.

   Table 64 provides more information about the options for creating a stand-alone profile.

Table 64. Selecting the creation option for your stand-alone profile

Select	When you want to . . .
Typical profile creation	Allow the Profile Management Tool to perform the following actions: • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for , the Process Server database and the Performance Data Warehouse database.
Advanced profile creation	• Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • 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.

   - If you selected **Typical profile creation**, go to step 6.
   - If you selected **Advanced profile creation** , go to step 11 on page 127.

6. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

   Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

   Click **Next**.

7. From the Process Server Configuration page, set the values for the following parameters

   `Environment name`
   Specifies the name of the environment you are configuring.

   `Select an environment type`

   Options are as follows:

- Production

  Select **Production** if the server will serve in a production capacity.
- Stage

  Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.
- Test

  Select **Test** if the server you are configuring will be used as a testing environment.

The environment type, which is set during installation, refers to how the Process Server is used and determines the environment variables and values that are applicable to the server. Environment-specific variables can be set for each process application, and then define values for each type of environment in which a process runs. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Server you are configuring will be accessed and used to review content and new functionality.

Process Center configuration information

Configure the Process Center that the Process Server will connect to.

Set parameters for the following fields:

- **Use server offline**

  Indicate whether the server you are configuring is an offline server.

  An offline server is a Process Server that is not connected to the Process Center.

  Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.
- **Protocol**

  Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**

  Type the host or virtual host that this Process Server needs 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**

  Type 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.

You can test the connection to the Process Center by clicking **Test Connection**.

Click **Next**.

8. On the Database Configuration page, perform the following actions:
   - From the **Select a database product** drop-down, select the database product to be used by the profile.
   - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

     If the database product you are using with the software already exists, select **Use an existing local or remote database** .
   - In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.

- In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
- Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

  If you do not select the checkbox, the scripts are output to the default directory.
- Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

For Oracle, the **Process Server database name** and the **Performance Data Warehouse database** name (actually this is the database instance name) can be the same as the **Common database name**. For all other database types, the database names must be unique.

9. In the Database Configuration - Part 2 page, complete the configuration of the database you selected.

   In the Database Configuration (Part 2) page, complete the configuration of the database you selected.

   Configuration parameters for all databases are listed in the sub-steps that follow:
   - For a listing of DB2 parameter definitions, click here
   - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
   - For a listing of Microsoft SQL Server parameter definitions, click here
   - For a listing of Oracle parameter definitions, click here

   a. Set values for the DB2 Database

      The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 65. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
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 the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
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.

      Click Next to go to the Profile Summary page.

   b. Set values for the DB2 Universal Database for z/OS

      The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Server database, must exist.

Table 66. Required database configuration fields for DB2 Universal Database for z/OS

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 the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of `446` or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

Click Next to go to the Profile Summary page.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 67. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**
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 by reentering it.
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 by reentering it.

Table 67. Required database configuration fields for Microsoft SQL Server (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`

Click Next to go to the Profile Summary page.

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 68. 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 the Process Server database user name. • **`Password`** Enter a password to authenticate with the Process Server database. • **`Confirm password`** Confirm the password by reentering it. **Note:** 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 the Performance Data Warehouse database user name. • **`Password`** Enter a password to authenticate with the Performance Data Warehouse database. • **`Confirm password`** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database 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.

Table 68. Required database configuration fields for Oracle (continued)

Field	Action needed
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`

Click Next to go to the Profile Summary page.

10. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.
    You have completed the steps to create the profile with default configuration settings.

    The remaining steps in this topic are for the **Advanced profile creation**.

11. In the Optional Application Deployment page, select the applications you want to deploy to the profile environment.

    Deploy the Sample applications
    Installs the IBM Business Process Manager and WebSphere Application Server sample applications. The sample applications are not recommended for deployment to production environments.

    Deploy the administrative console (recommended)
    Installs a web-based administrative console that manages the server.

    Deploy the default application
    Installs the default application that contains the Snoop, Hello, and HitCount Servlets.

12. In 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. If you elect not to use the default name, see Naming considerations for profiles, nodes, servers, hosts, and cells for information about issues you must consider when naming the profile, such as restrictions on the length of the directory 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 dependent on platform. The following examples show the platform differences and *profile_name* is the name you specify:

       - Linux UNIX *install_root*/profiles/*profile_name*
       - Windows *install_root*\profiles*profile_name*

An error message is displayed if any of the following issues occur:

- The *profile_name* you specify is not unique.
- The directory you specify is not empty.
- Your user ID does not have sufficient permissions for the directory.
- There is not sufficient space to create the profile.

c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile.

Note: This check box is shown only if you have an existing profile on your system.

When a profile is made to be 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. See Profile commands in a multiprofile environment for more information.

d. From the **Server runtime performance tuning setting** pull-down list, select a performance tuning level appropriate for the profile you are creating.

e. Click **Next**.

Note: 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.

13. In 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. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.
- 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** to display the Administrative Security page.

14. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

Click **Next**.

15. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

Perform the following actions:

- To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.
- To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons 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.

16. In 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.

17. From 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:

    - Linux UNIX *profile_root*/**properties/portdef.props**
    - Windows *profile_root***properties\portdef.props**

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 the topic Updating ports in an existing profile in the WebSphere Application Server Network Deployment information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

If you are installing	Next step
On a Linux or Windows platform, *and have root or Administrator group privileges*	The Linux or Windows Service Definition page is displayed. Proceed to step 18.
On any other platform or as a nonroot user on a Linux or Windows platform	The Web Server Definition page is displayed. Proceed to step 19 on page 131.

18. In the Service Definition page, indicate whether or not to use a Windows service or Linux service to run IBM Business Process Manager

Windows The Windows Service Definition page displays for the Windows platform only when the ID that installs the Windows service has the Administrator group privilege. If the profile is configured as a Windows service, the product starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Windows service and issue the **startServer** or **startManager** commands, 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, it must belong to the Administrator group, and it 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 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.

Linux The Linux Service Definition page is displayed only if the current operating system is a supported version of Linux and the current user has the appropriate permissions.

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 or deployment manager as a Linux service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

By default, IBM Business Process Manager is not selected to run as a Linux service.

To create the service, the user who runs the Profile Management Tool must be the root user. If you run the Profile Management Tool with a non-root user ID, the Linux Service Definition page is not displayed, and no service is created.

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 proper 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.

Click **Next** to continue

19. To include a Web server definition in the profile now, 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 need to include a Web server definition. You can include the definition now, or define the Web server to IBM Business Process Manager later. If you define 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 to IBM Business Process Manager after you create this profile, you must define the Web server in a separate profile.
    d. Click **Next**.
20. 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 the **Run database scripts to create the database tables (must not select if using a remote database)** check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.
    e. Click **Next**.
21. If you chose not to configure the databases using a design file, specify the database details on the database configuration panels. For details, see the following steps:
    a. 8 on page 123
    b. 9 on page 124
22. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:
    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.
23. Manually configure the SMTP server to enable mail notifications. Refer to “Configuring the SMTP server” on page 304.

Proceed to First Steps Console and start the Process Server stand-alone profile you have just created.

Related information:
Creating database design files by using the database design tool

Creating Process Center stand-alone profiles using the Profile Management Tool:

Use the Profile Management Tool to create Process Center stand-alone profiles.

Federating Process Center stand-alone profiles is not supported in version 7.5.

- Review Prerequisites for creating or augmenting profiles.
- Solaris 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
  ```

Use the procedure in this task topic if you are:

- Creating a *Process Center* stand-alone profile for IBM Business Process Manager Standard .

The steps describe both **Advanced profile creation** and **Typical profile creation**.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - Linux UNIX ***install_root*/bin/ProfileManagement/pmt.sh**
   - Windows ***install_root*\bin\ProfileManagement\pmt.bat**

   The Welcome page displays.

   See Starting the Profile Management Tool for other methods of starting this tool.
2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.
3. In the **Profiles** tab, click **Create**.

   The Environment Selection page opens in a separate window.
4. On the Environment Selection page, locate the configuration for which you are creating the profile and expand the section. .

   For example, if you are creating profiles for IBM BPM Advanced, select the option for **IBM BPM Advanced, Process Server Stand-alone** profile and click **Next**. If you are creating profiles for IBM BPM Standard, select the option for **IBM BPM Standard, Process Server Stand-alone** profile and click **Next**. If you are creating profiles for IBM BPM Express, select the option for **IBM BPM Express, Process Server Stand-alone** profile and click **Next**

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.
5. From the Profile Creation Options page, decide whether to create the stand-alone profile using the **Advanced** or **Typical** option.

Table 69. Selecting the creation option for your stand-alone profile

Select	When you want to . . .
Advanced profile creation	• Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • 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.
Typical profile creation	Let the Profile Management Tool • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for , the Process Server database and the Performance Data Warehouse database.

If you selected **Typical profile creation**, go to step 6.

If you selected **Advanced profile creation** , go to step 8 on page 134.

6. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

   Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

   Click **Next**.

7. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
   - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

8. In the Optional Application Deployment page, select whether to deploy the administrative console and the default application.

   Deploy the Sample applications
   Installs the IBM Business Process Manager and WebSphere Application Server sample applications. The sample applications are not recommended for deployment to production environments.

   Deploy the administrative console (recommended)
   Installs a web-based administrative console that manages the server.

   Deploy the default application
   Installs the default application that contains the Snoop, Hello, and HitCount Servlets.

   Click **Next** to display the Profile Name and Location page.

9. In 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. If you elect not to use the default name, see Naming considerations for profiles, nodes, servers, hosts, and cells for information about issues you must consider when naming the profile, such as restrictions on the length of the directory 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 dependent on platform. The following examples show the platform differences and *profile_name* is the name you specify:

      - Linux UNIX *install_root*/profiles/*profile_name*
      - Windows *install_root*\profiles*profile_name*

      An error message is displayed if any of the following issues occur:
      - The *profile_name* you specify is not unique.
      - The directory you specify is not empty.
      - Your user ID does not have sufficient permissions for the directory.
      - There is not sufficient space to create the profile.

   c. Optional: Select the **Make this profile the default** check box to make the profile you are creating the default profile.

      Note: This check box is shown only if you have an existing profile on your system.

      When a profile is made to be 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. See Profile commands in a multiprofile environment for more information.

   d. From the **Server runtime performance tuning setting** pull-down list, select a performance tuning level appropriate for the profile you are creating.

   e. Click **Next**.

Note: 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. In 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. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.
    - 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** to display the Administrative Security page.
11. See 6 on page 133 for details.
12. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    Perform the following actions:
    - To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.
    - To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons 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. In 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. From 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:

    - Linux UNIX *profile_root*/**properties/portdef.props**
    - Windows *profile_root***properties\portdef.props**

    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 the topic Updating ports in an existing profile in the WebSphere Application Server Network Deployment information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

If you are installing	Next step
On a Linux or Windows platform, *and have root or Administrator group privileges*	The Linux or Windows Service Definition page is displayed. Proceed to step 15.
On any other platform or as a nonroot user on a Linux or Windows platform	The Web Server Definition page is displayed. Proceed to step 16 on page 137.

15. In the Service Definition page, indicate whether or not to use a Windows service or Linux service to run IBM Business Process Manager

    Windows The Windows Service Definition page displays for the Windows platform only when the ID that installs the Windows service has the Administrator group privilege. If the profile is configured as a Windows service, the product starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Windows service and issue the **startServer** or **startManager** commands, 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, it must belong to the Administrator group, and it 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 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.

Linux The Linux Service Definition page is displayed only if the current operating system is a supported version of Linux and the current user has the appropriate permissions.

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 or deployment manager as a Linux service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

By default, IBM Business Process Manager is not selected to run as a Linux service.

To create the service, the user who runs the Profile Management Tool must be the root user. If you run the Profile Management Tool with a non-root user ID, the Linux Service Definition page is not displayed, and no service is created.

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 proper 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. To include a Web server definition in the profile now, 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 need to include a Web server definition. You can include the definition now, or define the Web server to IBM Business Process Manager later. If you define 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 to IBM Business Process Manager after you create this profile, you must define the Web server in a separate profile.
    d. Click **Next**.
17. 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 the **Run database scripts to create the database tables (must not select if using a remote database)** check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.
    e. Click **Next**.

    If you select **Use a database design file**, the next two steps (Database Configuration - Part 1, and Database Configuration Part 2) will be skipped.
18. On the Database Configuration - Part 1 page, perform the following actions:
    - From the **Select a database product** drop-down, select the database product to be used by the profile.

- Select whether to **Create a new local database** or to **Use an existing local or remote database**.

  If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

  If the database product you are using with the software already exists, select **Use an existing local or remote database** .
- In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.
- In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
- Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

  If you do not select the checkbox, the scripts are output to the default directory.
- Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

Click **Next** to display the Database Configuration - Part 2 page.

The information on the Database Configuration - Part 2 page varies depending on the value specified in the **Select a database product** menu on the Database Configuration - Part 1 page.

19. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

    In the Database Configuration - Part 2 page, complete the configuration of the database you selected.

    Configuration parameters for all databases are listed in the sub-steps that follow:

    - For a listing of DB2 parameter definitions, click here
    - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
    - For a listing of Microsoft SQL Server parameter definitions, click here
    - For a listing of Oracle parameter definitions, click here

    a. Set values for the DB2 Database

       The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 70. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
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 the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
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.

b. Set values for the DB2 Universal Database for z/OS

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Server database, must exist.

Table 71. Required database configuration fields for DB2 Universal Database for z/OS

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 the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of `446` or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 72. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**
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 by reentering it.

Table 72. Required database configuration fields for Microsoft SQL Server (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 by reentering it.
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`

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 73. 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 the Process Server database user name. • **Password** Enter a password to authenticate with the Process Server database. • **Confirm password** Confirm the password by reentering it. **Note:** Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 73. 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 a password to authenticate with the Performance Data Warehouse database. • **Confirm password** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database 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`

20. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:
    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.
21. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 304.

Proceed to First Steps Console and start the server for the Process Center stand-alone profile you created.

Related information:

Creating database design files by using the database design tool

Creating database design files by using the database design tool

Creating network deployment profiles

After you perform a Custom installation, you can use the Profile Management Tool or the **manageprofiles** command-line utility to create the deployment manager and custom profiles for a network deployment environment.

Creating Process Server deployment manager profiles using the Profile Management Tool:

You can use the Profile Management Tool to create the Process Server deployment manager profiles for your network deployment configuration.

- Review Prerequisites for creating or augmenting profiles.
- Solaris 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
  ```

Use the procedure in this task topic if you are:

- Creating a *Process Server* deployment manager profile for an IBM Business Process Manager Standard network deployment configuration

Note: Creating the deployment manager profile is *one step in a multistep process* for creating a network deployment configuration.

A network deployment environment configuration is any *non-standalone configuration* of IBM Business Process Manager Standard.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - Linux UNIX ***install_root*/bin/ProfileManagement/pmt.sh**
   - Windows ***install_root*\bin\ProfileManagement\pmt.bat**

   The Welcome page displays.

   See Starting the Profile Management Tool for other methods of starting this tool.
2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.
3. In 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 for which you are creating the deployment manager profile and expand the section. Select the option for IBM BPM Standard, Process Server deployment manager profile and click **Next**.

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

The Profile Creation Options page displays.

5. From the Profile Creation Options page, decide whether to create the deployment manager profile using the **Advanced** or **Typical** option.

Table 74. Selecting the profile creation option for your deployment manager profile

Select	When you want to . . .
Advanced profile creation	• Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • 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.
Typical profile creation	Let the Profile Management Tool • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for , the Process Server database and the Performance Data Warehouse database.

If you selected **Typical profile creation**, go to step 6.

If you selected **Advanced profile creation** , go to step 8 on page 144.

6. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

   Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

   Click **Next**.

7. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.

- **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

8. In the Optional Application Deployment page, select whether to deploy the administrative console

   Click **Next** to display the Profile Name and Location page.

9. In 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. If you elect not to use the default name, see Profile commands in a multiprofile environment for information about issues you must consider when naming the profile, such as restrictions on the length of the directory 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 dependent on platform:

      - Linux UNIX *install_root*/profiles/*profile_name*
      - Windows *install_root*\profiles*profile_name*

      where *profile_name* is the name you specified. An error message is displayed if:

      - The *profile_name* you specify is not unique.
      - The directory you specify is not empty.
      - Your user ID does not have sufficient permissions for the directory.
      - There is not sufficient space to create the profile.

   c. Optional: Select the **Make this profile the default** check box if you wish to make the profile you are creating the default profile.

      When a profile is made to be the default profile, commands work automatically with it.

      Note: This check box appears only if you have an existing profile on your system.

      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. See Profile commands in a multiprofile environment for more information.

10. In 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. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.
    - 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** to display the Administrative Security page.

11. See 6 on page 143 for details.
12. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

Perform the following actions:

- To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.
- To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons 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. In 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. From 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:

- Linux UNIX *profile_root*/properties/portdef.props
- Windows *profile_root*\properties\portdef.props

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 the topic Updating ports in an existing profile in the WebSphere Application Server Network Deployment information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

If you are installing	Next step
On a Linux or Windows platform, *and have root or Administrator group privileges*	The Linux or Windows Service Definition page is displayed. Proceed to step 15.

15. In the Service Definition page, indicate whether or not to use a Windows service or Linux service to run IBM Business Process Manager

Windows The Windows Service Definition page displays for the Windows platform only when the ID that installs the Windows service has the Administrator group privilege. If the profile is configured as a Windows service, the product starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Windows service and issue the **startServer** or **startManager** commands, 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, it must belong to the Administrator group, and it 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 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.

Linux The Linux Service Definition page is displayed only if the current operating system is a supported version of Linux and the current user has the appropriate permissions.

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 or deployment manager as a Linux service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

By default, IBM Business Process Manager is not selected to run as a Linux service.

To create the service, the user who runs the Profile Management Tool must be the root user. If you run the Profile Management Tool with a non-root user ID, the Linux Service Definition page is not displayed, and no service is created.

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 proper 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. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

17. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 304.

You have created the Process Server deployment manager profile for the IBM Business Process Manager Standard network deployment configuration.

Build the clusters and configure the components on the clusters. The components available for configuration in a network deployment environment vary based on the IBM Business Process Manager Standard (Advanced or Standard) installed on your system.

You have options on how to build the clusters and configure the IBM Business Process Manager Standard components for your network deployment configuration.

You can

Creating Process Server custom profiles (managed nodes) using the Profile Management Tool:

You can use the Profile Management Tool to create and configure Process Server custom profiles (managed nodes) for your network deployment configuration.

You have created the Process Server deployment manager profile and you have run the database configuration scripts to create Common database and tables.You have created the deployment manager profile and you have run the database configuration scripts to create Common database and tables.

To use the node (custom profile), you must federate the node to an existing deployment manager. If you want to federate the node during the creation process, the deployment manager must be running.

Tip: Instead of using the Profile Management Tool, you can use the manageprofiles command-line utility to create profiles, as described in Configuring the software using command-line utilities and wsadmin.

Use the procedure in this task topic if you are:

- Creating a *Process Server* custom profile (managed nodes) for your IBM Business Process Manager Standard network deployment configuration

Note: Information that applies to process center only or to process server only, is so noted in this procedure.

This topic describes both the **Typical Advanced** method for creating custom profiles (managed nodes).

You can choose to federate the node (custom profile) to an existing deployment manager during the creation process, or federate the node later using the **addNode** command. If you decide to federate the node during the creation process, the tool sets the Common database configuration to the same database as the deployment manager. If you decide not to federate the node, the database configuration is left unconfigured.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - Linux UNIX *install_root*/bin/ProfileManagement/pmt.sh
   - Windows *install_root*\bin\ProfileManagement\pmt.bat

   The Welcome page displays.
2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.
3. In 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 configuration (Advanced or Standard) for which you are creating the custom profile and expand the section. Select the option for Custom profile and click **Next**.

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.
5. On the Profile Creation Options page, decide whether to create the custom profile using the **Typical profile creation** or **Advanced profile creation** option.

Table 75. Selecting the profile creation option for your custom profile

Select	When you want to . . .
Typical profile creation	Let the Profile Management Tool • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for , the Process Server database and the Performance Data Warehouse database.
Advanced profile creation	• Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • 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.

If you selected **Typical profile creation**, go to step 6.

If you selected **Advanced profile creation** , go to step 9 on page 150.

6. In 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:

   Check **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** to exit from it, and then make different selections on the Federation page.

Click **Next** to continue.

7. On the Database Configuration page, select the database used by the deployment manager and specify the location of the JDBC driver classpath files.
8. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
   - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.
   You have completed the steps to create the profile with default configuration settings.

   The remaining steps in this topic are for the **Advanced profile creation**.
9. In 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. If you elect not to use the default name, see Profile commands in a multiprofile environment for information about issues you must consider when naming the profile, such as restrictions on the length of the directory 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 dependent on platform:

      - Linux UNIX *install_root*/profiles/*profile_name*
      - Windows *install_root*\profiles*profile_name*

      where *profile_name* is the name you specified. An error message is displayed if:

      - The *profile_name* you specify is not unique.
      - The directory you specify is not empty.
      - Your user ID does not have sufficient permissions for the directory.

- There is not sufficient space to create the profile.

c. Optional: Select the **Make this profile the default** check box if you wish to make the profile you are creating the default profile.

   When a profile is made to be the default profile, commands work automatically with it.

   Note: This check box appears only if you have an existing profile on your system.

   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. See Profile commands in a multiprofile environment for more information.

d. Click **Next**.

   Note: 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. In the Node and Host 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. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.
    - In the **Host name** field, enter a name for the host or accept the default value.

    Click **Next** to display the Federation page.

11. In 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:

    Check **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** to exit from it, and then make different selections on the Federation page.

Click **Next** to continue.

12. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    Perform the following actions:

    - To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.
    - To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons 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. In 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. In the Database Configuration page, select a database product and the location of the JDBC drivers.

15. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.
16. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.
17. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 304.

You have created your custom profile.

The node within the profile is empty until you federate the node to a deployment manager, then use the administrative console to customize it.

In a network deployment environment, you must create and configure databases, create other custom profiles and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

Federating custom nodes to a deployment manager:

You can use the **addNode** command to federate a custom node into a deployment manager cell. The following instructions guide you through the process of federating and deploying custom nodes.

Before using this procedure, ensure that the following prerequisites are met:

- You have installed IBM Business Process Manager and created an IBM Business Process Manager or WebSphere ESB 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:
  - Linux UNIX `profile_root/bin/startManager.sh`
  - Windows `profile_root\bin\startManager.bat`
- The deployment manager has been augmented into an IBM Business Process Manager or WebSphere ESB 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.

Federate a custom node so that it can be managed by a deployment manager. Use the **addNode** command to federate a custom profile into a deployment manager cell.

1. Go to the `bin` directory of the custom profile you want to federate. Open a command window and go to one of the following directories (from a command line), depending on platform (where *profile_root* represents the installation location of the custom profile):
   - Linux UNIX *profile_root*/bin
   - Windows *profile_root*\bin
2. Issue the **addNode** command.

   Issue one of the following commands from the command line if security is not enabled:
   - Linux UNIX ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port*
   - Windows addNode.bat *deployment_manager_host deployment_manager_SOAP_port*

   Issue one of the following commands from the command line if security is enabled:
   - Linux UNIX ./addNode.sh *deployment_manager_host deployment_manager_SOAP_port* -username *userID_for_authentication* -password *password_for_authentication*
   - Windows 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. For more information about the **addNode** command and its parameters, see the topic Using wsadmin scripting to run the addNode command in the WebSphere Application Server Network Deployment information center.

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.

Creating Process Center deployment manager profiles using the Profile Management Tool:

You can use the Profile Management Tool to create the Process Center deployment manager profiles for your network deployment configuration.

- Review Prerequisites for creating or augmenting profiles.
- Solaris 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
  ```

Use the procedure in this task topic if you are:

- Creating a *process center* deployment manager profile for an IBM Business Process Manager Standard network deployment configuration

Note: Creating the deployment manager profile is *one step in a multistep process* for creating a network deployment configuration.

A network deployment environment configuration is any *non-standalone configuration* of IBM Business Process Manager Standard.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - Linux UNIX ***install_root*/bin/ProfileManagement/pmt.sh**
   - Windows ***install_root*\bin\ProfileManagement\pmt.bat**

   The Welcome page displays.

   See Starting the Profile Management Tool for other methods of starting this tool.
2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.
3. In 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 for which you are creating the deployment manager profile and expand the section. Select the option for IBM BPM Standard, Process Center deployment manager profile and click **Next**.

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.
5. From the Profile Creation Options page, decide whether to create the deployment manager profile using the **Advanced** or **Typical** option.

Table 76. Selecting the profile creation option for your deployment manager profile

Select	When you want to . . .
Advanced profile creation	• Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • 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.

Table 76. Selecting the profile creation option for your deployment manager profile (continued)

Select	When you want to . . .
Typical profile creation	Let the Profile Management Tool • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for , the Process Server database and the Performance Data Warehouse database.

If you selected **Typical profile creation**, go to step 6.

If you selected **Advanced profile creation** , go to step 9 on page 157.

6. On the Administrative Security page, enter values for the **User name** and **Password** and **Confirm password**.

   Note: The **Next** button is disabled initially. There is no option to disable administrative security, thus you are required to specify the userid, password, and password confirmation in order to enable the **Next** button.

   Click **Next**.

7. On the Database Configuration page, perform the following actions:
   - From the **Select a database product** drop-down, select the database product to be used by the profile.
   - Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the SQL scripts used to create the database tables are written.

     If you do not select the checkbox, the scripts are output to the default directory.
   - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

     If the database product you are using with the software already exists, select **Use an existing local or remote database** .
   - In the **Common database name** field, enter a name for the common database or accept the default **CMNDB** value.
   - Select the **Run database scripts to create the database tables** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

Note: If you select **Run database scripts to create the database tables** and you are configuring Oracle or DB2 for z/OS, the Profile Management Tool needs access to the database system to create the tables. If the Profile Management Tool cannot connect to the database system to create the tables, a database validation error is thrown.

8. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
   - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

9. In the Optional Application Deployment page, select whether to deploy the administrative console

   Click **Next** to display the Profile Name and Location page.

10. In 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. If you elect not to use the default name, see Profile commands in a multiprofile environment for information about issues you must consider when naming the profile, such as restrictions on the length of the directory 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 dependent on platform:

       - Linux UNIX *install_root*/profiles/*profile_name*
       - Windows *install_root*\profiles*profile_name*

       where *profile_name* is the name you specified. An error message is displayed if:

       - The *profile_name* you specify is not unique.
       - The directory you specify is not empty.
       - Your user ID does not have sufficient permissions for the directory.
       - There is not sufficient space to create the profile.

    c. Optional: Select the **Make this profile the default** check box if you wish to make the profile you are creating the default profile.

       When a profile is made to be the default profile, commands work automatically with it.

       Note: This check box appears only if you have an existing profile on your system.

       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. See Profile commands in a multiprofile environment for more information.

11. In 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. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.
    - 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** to display the Administrative Security page.
12. On the Administrative Security page, enter values for the **User name** and **Password** and renter the password in the **Confirm password** field. For information about this page, see 6 on page 156
13. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    Perform the following actions:
    - To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.
    - To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons 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.
14. In 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.

15. From 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:

    - Linux UNIX *profile_root*/**properties/portdef.props**
    - Windows *profile_root***properties\portdef.props**

    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 the topic Updating ports in an existing profile in the WebSphere Application Server Network Deployment information center. Run the **updatePorts.ant** file through the **ws_ant** script detailed in this topic.

16. In the Service Definition page, indicate whether or not to use a Windows service or Linux service to run IBM Business Process Manager

    Windows The Windows Service Definition page displays for the Windows platform only when the ID that installs the Windows service has the Administrator group privilege. If the profile is configured as a Windows service, the product starts Windows services for processes started by the **startServer** or **startManager** commands. For example, if you configure a server or deployment manager as a Windows service and issue the **startServer** or **startManager** commands, 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, it must belong to the Administrator group, and it 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 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.

Linux The Linux Service Definition page is displayed only if the current operating system is a supported version of Linux and the current user has the appropriate permissions.

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 or deployment manager as a Linux service and issue the **startServer** or **startManager** commands, the **wasservice** command starts the defined services.

By default, IBM Business Process Manager is not selected to run as a Linux service.

To create the service, the user who runs the Profile Management Tool must be the root user. If you run the Profile Management Tool with a non-root user ID, the Linux Service Definition page is not displayed, and no service is created.

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 proper 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.

17. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

18. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 304.

You have created the Process Center deployment manager profile.

You can add custom (managed nodes) profiles to be managed by the deployment manager and then build the clusters and configure the components on the clusters.

The components available for configuration in a network deployment environment vary based on the IBM Business Process Manager Standard (Advanced or Standard) installed on your system.

You have options on how to build the clusters and configure the IBM Business Process Manager Standard components for your network deployment configuration, as follows:

- Creating a standardized network deployment configuration.
- Creating a customized network deployment configuration.

Creating Process Center custom profiles (managed nodes) using the Profile Management Tool:

You can use the Profile Management Tool to create and configure Process Center custom profiles (managed node) for your network deployment configuration.

- You have created the deployment manager profile for process center.
- The Deployment manager is running.

Use the procedure in this task topic if you are:

- Creating a *process center* custom profile (managed nodes) for your IBM Business Process Manager Standard network deployment configuration

Note: Information that applies to process center only or to process server only, is so noted in this procedure.

This topic describes both the **Typical Advanced** method for creating custom profiles (managed nodes).

You can choose to federate the node to an existing deployment manager during the creation process, or federate it later using the **addNode** command.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - Linux UNIX *install_root*/bin/ProfileManagement/pmt.sh
   - Windows *install_root*\bin\ProfileManagement\pmt.bat

   The Welcome page displays.
2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab can contain a list of profiles that have been created on your machine. You can use the Profile Management Tool to create new profiles or augment existing profiles.
3. In 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 configuration (Advanced or Standard) for which you are creating the custom profile and expand the section. Select the option for Custom profile and click **Next**.

   Note: You can also create WebSphere Application Server profiles with this Profile Management Tool. However, this documentation addresses creating IBM Business Process Manager profiles only.

   The Profile Creation Options page displays.
5. From the Profile Creation Options page, decide whether to create the custom profile using the **Advanced** or **Typical** option.

Table 77. Selecting the profile creation option for your custom profile

Select	When you want to . . .
Advanced profile creation	• Assign customized values to ports, to the location of the profile, and to the names of the profile, node, host, and cell (when applicable). • Deploy the administrative console. • Deploy the default application (which contains the Snoop, Hello, and HitCount Servlets). • 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.

Table 77. Selecting the profile creation option for your custom profile (continued)

Select	When you want to . . .
Typical profile creation	Let the Profile Management Tool • Assign default values to ports, to the location of the profile, and to the names of the profile, node, host, and cell. • Install the administrative console. • Create a personal security certificate for the profile. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is one year. • Create a root signing security certificate for signing other certificates. The certificate has a personal key and private key, each with a default value of `WebAS` (you must change this password). The expiration period is 15 years. • Create a system service to run the server. Applicable only when your operating system and the privileges of your user account permit. • Select any of the supported database products and the database configuration is set for , the Process Server database and the Performance Data Warehouse database.

If you selected **Typical profile creation**, go to step 6.

If you selected **Advanced profile creation** , go to step 8 on page 163.

6. In 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 number of the deployment manager, and an authentication user ID and password if to be used to authenticate with the deployment manager.

   Important:

   Check **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** to exit from it, and then make different selections on the Federation page.

Click **Next** to continue.

7. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

   Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
   - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

8. In 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. If you elect not to use the default name, see Profile commands in a multiprofile environment for information about issues you must consider when naming the profile, such as restrictions on the length of the directory name.

   b. In the **Profile** 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 dependent on platform:

      - Linux UNIX *install_root*/profiles/*profile_name*
      - Windows *install_root*\profiles*profile_name*

      where *profile_name* is the name you specified. An error message is displayed if:

      - The *profile_name* you specify is not unique.
      - The directory you specify is not empty.
      - Your user ID does not have sufficient permissions for the directory.
      - There is not sufficient space to create the profile.

   c. Optional: Select the **Make this profile the default** check box if you wish to make the profile you are creating the default profile.

      When a profile is made to be the default profile, commands work automatically with it.

      Note: This check box appears only if you have an existing profile on your system.

      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. See Profile commands in a multiprofile environment for more information.

d. Click **Next**.

Note: 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. In the Node and Host 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. See *Naming considerations for profiles, nodes, servers, hosts, and cells* for information about reserved terms and other issues you must consider when naming.
   - In the **Host name** field, enter a name for the host or accept the default value.

   Click **Next** to display the Federation page.
10. See 6 on page 162 for details about the Federation page.
11. In the Security Certificate (Part 1) page, specify whether to create new certificates or import existing certificates.

    Perform the following actions:
    - To create a new default personal certificate and a new root signing certificate, select the **Create a new default personal certificate** and the **Create a new root signing certificate** radio buttons then click **Next**.
    - To import an existing certificates, select the **Import an existing default personal certificate** and the **Import an existing root signing personal certificate** radio buttons 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. In 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. In the Profile Summary page, click **Create** to create the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When the profile creation is complete, the Profile Complete page is displayed with the message **The Profile Management tool created the profile successfully**.

    Attention: If errors are detected during profile creation, other messages might appear in place of the success message, for example:

    - **The Profile Management tool created the profile but errors occurred**, which indicates that profile creation completed but errors were generated.
    - **The Profile Management tool cannot create the profile**, which indicates that profile creation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems. To proceed to the First Steps Console, make sure the **Launch First Steps Console checkbox** checked and click **Finish**. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

14. Manually configure the SMTP server to enable mail notifications. Refer to "Configuring the SMTP server" on page 304.

You have created your IBM Business Process Manager profile.

The node within the profile is empty until you federate it and use the administrative console to customize it.

In a deployment environment, you must create and configure databases, create other custom profiles and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

Using the manageprofiles command

You can achieve the same configurations that you set up using Profile Management Tool and Deployment Environment by using the manageprofiles command-line utility and wsadmin.

Related concepts:

"Creating stand-alone profiles after a custom installation" on page 120
After you perform a Custom installation, you can use the Profile Management Tool or the **manageprofiles** command-line utility to create a stand-alone server profile.

Creating profiles using the manageprofiles command-line utility:

Learn about creating a profile from the command line using the **manageprofiles** command-line utility and a property file.

To find out more about the **manageprofiles** command-line utility, see manageprofiles command-line utility. Sample response files for the **manageprofiles** command-line utility are located in the *install_root*/BPM/samples/manageprofiles directory.

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:

- You have reviewed the full list of prerequisites for creating or augmenting a profile at Prerequisites for creating or augmenting profiles.
- You have reviewed example profile creation commands
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Security role required for this task: See Granting write permission of files and directories to nonroot users for profile creation.

To use the **manageprofiles** command-line utility to create a profile, perform the following steps.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your new 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.procsvr: for an IBM Business Process Manager stand-alone server profile, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
   - dmgr.procsvr: for an IBM Business Process Manager Process Server deployment manager profile, which defines a deployment manager for IBM BPM Standard. A deployment manager provides one administrative interface to a logical group of servers on one or more workstations.
   - managed.procsvr: for an IBM Business Process Manager custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Standard.

     If you have decided that your solution requires a network deployment configuration, your runtime environment requires one or more managed nodes. 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. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.
   - default.procctr: for an IBM Business Process Manager Process Center stand-alone profile, which defines stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
   - dmgr.procctr for an IBM Business Process Manager Process Center deployment manager profile, which defines a deployment manager for IBM BPM Standard. A deployment manager provides one administrative interface to a logical group of servers on one or more workstations.
   - managed.procctr for an IBM Business Process Manager Process Center custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Standard. If you have decided that your solution requires a deployment environment, your runtime environment requires one or more managed nodes.

     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. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.
2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.
3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.

   Note: If you create profiles in IBM Business Process Manager using the **manageprofiles** command-line utility without specifying the **samplesPassword** parameter, the **INSTCONFPARTIALSUCCESS** message is returned. This occurs when the following criteria are met:
   - You installed the samples during IBM Business Process Manager or WebSphere Application Server installation.

- You use the **manageprofiles** command-line utility to create the profiles.
- The **samplesPassword** parameter is not specified in the **manageprofiles** command-line utility.

4. Create a response file.

   Sample response files are available under the `install_root/BPM/samples/manageprofiles/` directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for 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. See Creating a response file using the IBM Business Process Manager samples.

5. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - Linux UNIX **manageprofiles.sh -response** *myResponseFile*
   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. 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.

6. Manually configure the SMTP server to enable mail notifications. See Configuring the SMTP server..

You can see that your profile creation completed successfully if you receive a `INSTCONFSUCCESS: Profile creation succeeded.` message, and you can check the following log file:

- Linux UNIX *install_root*`/logs/manageprofiles/`*profile_name*`_create.log`
- Windows *install_root*`\logs\manageprofiles\`*profile_name*`_create.log`

Run the Installation Verification Test (IVT) tool to verify that the profile was created successfully. To do this, run the following command:

- Linux UNIX **On Linux and UNIX platforms:** *profile_root*`/bin/wbi_ivt.sh`
- Windows **On Windows platforms:** *profile_root*`\bin\wbi_ivt.bat`

Related concepts:

"JDBC drivers and locations" on page 49
The following table lists both the JDBC drivers that are shipped with your installation and those that are supported by the product.

Creating a response file using the IBM Business Process Manager samples:

IBM Business Process Manager is shipped with sample response files that you can use to create a response file that contains all the details of how you want to configure your system.

Install and configure WebSphere Application Server which is used as a base for your IBM Business Process Manager configuration.

The response file you create is based on one of the following eight sample response files:

- PCStd_StandAlone_MSSQLSERVER_Win.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with a SQL Server database.
- PSStd_StandAlone_DB2_UNIVERSAL_Win.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.
- PCAdv_StandAlone_MSSQLSERVER_MICROSOFT_Win.response

You can create a response file to use when configuring IBM Business Process Manager Standard Process Center in a stand-alone configuration with a SQL Server database.

- PSAdv_StandAlone_DB2_UNIVERSAL_Win.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Server in a stand-alone configuration with a DB2 database.

- PCAdv_Dmgr_ORACLE_Unix.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Center in a deployment manager configuration with an Oracle database.

- PSAdv_Dmgr_DB2_DATASERVER_Unix.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Server in a deployment manager configuration with a DB2 Dataserver database.

- PCAdv_Custom_ORACLE_Unix.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Center in a custom configuration with an Oracle database.

- PSAdv_Custom_DB2_DATASERVER_Unix.response

  You can create a response file to use when configuring IBM Business Process Manager Standard Process Server in a custom configuration with a DB2 Dataserver database.

1. From the *Install_root*\BPM\samples\manageprofiles directory, locate and copy the sample response file to your working directory. Choose an appropriate response file to copy based on the profile that you want to create (stand-alone or network, Process Center or Process Server).
2. UNIX Linux Use the **chmod** command to assign the appropriate permissions to the copy of the response file. For example:

   ```
   chmod 644 myResponseFile
   ```

3. Edit the parameters in the response file as appropriate to your configuration. Make sure the **templatePath** property path matches your specific installation directory.

   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.
4. Save the edited response file.
5. **z/OS only:** Increase the OMVS time limit to allow the product configuration script time to complete. In an MVS console enter the following command: **SETOMVS MAXCPUTIME=86400**.
6. **z/OS only:** Access the z/OS UNIX System Services command shell, then switch to the administrator user ID. For example: **su wsadmin**.
7. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - Linux UNIX **manageprofiles.sh -response** *myResponseFile*
   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. 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.
8. Start the server.

The following example shows a response file to create a stand-alone Process Center profile on Windows.

```
#*******************************************************************************
# Creates a stand-alone Process Center profile on a Windows platform.
# Call manageprofiles -response PCStd_StandAlone__DB2_UNIVERSAL_Win.response
#*******************************************************************************
create
templatePath=C:/Program Files/IBM/WebSphere/AppServer/profileTemplates/BPM/default.procctr
profileName=ProcCtr01
cellName=SampleCell
```

```
nodeName=SampleNode01
serverName=server1
hostName=SampleHost.com
winserviceCheck=false
enableAdminSecurity=true
adminUserName=tw_admin
adminPassword=tw_admin
applyPerfTuningSetting=standard
dbJDBCClasspath=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2
dbType=DB2_UNIVERSAL
dbUserId=bpmadmin
dbPassword=bpmadmin1
dbHostName=DB_hostname
dbServerPort=50000
dbCreateNew=true
dbDelayConfig=false
procSvrDbName=PCBPMDB<
dbProcSvrUserId=procadmin
dbProcSvrPassword=procpwd
perfDWDbName=PCPERFDB
dbPerfDWUserId=perfadmin
dbPerfDWPassword=perfpwd
samplesPassword=smppwd
```

The following example shows a response file to create a stand-alone Process Server profile on Windows.

```
#*******************************************************************************
# Creates a stand-alone Process Server profile on a Windows platform.
# Call manageprofiles -response PSStd_StandAlone_DB2_UNIVERSAL_Win.response
#*******************************************************************************

create
templatePath=C:/Program Files/IBM/WebSphere/AppServer/profileTemplates/BPM/default.procsvr
profileName=ProcSrv01
cellName=SampleCell
nodeName=SampleNode01
serverName=server1
hostName=SampleHost.com
environmentName=SampleEnv
winserviceCheck=false
enableAdminSecurity=true
adminUserName=tw_admin
adminPassword=tw_admin
processCenterURL=http://processcenter_hostname:9080
processCenterUserId=tw_admin
processCenterPassword=tw_admin
applyPerfTuningSetting=standard
dbJDBCClasspath=${WAS_INSTALL_ROOT}/jdbcdrivers/DB2
dbType=DB2_UNIVERSAL
dbUserId=bpmadmin
dbPassword=bpmadmin1
dbHostName=DB_hostname
dbServerPort=50000
dbCreateNew=true
dbDelayConfig=false
procSvrDbName=PSBPMDB
perfDWDbName=PSPERFDB
samplesPassword=smppwd
```

Configuring the software after a Custom installation to create one or more stand-alone profiles using manageprofiles:

After performing a Custom installation you can create stand-alone server profiles using the Profile Management Tool or the manageprofiles command-line utility.

The information in this section describes how to use the manageprofiles command-line utility to create stand-alone profiles. It assumes that you have run the installer and have performed a Custom installation.

You can also use the Profile Management Tool to create stand-alone profiles after performing a Custom installation

Creating Process Server stand-alone profiles using manageprofiles:

Use the **manageprofiles** command-line utility to create Process Server stand-alone profiles for IBM Business Process Manager Standard .

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:

- You have reviewed the full list of prerequisites for creating or augmenting a profile at Prerequisites for creating or augmenting profiles
- You have reviewed example profile creation commands.
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

This task describes how to use the **manageprofiles** command-line utility to create Process Server stand-alone profiles for IBM Business Process Manager Standard.

To use the **manageprofiles** command-line utility to create a profile, perform the following steps.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your new 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.procsvr: for Process Server stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.
3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.
4. Create a response file.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for 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. See Creating a response file using the IBM Business Process Manager samples.
5. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - Linux UNIX **manageprofiles.sh -response** *myResponseFile*
   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. 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.
6. Manually configure the SMTP server to enable mail notifications. Refer to Configuring the SMTP server.

Related concepts:

"Creating stand-alone profiles after a custom installation" on page 120
After you perform a Custom installation, you can use the Profile Management Tool or the **manageprofiles** command-line utility to create a stand-alone server profile.

"**manageprofiles** examples" on page 174
This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

Creating Process Center stand-alone profiles using manageprofiles command-line utility:

Use **manageprofiles** command-line utility to create Process Center stand-alone profiles for IBM Business Process Manager Standard .

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:

- You have reviewed the full list of prerequisites for creating or augmenting a profile
- You have reviewed example profile creation commands
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

This task describes how to use the **manageprofiles** command-line utility to create Process Center profiles for IBM Business Process Manager Standard.

To use the **manageprofiles** command-line utility to create a profile, perform the following steps.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your new 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 Process Center stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.
3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.
4. Create a response file.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for 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. See Creating a response file using the IBM Business Process Manager samples.
5. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - Linux UNIX **manageprofiles.sh -response** *myResponseFile*
   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. 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.

6. Manually configure the SMTP server to enable mail notifications. Refer to Configuring the SMTP server.

Related concepts:

"**manageprofiles** examples" on page 174
This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

Configuring the software after a Custom installation to create one or more Deployment manager and Custom profiles using manageprofiles:

After performing a Custom installation you can create deployment manager and custom (managed node) profiles using the Profile Management Tool or the manageprofiles command-line utility.

The information in this section describes how to use the manageprofiles command-line utility to create deployment manager and custom (managed node) profiles for a network deployment configuration. It assumes that you have run the installer and have performed a Custom installation.

For information about using the Profile Management Tool to create deployment manager and custom (managed node) profiles after performing a Custom installation, see Creating custom profiles (managed nodes) by using the Profile Management Tool.

Creating Process Server deployment manager and custom profiles using manageprofiles:

Use the **manageprofiles** command-line utility to createProcess Server deployment manager and custom profiles for a network deployment configuration.

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:

- You have reviewed the full list of prerequisites for creating or augmenting a profile
- You have reviewed example profile creation commands
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

This task describes how to use the **manageprofiles** command-line utility to create Process Server deployment manager and custom profiles for a network deployment configuration.

To use the **manageprofiles** command-line utility to create the profiles, perform the following steps.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your new 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.procsvr: for a Process Server deployment manager profile, which defines a deployment manager. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - managed.procsvr: for a Process Server custom profile, which, when federated to a deployment manager, defines a managed node. If you have decided that your solution requires a network deployment configuration, your runtime environment requires one or more managed nodes. 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. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating. Also, : Process Server profiles cannot use a

WebSphere Enterprise Service Bus deployment manager, but WebSphere Enterprise Service Bus profiles can use a : Process Server deployment manager.
- `managed.procsvr.adv`: for Process Server custom profiles which, when federated to a deployment manager, define a managed node with capabilities and functionality specific to an IBM BPM Advanced configuration.
- `dmgr.esbserver`: for a WebSphere Enterprise Service Bus deployment manager profile, which defines a deployment manager.
- `managed.esbserver`: for a WebSphere Enterprise Service Bus custom profile, which, when federated to a deployment manager, defines a managed node. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating. WebSphere Enterprise Service Bus profiles can use an Enterprise Service Bus deployment manager or Process Server deployment manager.

2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.
3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.
4. Create a response file.

   Sample response files are available under the `install_root/BPM/samples/manageprofiles/` directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for 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. See Creating a response file using the IBM Business Process Manager samples.
5. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.
   - Linux UNIX **manageprofiles.sh -response** *myResponseFile*
   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. 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.
6. Manually configure the SMTP server to enable mail notifications. Refer to Configuring the SMTP server.

Related concepts:

"**manageprofiles** examples" on page 174
This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

Creating Process Center deployment manager and custom profiles using manageprofiles:

Use the **manageprofiles** command-line utility to create Process Center deployment manager and custom profiles for a network deployment configuration .

Before you run the **manageprofiles** command-line utility ensure that you have completed the following tasks:
- You have reviewed the full list of prerequisites for creating or augmenting a profile
- You have reviewed example profile creation commands
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

This task describes how to use the **manageprofiles** command-line utility to create Process Center deployment manager and custom profiles for a network deployment configuration.

To use the **manageprofiles** command-line utility to create a profile, perform the following steps.

1. Determine the kind of profile you want to create, which in turn determines the template to use for your new 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, which defines a deployment manager. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - managed.procctr: for a Process Center custom profile, which, when federated to a deployment manager, defines a managed node. If you have decided that your solution requires a deployment environment, your runtime environment requires one or more managed nodes. 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. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.
2. Determine which parameters are required for your type of profile by reviewing the example profile creation commands in manageprofile examples.
3. Determine the values that you want to supply for the profile by reviewing the default values in the manageprofiles parameters topic to see if they are what you need for your profile.
4. Create a response file.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for 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. See Creating a response file using the IBM Business Process Manager samples.
5. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.
   - Linux UNIX **manageprofiles.sh -response** *myResponseFile*
   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. 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.
6. Manually configure the SMTP server to enable mail notifications. Refer to Configuring the SMTP server.

Related concepts:

"**manageprofiles** examples"
This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

manageprofiles examples:

This section provides sample commands for creating profiles using the **manageprofiles** command-line utility.

The examples in this section cover stand-alone, deployment manager, and custom (managed node) profiles.

Examples: Creating Process Server profiles with manageprofiles command-line utility using a DB2 database:

This topic contains example profile creation commands to help you create *Process Server* stand-alone server, deployment manager, and custom profiles using the **manageprofiles** command-line utility on your installation with a DB2 database.

Stand-alone server profile

The following command example creates an IBM Business Process Manager stand-alone server profile called *my_BPM_PSVRSA_profile* on a Windows server. The parameters in Specified **manageprofiles** command-line utility parameters and Defaulted **manageprofiles** command-line utility parameters specify the following:

- The DB2 database product will be used for the Process Server and Performance Data Warehouse databases, which are all assumed to already exist on the localhost. All databases are set to be configured later (the **-dbDelayConfig "true"** command parameter value specifies that configuration scripts be created but not run). For complete listings of database-related **manageprofiles** parameters, see the topic *manageprofiles parameters*.
- The Windows service will be set for manual startup.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- Administrative security will be enabled.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a stand-alone server profile.

Table 78. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\default.procsvr" (must be fully qualified)
-profileName	"*my_BPM_PSVRSA_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbServerPort	"50000"
-dbHostName	"localhost"
-dbType	"DB2_UNIVERSAL" or "DB2_DATASERVER"
-procSvrDbName	"BPMDB"
-perfDWDbName	"PDWDB"
-dbCreateNew	"false"
-dbDelayConfig	"true"
-dbUserId	"*db_id*"
-dbPassword	"*db_pwd*"
-samplesPassword	"*samples_pwd*"
-environmentName	"*environment_name*"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Tip: The **samplesPassword** parameter is only required when using Samples.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 79. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRSA_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"
-cellName	"*host_name*Node*node_number**cell_number*Cell"
Windows -environmentType	"Test"
Windows -processCenterURL	Defaults to an offline server when no URL is specified.
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\DB2"
-dbOutputScriptDir	"*install_root*\profiles*my_BPM_PSVRSA_profile*\dbscripts"

Deployment manager profile

The following command example creates a deployment manager profile called *my_BPM_PSVRDMGR_profile* on a Windows server.

The parameters in Table 80 and Table 81 on page 177 specify the following:

- The Windows service will be set for manual startup.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- Administrative security will be enabled.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a deployment manager profile.

Table 80. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\dmgr.procsvr" (must be fully qualified)
-profileName	"*my_BPM_PSVRDMGR_profile*"

Table 80. Specified **manageprofiles** *command-line utility parameters (continued)*

Parameter	Value
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbType	"DB2_UNIVERSAL" or "DB2_DATASERVER"
-dbCreateNew	"false"
-dbDelayConfig	"true"
-dbUserId	"*db_id*"
-dbPassword	"*db_pwd*"
-dbHostName	"*remote_host_name*"
-dbServerPort	"50000"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 81. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRDMGR_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*CellManager*node_number*"
-cellName	"*host_name*Cell*cell_number*"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\DB2"
-dbOutputScriptDir	"*install_root*\profiles*my_BPM_PSVRDMGR_profile*\dbscripts"

Custom profile

The following command example creates a custom profile called *my_BPM_PSVRCUSTOM_profile* on a Windows server.

This example is set to operate with the deployment manager profile created above.

The parameters in Table 82 on page 178 and Table 83 on page 178 specify the following:

- Administrative security will be enabled on the deployment manager to which the custom profile will be federated.
- The custom node will be federated during profile creation for which the deployment manager must be running.

Tip: If the deployment manager is not running, or you want to federate the custom node after profile creation, set the **federateLaterBPM** to true.

See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a custom profile.

Table 82. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\managed.procsvr" (must be fully qualified)
-profileName	"*my_BPM_PSVRCUSTOM_profile*"
-dmgrHost	"*remote_host*"
-dmgrPort	"8879" (To find the -dmgrPort value, go to the *dmgr_profile_root*\logs directory for the deployment manager associated with this custom profile. In this directory, open the AboutThisProfile.txt file and find the value for the entry "Management SOAP connector port:".)
-dmgrAdminPassword	"*admin_pwd*"
-dmgrAdminUserName	"*admin_id*"
-federateLaterBPM	"false"
-dbType	"DB2_UNIVERSAL" or "DB2_DATASERVER"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\DB2"

Remember: If the **federateLaterBPM** parameter is set to true, then the dmgrHost, dmgrPort, dmgrAdminPassword and dmgrAdminUserName do not need to be specified.

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 83. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRCUSTOM_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"

Examples: Creating Process Center profiles with manageprofiles command-line utility using an Oracle database:

This topic contains example profile creation commands to help you create Process Center stand-alone server, deployment manager and custom profiles using the manageprofiles command-line utility on your installation with an Oracle database.

Stand-alone server profile

The following command example creates a Process Center stand-alone profile called *my_BPM_PCTRSA_profile* on a Windows server.

The parameters in Specified **manageprofiles** command-line utility parameters specify the following features:

- The Oracle database product will be used for both the Process Server and Performance Data Warehouse databases, which are assumed to already exist on the localhost. All databases are set to be configured later (the **-dbDelayConfig "true"** command parameter value specifies that configuration scripts be created but not run).
- The Windows service will be set for manual startup.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- Administrative security will be enabled.

All user IDs specified for profile creation should already exist in the database before any database configuration is performed:

- If **dbDelayConfig** is set to false, the user IDs must be created before profile creation.
- If **dbDelayConfig** is set to true, the user IDs can be created at the same time as the database tables after profile creation is complete and before starting the server.

  Note: If **dbDelayConfig** is set to true, the `bootstrapPocessServerData` script must be run before starting the server. See, "Loading the database with system information" on page 249 for details. In this scenario, this step does apply to stand-alone profiles.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a stand-alone server profile.

Table 84. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\default.procctr" (must be fully qualified)
-profileName	"*my_BPM_PCTRSA_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbServerPort	"1521"
-dbType	"ORACLE"
-procSvrDbName	"BPMDB"
-dbProcSvrUserId	"*procsvr_db_id*"
-dbProcSvrPassword	"*procsvr_db_pwd*"
-perfDWDbName	"PDWDB"
-dbPerfDWUserId	"*perfdw_db_id*"
-dbPerfDWPassword	"*perfdw_db_pwd*"
-dbDelayConfig	"true"
-samplesPassword	"*samples_pwd*"
-environmentName	"*environment_name*"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Tip: The **samplesPassword** parameter is only required when using Samples.

Restriction: The **dbProcSvrUserId** and **dbPerfDWUserId** parameters cannot have the same value if the same value was given for the **procSvrDbname** and **perfDWDbName** parameters.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 85. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PCTRSA_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"
-cellName	"*host_name*Node*node_number**cell_number*Cell"
Windows -environmentType	"Test"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\Oracle"
-dbOutputscriptDir	"*install_root*\profiles*my_BPM_PCTRSA_profile*\dbscripts"
-dbHostName	"local_host_name"

Additional manageprofiles command-line utility parameters for Oracle shows additional **manageprofiles** command-line utility parameters that are not displayed via the Profile Management Tool that can be specified to select your own user name and password combinations for Oracle.

Table 86. Additional **manageprofiles** *command-line utility parameters for Oracle*

Parameter	Value	Remarks
-dbCeiMeUserId	"*cei_me_userID*" (used to create CEI ME objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbCeiMeId is ORCCM00
-dbCeiMePassword	"*cei_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbCeiMePassword = dbPassword

Table 86. Additional **manageprofiles** *command-line utility parameters for Oracle (continued)*

Parameter	Value	Remarks
-dbAppMeUserId	"*app_me_userID*" (used to create SCAAPP ME objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbAppMeId is ORCSA00
-dbAppMePassword	"*app_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbAppMePassword = dbPassword

Deployment manager profile

The following command example creates a deployment manager profile called *my_BPM_PCTRDMGR_profile* on a Windows server.

The parameters in Specified manageprofiles command-line utility parameters specify the following:

- The Windows service will be set for manual startup.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- Administrative security will be enabled.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a deployment manager profile.

Table 87. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\dmgr.procctr" (must be fully qualified)
-profileName	"*my_BPM_PCTRDMGR_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbType	"ORACLE"
-dbDelayConfig	"true"
-dbHostName	"*remote_host_name*"
-dbServerPort	"1521"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 88. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PCTRDMGR_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*CellManager*node_number*"
-cellName	"*host_name*Cell*cell_number*"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\Oracle"
-dbOutputScriptDir	"*install_root*\profiles*my_BPM_PCTRDMGR_profile*\dbscripts"

Additional manageprofiles command-line utility parameters for Oracle shows additional **manageprofiles** command-line utility parameters that are not displayed via the Profile Management Tool that can be specified to select your own user name and password combinations for Oracle.

Custom profile

The following command example creates a custom profile called *my_BPM_PCTRCUSTOM_profile* on a Windows server.

This example is set to operate with the deployment manager profile created above.

The parameters in Table 89 and Table 90 on page 183 specify the following:

- Administrative security will be enabled on the deployment manager to which the custom profile will be federated.
- The custom node will be federated during profile creation for which the deployment manager must be running.

  Tip: If the deployment manager is not running, or you want to federate the custom node after profile creation, set the **federateLaterBPM** to true.

See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a custom profile.

Table 89. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\managed.procctr" (must be fully qualified)
-profileName	"*my_BPM_PCTRCUSTOM_profile*"

Table 89. Specified **manageprofiles** *command-line utility parameters (continued)*

Parameter	Value
-dmgrHost	"*remote_host*"
-dmgrPort	"8879" (To find the -dmgrPort value, go to the *dmgr_profile_root*\logs directory for the deployment manager associated with this custom profile. In this directory, open the AboutThisProfile.txt file and find the value for the entry "Management SOAP connector port:".)
-dmgrAdminPassword	"*admin_pwd*"
-dmgrAdminUserName	"*admin_id*"
-federateLaterBPM	"false"
-dbType	"ORACLE"
-dbJDBCClasspath	"*install_root*\jdbcdrivers\Oracle"

Remember: If the **federateLaterBPM** parameter is set to true, then the dmgrHost, dmgrPort, dmgrAdminPassword and dmgrAdminUserName do not need to be specified.

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 90. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PCTRCUSTOM_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"

Examples: Creating Process Server and WebSphere ESB profiles with **manageprofiles** *command-line utility using an Oracle database:*

This topic contains example profile creation commands to help you create *Process Server* stand-alone server, deployment manager, and custom profiles using the **manageprofiles** command-line utility on your installation with an Oracle database.

Stand-alone server profile

The following command example creates an IBM Business Process Manager stand-alone profile called *my_BPM_PSVRSA_profile* on a Windows server.

The parameters in Specified **manageprofiles** command-line utility parameters, Defaulted **manageprofiles** command-line utility parameters, and Additional **manageprofiles** command-line utility parameters for Oracle specify the following features:

- The Oracle database product will be used for the Process Server and Performance Data Warehouse databases, which are all assumed to already exist on the localhost. All databases are set to be configured later (the **-dbDelayConfig "true"** command parameter value specifies that configuration scripts be created but not run). For complete listings of database-related **manageprofiles** parameters, see the topic *manageprofiles parameters*.
- The Windows service will be set for manual startup.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.

- Administrative security will be enabled.

All user IDs specified for profile creation should already exist in the database before any database configuration is performed:

- If **dbDelayConfig** is set to false, the user IDs must be created before profile creation.
- If **dbDelayConfig** is set to true, the user IDs can be created at the same time as the database tables after profile creation is complete and before starting the server.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a stand-alone server profile.

Table 91. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\default.procsvr" (must be fully qualified)
-profileName	"*my_BPM_PSVRSA_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbServerPort	"1521"
-dbType	"ORACLE"
-procSvrDbName	"BPMDB
-dbProcSvrUserId	"*procsvr_db_id*"
-dbProcSvrPassword	"*procsvr_db_pwd*"
-perfDWDbName	"PDWDB"
-dbPerfDWUserId	"*perfdw_db_id*"
-dbPerfDWPassword	"*perfdw_db_pwd*"
-dbDelayConfig	"true"
-environmentName	"*environment_name*"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Tip: The **samplesPassword** parameter is only required when using Samples.

Restriction: The **dbProcSvrUserId** and **dbPerfDWUserId** parameters cannot have the same value if the same value was given for the **procSvrDbname** and **perfDWDbName** parameters.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 92. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRSA_profile*"
-hostName	"*host_name*"

Table 92. Defaulted **manageprofiles** *command-line utility parameters (continued)*

Parameter	Default values
-nodeName	"*host_name*Node*node_number*"
-cellName	"*host_name*Node*node_number**cell_number*Cell"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcDrivers\Oracle"
-dbOutputscriptDir	"*install_root*\profiles*my_BPM_PSVRSA_profile*\dbscripts"
-dbHostName	"local_host_name"

Additional manageprofiles command-line utility parameters for Oracle shows additional **manageprofiles** command-line utility parameters that are not displayed via the Profile Management Tool that can be specified to select your own user name and password combinations for Oracle.

Table 93. Additional **manageprofiles** *command-line utility parameters for Oracle*

Parameter	Value	Remarks
-dbCeiMeUserId	"*cei_me_userID*" (used to create CEI ME objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbCeiMeId is ORCCM00
-dbCeiMePassword	"*cei_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbCeiMePassword = dbPassword
-dbAppMeUserId	"*app_me_userID*" (used to create SCAAPP ME objects)	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, this user will be generated automatically based on Oracle Database name [SID]. For example: If SID is ORCL, dbAppMeId is ORCSA00
-dbAppMePassword	"*app_me_pwd*"	This parameter is needed if you select the Custom Users and Passwords option during profile creation. For the Generate Users with Single Password option, dbCeiPassword will be set to dbPassword. For example: dbAppMePassword = dbPassword

Deployment manager profile

The following command example creates a deployment manager profile called *my_BPM_PSVRDMGR_profile* on a Windows server.

The parameters in Table 94 on page 186 and Table 95 on page 186 specify the following:

- The Windows service will be set for manual startup.
- The profile creation process will set the port values automatically (except for database-related ports). The process will validate the new profile against other profiles to ensure there are no port conflicts.

  Tip: To override the port values that the **manageprofiles** command-line utility will specify, use the **-portsFile** parameter. See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.
- Administrative security will be enabled.

Specified manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a deployment manager profile.

Table 94. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\dmgr.procsvr" (must be fully qualified)
-profileName	"*my_BPM_PSVRDMGR_profile*"
-adminPassword	"*admin_pwd*"
-adminUserName	"*admin_id*"
-dbType	"ORACLE"
-dbDelayConfig	"true"
-dbPassword	"*db_pwd*"
-dbHostName	"*remote_host_name*"
-dbServerPort	"1521"

Remember: The **enableAdminSecurity** parameter is always true and cannot be false so it does not need to be specified.

Defaulted manageprofiles command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 95. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRDMGR_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*CellManager*node_number*"
-cellName	"*host_name*Cell*cell_number*"
Windows -winserviceCheck	"true"
Windows -winserviceAccountType	"localsystem"
Windows -winserviceStartupType	"manual"
Windows -winserviceUserName	"Administrator"
-dbJDBCClasspath	"*install_root*\jdbcDrivers\Oracle"
-dbOutputScriptDir	"*install_root*\profiles*my_BPM_PSVRDMGR_profile*\dbscripts"

Custom profile

The following command example creates a custom profile called *my_BPM_PSVRCUSTOM_profile* on a Windows server.

This example is set to operate with the deployment manager profile created above.

The parameters in Table 96 and Table 97 specify the following:

- The Oracle database product will be used for the Common database, which is assumed to already exist. The custom profile creation needs to point to the database used by the deployment manager to which the custom profile will be federated.
- Administrative security will be enabled on the deployment manager to which the custom profile will be federated.

See *manageprofiles parameters* in the reference documentation for a listing of all valid **manageprofiles** parameters.

Specified **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with example values used to create a custom profile.

Table 96. Specified **manageprofiles** *command-line utility parameters*

Parameter	Value
-create	N/A
-templatePath	"*install_root*\profileTemplates\BPM\managed.procsvr" (must be fully qualified)
-profileName	"*my_BPM_PSVRCUSTOM_profile*"
-dmgrHost	"*remote_host*"
-dmgrPort	"8879" (To find the -dmgrPort value, go to the *dmgr_profile_root*\logs directory for the deployment manager associated with this custom profile. In this directory, open the AboutThisProfile.txt file and find the value for the entry "Management SOAP connector port:".)
-dmgrAdminPassword	"*admin_pwd*"
-dmgrAdminUserName	"*admin_id*"
-federateLaterBPM	"false"
-dbType	"ORACLE"
-dbJDBCClasspath	"*install_root*\jdbcDrivers\Oracle"

Remember: If the **federateLaterBPM** parameter is set to true, then the dmgrHost, dmgrPort, dmgrAdminPassword and dmgrAdminUserName do not need to be specified.

Defaulted **manageprofiles** command-line utility parameters shows **manageprofiles** command-line utility parameters with default values that do not normally have to be changed.

Table 97. Defaulted **manageprofiles** *command-line utility parameters*

Parameter	Default values
-profilePath	"*install_root*\profiles*my_BPM_PSVRCUSTOM_profile*"
-hostName	"*host_name*"
-nodeName	"*host_name*Node*node_number*"

Examples: Using a database design file with the manageprofiles command:

If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

If you specify the **-bpmdbDesign** parameter and provide the name for the database design file, the only other database parameter that you need to specify is the **dbDelayConfig** parameter.

Stand-alone server profile for BPM Standard

The following example creates a stand-alone server profile called *SAPC* for BPM Standard:

```
manageprofiles.bat -create -templatePath C:\w\4210\profileTemplates\BPM\default.procctr -profileName SAPC -profilePath C:\w
```

Stand-alone server profile for BPM Advanced

The following example creates a stand-alone server profile called *SAAPC* for BPM Advanced:

```
manageprofiles.bat -create -templatePath C:\w\4210\profileTemplates\BPM\default.procctr.adv -profileName SAAPC -profilePath
manageprofiles.bat -create -templatePath C:\w\4210\profileTemplates\default.esbserver -profileName SAESB -profilePath C:\w\
```

Deleting profiles using the manageprofiles command-line utility:

You can delete a profile from the command line using the **manageprofiles** command-line utility.

1. Open a command prompt and run one of the following commands, based on your operating system:
   - Linux UNIX `manageprofiles.sh -delete -profileName profile_name`
   - Windows `manageprofiles.bat -delete -profileName profile_name`

   The variable *profile_name* represents the name of the profile that you want to delete.
2. Confirm that the profile deletion has completed by checking the following log file:
   - Linux UNIX *install_root*`/logs/manageprofiles/`*profile_name*`_delete.log`
   - Windows *install_root*`\logs\manageprofiles\`*profile_name*`_delete.log`

If you plan to recreate a deleted profile using both the same profile name and the same database names that are associated with the deleted profile, you must manually delete the associated database names before you attempt to recreate the profile name and the database names.

Augmenting profiles

You can augment an existing profile for WebSphere Application Server version 7.0 or WebSphere Application Server Network Deployment version 7.0 to add support for WebSphere Enterprise Service Bus.

- See the list of prerequisites for creating or augmenting profiles in the topic Prerequisites for creating or augmenting profiles.
- Ensure that the profile has the following characteristics:
  - It exists on a system with an installation of IBM Business Process Manager.
  - It is not federated to a deployment manager. You cannot use the Profile Management Tool or the **manageprofiles** command-line utility to augment federated profiles.
  - It does not have running servers.

If you have existing WebSphere Application Server or WebSphere Application Server Network Deployment profiles on your system, you might want the operating environments defined by those profiles to have WebSphere ESB functionality.

Restrictions:

- You cannot use the Profile Management Tool to augment profiles on IBM Business Process Manager installations on 64-bit architectures except on the Linux on zSeries platform. To augment profiles on other 64-bit architectures, you can use the **manageprofiles** command-line utility. For information about using the **manageprofiles** command-line utility, see Augmenting profiles using the manageprofiles command-line utility. You can also use the Profile Management Tool on these architectures if you use an IBM Business Process Manager 32-bit installation.

Use the instructions in this section and its subsections to augment Process Server and Process Center profiles interactively by using the Profile Management Tool graphical user interface (GUI) or, from a command line, by using the **manageprofiles** command-line utility.

Augmenting profiles using the Profile Management Tool:

Use the Profile Management Tool to augment WebSphere Application Server version 7.0, WebSphere Application Server Network Deployment version 7.0, or WebSphere Enterprise Service Bus version 7.5 profiles into IBM Business Process Manager version 7.5 Process Server profiles.

Ensure that the following prerequisites are satisfied:

- The profile type you will augment to (stand-alone server, deployment manager, or custom) is the same as the type of the profile from which you will augment.
- You have reviewed the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 115.
- You have shut down any servers associated with the profile you plan to augment.
- If you plan to augment a stand-alone server or custom profile, you ensured that it is *not* federated to a deployment manager.
- Solaris 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 of the Profile Management Tool. 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
  ```

1. Start the IBM Business Process Manager Profile Management Tool.

   Use one of the following commands:

   - Linux UNIX ***install_root*/bin/ProfileManagement/pmt.sh**
   - Windows ***install_root*\bin\ProfileManagement\pmt.bat**

   See the topic Starting the Profile Management Tool for other methods of starting this tool.

   The Welcome page is displayed.
2. In the Welcome page, click the **Launch Profile Management Tool** button or the **Profile Management Tool** tab.

   The **Profiles** tab is displayed.
3. In the **Profiles** tab, highlight the profile you want to augment and click **Augment**.

   The **Profiles** tab lists the profiles that exist on your system. For this procedure, it is assumed you are augmenting an existing profile.

   Restrictions:

   - You cannot augment WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus version 6.2 profiles into IBM Business Process Manager version 7.0 profiles.

- You cannot augment cell stand-alone server, management administrative agent, management job manager, or secure proxy profiles.
- If you augment a WebSphere Application Server or WebSphere Application Server Network Deployment profile, it must be from the version of WebSphere Application Server on which IBM Business Process Manager is installed. The **Augment** button is cannot be selected unless a profile can be augmented.

The Augment Selection page opens in a separate window.

4. In the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**.

   The Profile Augmentation Options page is displayed.

5. In 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.

6. Before continuing to the next page in the Profile Management Tool, proceed to one of the following topics to configure and complete augmentation of your profile.

Type of profile augmentation you selected	Procedure to complete profile augmentation based on your profile type (stand-alone server, deployment manager, or custom)
Typical	For Process Server profiles: • "Augmenting stand-alone profilesfor Process Server using the Typical option" on page 191 • "Augmenting deployment manager profiles for Process Server" on page 202 • "Augmenting custom profiles (managed nodes) for Process Server" on page 204 For Process Center profiles: • "Augmenting stand-alone profiles for Process Center using the **Typical** option" on page 205 • "Augmenting Deployment Manager profiles for Process Center" on page 216 • "Augmenting custom profiles (managed nodes) for Process Center" on page 217
Advanced	For Process Server profiles: • "Augmenting stand-alone profiles for Process Server using the **Advanced** option" on page 196 For Process Center profiles: • "Augmenting stand-alone profiles for Process Center using the **Advanced** option" on page 210

Augmenting profiles for Process Server:

You can use the **Typical** profile augmentation option or the **Advanced** profile augmentation option to augment profiles for Process Server.

Augmenting stand-alone profilesfor Process Server using the Typical option:

Use the **Typical profile augmentation** option of the Profile Management Tool to augment and configure stand-alone profiles for IBM Business Process Manager Process Server. Selecting the **Typical** option augments profiles with default configuration settings.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.

- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 115.

This topic assumes that you are using the Profile Management Tool to augment profiles. It is assumed that you have started the Profile Management Tool, have chosen to augment a stand-alone profile for Process Server, and have selected the **Typical profile augmentation** option.

In this type of configuration, the Profile Management Tool performs the following tasks:

- Gives option to deploy the administrative console.

Restriction: If you plan to federate the stand-alone server profile to a deployment manager, do not use the **Typical** option to create it. The default values for messaging engine storage and database type provided in a **Typical** profile augmentation are not suitable deployment environment installations. Use the **Advanced** option to augment the profile instead. See "Augmenting stand-alone profiles for Process Server using the **Advanced** option" on page 196 for instructions.

As a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 189, you are viewing the Administrative Security page. All IBM Business Process Manager profiles have security enabled.

1. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.
2. From the Process Server Configuration page, set the values for the following parameters

   Environment name
   Specifies the name of the environment you are configuring.

   Select an environment type

   Options are as follows:

   - Production

     Select **Production** if the server will serve in a production capacity.
   - Stage

     Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.
   - Test

     Select **Test** if the server you are configuring will be used as a testing environment.

The environment type refers to how the Process Server is used. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Server you are configuring will be accessed and used to review content and new functionality.

Process Center configuration information

Configure the Process Center that the Process Server will connect to.

Set parameters for the following fields:

- **Use server offline**

  Indicate whether the server you are configuring is an offline server.

  An offline server is a Process Server that is not connected to the Process Center.

  Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

- **Protocol**

  Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name**

  Type the host or virtual host that this Process Server needs 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**

  Type 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.

You can test the connection to the Process Center by clicking **Test Connection**.

Click **Next**.

3. On the Database Configuration - Part 1 page, perform the following actions: When augmenting a Process Server for IBM Business Process Manager Standard, the **Performance Data Warehouse database name** and **Process server database name** fields do not display.
   - From the **Select a database product** drop-down, select the database product to be used by the profile.
   - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

     If the database product you are using with the software already exists, select **Use an existing local or remote database** .
   - In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.
   - In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
   - Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

     If you do not select the checkbox, the scripts are output to the default directory.

- Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

4. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

   Note: You must complete this page even if you decided not to run the database scripts. The values you choose on the Database Configuration - Part 2 page are added to the database configuration scripts stored in the directory you specified in the **Database script output directory** field on the previous page (or in the default directory for these scripts if you did not specify a different location).

   Restriction: You cannot create a new database if you are using DB2 for z/OS V8 or V9, or Oracle. In these cases, the Process Server / Performance Data Warehouse databases must exist.
   From the following list, select the link that names the database you are using.
   - DB2 Database
   - DB2 for z/OS V8, V9 and V10
   - Microsoft SQL Server
   - Oracle

   a. Set values for the DB2 Database

      The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 98. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
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 the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
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.

   b. Set values for the DB2 for z/OS V8, V9 and V10

      The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 for z/OS V8 and V9 as your database product. You cannot create a new database using these databases. The performance data warehouse database and, for a stand-alone server profile, the process server database, must exist.

Table 99. Required database configuration fields for DB2 Universal Database for z/OS

Field	Action needed
User name for database authentication	Enter the user name to authenticate with the database.

Table 99. Required database configuration fields for DB2 Universal Database for z/OS (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 the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of `446` or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 100. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**
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 by reentering it.
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 by reentering it.
Database server host name (for example IP address)	Accept the default value of `localhost` or enter the correct database server host name.

Table 100. Required database configuration fields for Microsoft SQL Server (continued)

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`

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 101. 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 the Process Server database user name. • **`Password`** Enter a password to authenticate with the Process Server database. • **`Confirm password`** Confirm the password by reentering it. **Note:** 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 the Performance Data Warehouse database user name. • **`Password`** Enter a password to authenticate with the Performance Data Warehouse database. • **`Confirm password`** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database 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`

5. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:
   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

You have completed one of the following tasks:
- Augmented a WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus profile into an IBM Business Process Manager profile.
- Augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

Check server operation by selecting **Start the server** from the First steps console. An output window opens. If you see a message like the following message, your server is operating properly:

```
ADMU3000I: Server server1 open for e-business; process id is 3348
```

You can also check server operation by running the Installation Verification Test (IVT) from the First steps console or running the **wbi_ivt** command-line utility. This test is to verify that your deployment manager or stand-alone server installation is operating properly. For a Process Server stand-alone server profile, it also runs a System Health check and generates a report.

Augmenting stand-alone profiles for Process Server using the **Advanced** *option:*

Use the **Advanced profile augmentation** option on the Profile Management Tool graphical user interface (GUI) to augment stand-alone profiles for Process Server. Selecting the **Advanced** option augments profiles with customized configuration settings.

An *IBM BPM Advanced, Process Server stand-alone profile* is a defined server environment that is managed from its own console and functions independently from all other process servers. Before you begin, you should have stopped the server for this profile and launched the Profile Management Tool from your BPM Advanced installation.

This task describes how to use the **Advanced profile augmentation** option on the Profile Management Tool to augment a Stand-alone profile.

By selecting the **Advanced** option, you can perform the following tasks:
- Configure the databases using a database design file.

Important: The procedure in this topic includes all pages from the Profile Management Tool that might display when augmenting a stand-alone process server profile using the Advanced option. However, if the profile you are augmenting already includes configured components (for example, the common database or Business Space powered by WebSphere) the pages within the profile management tool for these components will not display.

Use the "Augmenting profiles using the Profile Management Tool" on page 189 procedure to get started with your profile augmentation and then resume with the following steps depending on where you left off.

Remember: All IBM Business Process Manager profiles have administrative security enabled.

1. Using the Profile Management Tool, select the profile you want to augment for Process Server and click **Augment**. The Augment Selection page opens.
2. Select the type of augmentation to apply to the profile and click **Next**. The Profile Augmentation Options page opens.
3. Select **Advanced profile augmentation** and click **Next**. The Administrative Security page opens.
4. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.
5. The next step depends on whether multiple servers are defined on your system and, if not, on whether databases are already configured on your system.

Condition	Next step
• Multiple servers *are* defined on your system.	The Application Scheduler Configuration page is displayed. Proceed to step 6.
• Multiple servers are *not* defined on your system. • Databases are *not* already defined on your system.	The Database Design page is displayed. Proceed to step 7.
• Multiple servers are *not* defined on your system. • Databases *are* already defined on your system.	A password page asks for the database user name and password used to configure the databases. Enter the information and click **Next**. The Profile Summary page is displayed. Proceed to step 11 on page 202.

6. **For Advanced profile augmentation when the profile has multiple servers defined:** In the Application Scheduler Configuration page, select the server you want from the drop-down list and click **Next**. The next step depends on whether databases are already defined on your system.

Condition of databases	Next step
• Databases are *not* already defined on your system.	The Database Design page is displayed. Proceed to step 7.
• Databases *are* already defined on your system.	A password page asks for the database user name and password used to configure the databases. Enter the information and click **Next**. The Profile Summary page is displayed. Proceed to step 11 on page 202.

7. Optional: Configure the databases using a design file. This option is available for both stand-alone server and deployment manager profiles created using the **Advanced** option.
   a. Select **Use a database design file for database configuration**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. 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. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 237.
8. From the Process Server Configuration page, set the values for the following parameters.

Environment name
Specifies the name of the environment you are configuring.

Select an environment type

Options are as follows:

- Production

  Select **Production** if the server will serve in a production capacity.
- Stage

  Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.
- Test

  Select **Test** if the server you are configuring will be used as a testing environment.

The environment type refers to how the Process Server is used. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Server you are configuring will be accessed and used to review content and new functionality.

Process Center configuration information
Configure the Process Center that the Process Server will connect to.

Set parameters for the following fields:

- **Use server offline**

  Indicate whether the server you are configuring is an offline server.

  An offline server is a Process Server that is not connected to the Process Center.

  Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.
- **Protocol**

  Select either **http://** or **https://** as the connection protocol to the Process Center.
- **Host name**

  Type the host or virtual host that this Process Server needs 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**

  Type 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.

You can test the connection to the Process Center by clicking **Test Connection**.

Click **Next**.

9. On the Database Configuration - Part 1 page, perform the following actions:
   - From the **Select a database product** drop-down, select the database product to be used by the profile.
   - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

     If the database product you are using with the software already exists, select **Use an existing local or remote database** .

- In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.
- In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
- Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

  If you do not select the checkbox, the scripts are output to the default directory.
- Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

10. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

    In the Database Configuration - Part 2 page, complete the configuration of the database you selected.

    Configuration parameters for all databases are listed in the sub-steps that follow:
    - For a listing of DB2 parameter definitions, click here
    - For a listing of DB2 Universal Database for z/OS parameter definitions, click here
    - For a listing of Microsoft SQL Server parameter definitions, click here
    - For a listing of Oracle parameter definitions, click here

    a. Set values for the DB2 Database

       The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 102. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
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 the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
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.

    b. Set values for the DB2 Universal Database for z/OS

       The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Server database, must exist.

Table 103. Required database configuration fields for DB2 Universal Database for z/OS

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 the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of `446` or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 104. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**
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 by reentering it.
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 by reentering it.
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 Microsoft SQL Server (continued)

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`

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

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 the Process Server database user name. • **`Password`** Enter a password to authenticate with the Process Server database. • **`Confirm password`** Confirm the password by reentering it. **Note:** 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 the Performance Data Warehouse database user name. • **`Password`** Enter a password to authenticate with the Performance Data Warehouse database. • **`Confirm password`** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database 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`

11. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

    The progress of the configuration displays on the Profile Configuration Progress window.

    When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

    Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

    - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
    - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

    The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.
12. Complete the Process Server stand-alone profile configuration by performing one of the following tasks, depending on whether you chose to postpone actual database configuration by producing scripts to be run manually.
    - If you completed configuration of the Performance Data Warehouse database and the Process Server database using the Profile Management Tool, ensure **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.
    - If you chose to postpone actual database configuration by producing scripts to be run manually, perform the following steps:
      a. Clear the check box beside **Launch the First steps console** and click **Finish** to close the Profile Management Tool. Also, close the Profiles page, which is open in a separate window.
      b. Use your site's standard database definition tools and procedures to edit and run the scripts that the Profile Management Tool generated to create, or create and configure the databases. When the databases are configured, start the First steps console associated with the profile.

You have completed one of the following tasks:

- Augmented a WebSphere Application Server, WebSphere Application Server Network Deployment, or WebSphere Enterprise Service Bus profile into an IBM Business Process Manager profile.
- Augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a WebSphere Enterprise Service Bus profile.

Check server operation by selecting **Start the server** from the First steps console. An output window opens. If you see a message like the following message, your server is operating properly:

```
ADMU3000I: Server server1 open for e-business; process id is 3348
```

You can also check server operation by running the Installation Verification Test (IVT) from the First steps console or running the **wbi_ivt** command-line utility. This test is to verify that your deployment manager or stand-alone server installation is operating properly. For a Process Server stand-alone server profile, it also runs a System Health check and generates a report.

Augmenting deployment manager profiles for Process Server:

Use the Profile Management Tool graphical user interface (GUI) to augment and configure a deployment manager profile for Process Server or .

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

- Review the list of prerequisites for creating or augmenting profiles at “Prerequisites for creating or augmenting profiles” on page 115.

- Solaris 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
  ```

This topic assumes that you are using the Profile Management Tool to augment profiles. As a result, it is assumed that you have started the Profile Management Tool, have chosen to augment a deployment manager profile for Process Server.

The task describes the procedure for augmenting a deployment manager profile for Process Server.

As a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 189, you are viewing the Administrative Security page. All IBM Business Process Manager profiles have security enabled.

1. Enable administrative security

   From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.
2. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:
   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.
3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.

The node defined by the profile has a deployment manager named **Dmgr**.

Check the server operation by selecting **Start the deployment manager** from the First steps console. An output window opens. If you see a message like the following one, your deployment manager is operating properly:

```
ADMU3000I: Server dmgr open for e-business; process id is 3072
```

In a deployment environment, you must create and configure other databases, create custom profiles, and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

Augmenting custom profiles (managed nodes) for Process Server:

Use the Profile Management Tool to augment and configure WebSphere Application Server version 7.0, WebSphere Application Server Network Deployment version 7.0, or WebSphere Enterprise Service Bus version 7.0 custom profiles (managed nodes) into Process Server profiles.

You have started the Profile Management Tool and have chosen to augment a custom profile.

In this type of configuration, you can choose to federate the node to an existing deployment manager during the augmentation process, or federate it later using the **addNode** command.

1. In the Federation page, choose to federate the node into the deployment manager now as part of the profile augmentation, or at a later time and apart from profile augmentation.
   - If you choose to federate the node as part of the profile augmentation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if administrative security is enabled on the deployment manager. Leave the **Federate this node later** check box deselected. Then click **Next**.

     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).

     Attention: Federate the custom node during profile augmentation only if all the following conditions are true:
     - You do not plan to use this custom node as a migration target.
     - No other node is being federated. (Node federation must be serialized.)
     - The deployment manager is running.
     - The deployment manager is an IBM Business Process Manager deployment manager.
     - The deployment manager is at a release level the same or higher than the release level of the custom profile you are augmenting.
     - The deployment manager has a JMX administrative port enabled. The default protocol is SOAP. (Click **System administration > Deployment manager > Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

     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** to exit from it, and then make different selections on the Federation page.
   - If you choose to federate the node at a later time and apart from profile augmentation, select the **Federate this node later** check box and click **Next**.

   The Profile Summary page is displayed.
2. In the Profile Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   When the profile augmentation is complete, the Profile Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might appear in place of the success message, for example:
   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

If you did not federate the profile during profile augmentation, federate it now. The node within the profile is empty until you federate the node and use the deployment manager to customize the node.

Augmenting profiles for Process Center:

You can use the **Typical** profile augmentation option or the **Advanced** profile augmentation option to augment profiles for Process Center.

Augmenting stand-alone profiles for Process Center using the **Typical** *option:*

Use the Profile Management Tool to augment stand-alone profiles for Process Center.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

Understand the differences between the **Typical profile augmentation** option and the **Advanced profile augmentation** option, including under which scenarios you should use one over the other.

- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 115.
- Solaris 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
  ```

Use the procedure in this task topic if you are:

- Augmenting a stand-alone server profile for *Process Center*.

The steps describe **Typical profile augmentation**.

1. Start the Profile Management Tool.

   Use one of the following commands:

   - Linux UNIX ***install_root*/bin/ProfileManagement/pmt.sh**
   - Windows ***install_root*\bin\ProfileManagement\pmt.bat**

   The Welcome page displays.
2. In the Welcome page, click **Launch Profile Management Tool** or select the **Profile Management Tool** tab.

   The **Profiles** tab displays.

   The **Profiles** tab contains a list of profiles on your machine currently. For this procedure, it is assumed you are augmenting an existing stand-alone profile for Process Center. For instructions on creating a new Process Center profile, see "Creating Process Center stand-alone profiles using the Profile Management Tool" on page 132

   Restrictions:

   - You cannot augment cell stand-alone server, management administrative agent, management job manager, or secure proxy profiles.

- If you augment a WebSphere Application Server or WebSphere Application Server Network Deployment 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.

3. In the Augment Selection page, select the type of augmentation you want to apply to the profile. Then click **Next**

   The Profile Augmentation Options page displays.

   From the Profile Augmentation Options page, select the profile augmentation method to apply. The following options are available:

   - **Typical profile augmentation**

     Augments a profile with default configuration settings.
   - **Advanced profile augmentation**

     Lets you specify your own configuration values for the profile you are augmenting.

   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.
4. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.
5. Select the configuration settings for the Performance Data Warehouse.

   To configure performance data warehouse functionality for the profile, select the **Configure Performance Data Warehouse** checkbox.
6. Configure the databases using a design file. **Option is for the Advanced path only.**
   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 the **Run database scripts to create the database tables (must not select if using a remote database)** check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.
   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. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 237.
7. On the Database Configuration - Part 1 page, perform the following actions:
   - From the **Select a database product** drop-down, select the database product to be used by the profile.
   - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

     If the database product you are using with the software already exists, select **Use an existing local or remote database** .

- In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.
- In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
- Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

  If you do not select the checkbox, the scripts are output to the default directory.
- Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.

8. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

   Note: You must complete this page even if you decided not to run the database scripts. The values you choose on the Database Configuration - Part 2 page are added to the database configuration scripts stored in the directory you specified in the **Database script output directory** field on the previous page (or in the default directory for these scripts if you did not specify a different location).

   Restriction: You cannot create a new database if you are using DB2 for z/OS V8 or V9, or Oracle. In these cases, the Process Server / Performance Data Warehouse databases must exist.
   From the following list, select the link that names the database you are using.
   - DB2 Database
   - DB2 for z/OS V8, V9 and V10
   - Microsoft SQL Server
   - Oracle

   a. Set values for the DB2 Database

      The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 106. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
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 the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
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.

   b. Set values for the DB2 for z/OS V8, V9 and V10

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 for z/OS V8 and V9 as your database product. You cannot create a new database using these databases. The performance data warehouse database and, for a stand-alone server profile, the process server database, must exist.

Table 107. Required database configuration fields for DB2 Universal Database for z/OS

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 the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of `446` or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 108. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**
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 by reentering it.

Table 108. Required database configuration fields for Microsoft SQL Server (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 by reentering it.
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`

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 109. 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 the Process Server database user name. • **Password** Enter a password to authenticate with the Process Server database. • **Confirm password** Confirm the password by reentering it. **Note:** Process Server database user name and the Performance Data Warehouse database user name cannot be the same.

Table 109. 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 a password to authenticate with the Performance Data Warehouse database. • **Confirm password** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database 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`

9. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:
   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

Augmenting stand-alone profiles for Process Center using the **Advanced** *option:*

Use the **Advanced profile augmentation** option on the Profile Management Tool graphical user interface (GUI) to augment stand-alone profiles for Process Center. Selecting the **Advanced** option augments profiles with customized configuration settings.

An *IBM BPM Advanced, Process Center stand-alone profile* is a defined server environment that is managed from its own console and functions independently from all other process centers.

This task describes how to use the **Advanced profile augmentation** option on the Profile Management Tool to augment a Stand-alone profile.

By selecting the **Advanced** option, you can perform the following tasks:
- Configure the databases using a database design file.

Important: The procedure in this topic includes all pages from the Profile Management Tool that might display when augmenting a stand-alone process server profile using the Advanced option. However, if the profile you are augmenting already includes configured components (for example, the common database or Business Space powered by WebSphere) the pages within the profile management tool for these components will not display.

Use the "Augmenting profiles using the Profile Management Tool" on page 189 procedure to get started with your profile augmentation and then resume with the following steps depending on where you left off.

Remember: All IBM Business Process Manager profiles have administrative security enabled.

1. Using the Profile Management Tool, select the profile you want to augment for Process Center and click **Augment**. The Augment Selection page opens.
2. Select the type of augmentation to apply to the profile and click **Next**. The Profile Augmentation Options page opens.
3. Select **Advanced profile augmentation** and click **Next**. The Administrative Security page opens.
4. From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.
5. Optional: Configure the databases using a design file. This option is available for both stand-alone server and deployment manager profiles created using the **Advanced** option.

   Note: Using a database design file is not recommended for IBM BPM Express configurations.

   a. Select **Use a database design file for database configuration**.
   b. Click **Browse**.
   c. Specify the fully qualified path name for the design file.
   d. 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. For more information on using a design file for database configuration, see "Creating database design files by using the database design tool" on page 237.
6. From the Process Center Configuration page, set the values for the following parameters.

   Environment name
   Specifies the name of the environment you are configuring.

   Select an environment type

   Options are as follows:

   - Production

     Select **Production** if the server will serve in a production capacity.
   - Stage

     Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.
   - Test

     Select **Test** if the server you are configuring will be used as a testing environment.

   s

   The environment type refers to how the Process Center is used. For example, in what capacity will the Process Center be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes

before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Center you are configuring will be accessed and used to review content and new functionality.

Process Center configuration information

Configure the Process Server that the Process Center will connect to.

Set parameters for the following fields:

- **Use server offline**

  Indicate whether the server you are configuring is an offline server.

  An offline server is a Process Server that is not connected to the Process Center.

  Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

- **Protocol**

  Select either **http://** or **https://** as the connection protocol to the Process Server.

- **Host name**

  Type the host or virtual host that this Process Center needs to communicate with Process Server. Use a fully qualified host name.

  In an environment with a load balancer or proxy server between the Process Center and the Process Server services, make sure that what you designate here matches the URL for accessing the Process Server.

- **Port**

  Type the port number of the Process Server. 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 Server.

You can test the connection to the Process Server by clicking **Test Connection**.

Click **Next**.

7. On the Database Configuration - Part 1 page, perform the following actions:
   - From the **Select a database product** drop-down, select the database product to be used by the profile.
   - Select whether to **Create a new local database** or to **Use an existing local or remote database**.

     If you selected DB2 as the database product, you can select to create a new database and the Profile Management Tool will create a new DB2 database, as DB2 is embedded with the software.

     If the database product you are using with the software already exists, select **Use an existing local or remote database** .
   - In the **Process Server database name** field, enter a name for the database or accept the **BPMDB** default value.
   - In the **Performance Data Warehouse database name** field, enter a name for the database or accept the **PDWDB** default value.
   - Select the **Override the default output directory for database scripts** checkbox if you want to set the directory into which the sql scripts used to create the database tables are written.

     If you do not select the checkbox, the scripts are output to the default directory.
   - Select the **Run database scripts to initialize the databases** checkbox if you want to run the database scripts automatically (as part of the profile creation process). If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.
8. In the Database Configuration - Part 2 page, complete the database configuration and click **Next**.

   In the Database Configuration - Part 2 page, complete the configuration of the database you selected.

   Configuration parameters for all databases are listed in the sub-steps that follow:

- For a listing of DB2 parameter definitions, click here
- For a listing of DB2 Universal Database for z/OS parameter definitions, click here
- For a listing of Microsoft SQL Server parameter definitions, click here
- For a listing of Oracle parameter definitions, click here

a. Set values for the DB2 Database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database as your database product.

Table 110. Required database configuration fields for DB2 Database

Field	Action needed
JDBC driver	Select from the following options: • DB2 Universal • DB2 DataServer
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 the following directory: • If you selected the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/db2/java` • If you did not select the DB2 Express feature during the installation: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
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.

b. Set values for the DB2 Universal Database for z/OS

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select DB2 Universal Database for z/OS as your database product. You cannot create a new database using DB2 Universal Database for z/OS. The Performance Data Warehouse database and, for a stand-alone server profile, the Process Center database, must exist.

Table 111. Required database configuration fields for DB2 Universal Database for z/OS

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 the following directory: `${WAS_INSTALL_ROOT}/jdbcdrivers/DB2`
Database server host name (for example IP address)	Enter the database server host name.
Server port	Accept the default value of `446` or enter the correct server port number.
Process Server Schema name	Enter the database schema name for Process Server.
Performance Server Schema name	Enter the database schema name for Performance Server.
Connection location	Enter the connection location.
Storage group name	Enter the storage group name.

c. Set values for the Microsoft SQL Server

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Microsoft SQL Server as your database product.

Table 112. Required database configuration fields for Microsoft SQL Server

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**
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 by reentering it.
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 by reentering it.
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`

d. Set values for the Oracle database

The following table lists the fields you must complete on the Database Configuration (Part 2) page when you select Oracle as your database product. You cannot create a new database using this database.

Important: You must have a user ID that has SYSDBA privileges before creating any profile.

Table 113. 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 the Process Server database user name. • **Password** Enter a password to authenticate with the Process Server database. • **Confirm password** Confirm the password by reentering it. **Note:** 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 the Performance Data Warehouse database user name. • **Password** Enter a password to authenticate with the Performance Data Warehouse database. • **Confirm password** Confirm the password by reentering it. **Note:** The Performance Data Warehouse database user name and the Process Server database 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`

9. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:

   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

10. Complete the Process Center stand-alone profile configuration by performing one of the following tasks, depending on whether you chose to postpone actual database configuration by producing scripts to be run manually.
    - If you completed configuration of the Performance Data Warehouse database and the Process Center database using the Profile Management Tool, ensure **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.
    - If you chose to postpone actual database configuration by producing scripts to be run manually, perform the following steps:
        a. Clear the check box beside **Launch the First steps console** and click **Finish** to close the Profile Management Tool. Also, close the Profiles page, which is open in a separate window.
        b. Use your site's standard database definition tools and procedures to edit and run the scripts the Profile Management Tool generated to create, or create and configure the databases. When the databases are configured, start the First steps console associated with the profile, as described in Starting the First steps console: IBM Business Process Manager Standard or .

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager profile.

Check server operation by selecting **Start the server** from the First steps console. An output window opens. If you see a message like the following message, your server is operating properly:

```
ADMU3000I: Server server1 open for e-business; process id is 3348
```

You can also check server operation by running the Installation Verification Test (IVT) from the First steps console or running the **wbi_ivt** command-line utility. This test is to verify that your deployment manager or stand-alone server installation is operating properly.

Augmenting Deployment Manager profiles for Process Center:

Use the Profile Management Tool graphical user interface (GUI) to augment and configure a deployment manager profile for Process Center.

Understand the concepts of profiles, including the differences between stand-alone, network deployment and custom profiles.

- Review the list of prerequisites for creating or augmenting profiles at "Prerequisites for creating or augmenting profiles" on page 115.
- Solaris 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
  ```

This topic assumes that you are using the Profile Management Tool to augment profiles. As a result, it is assumed that you have started the Profile Management Tool and have chosen to augment a deployment manager profile for Process Center.

The task describes the procedure for augmenting a deployment manager profile for Process Center.

As a result of following the procedure in "Augmenting profiles using the Profile Management Tool" on page 189, you are viewing the Administrative Security page. All IBM Business Process Manager profiles have security enabled.

1. Enable administrative security

   From the Administrative Security page, re-enter the administrative user ID and password for the profile you are augmenting.

   If the profile you are augmenting has the WebSphere(r) Application Server sample application deployed, it requires an account under which to run. Supply the password for the account. You cannot change the user name of the account.
2. In the Profile Augmentation Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   The progress of the configuration displays on the Profile Configuration Progress window.

   When profile augmentation completes, the Profile Augmentation Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might display in place of the success message, for example:
   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.
3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console to start the server.

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager profile.

Check the server operation by selecting **Start the deployment manager** from the First steps console. An output window opens. If you see a message like the following one, your deployment manager is operating properly:

```
ADMU3000I: Server dmgr open for e-business; process id is 3072
```

In a deployment environment, you must create and configure other databases, create custom profiles, and federate them to your deployment manager, create servers, create clusters if you want workload management capabilities, and perform other tasks specific to your planned installation environment. Your planned environment dictates which tasks you must perform and the order in which you perform them.

Augmenting custom profiles (managed nodes) for Process Center:

Use the augmentation option on the Profile Management Tool graphical user interface (GUI) to augment and configure WebSphere Application Server version 7.0 or WebSphere Application Server Network Deployment version 7.0 custom profiles (managed nodes).

You have started the Profile Management Tool and have chosen to augment a custom profile.

In this type of configuration, you can choose to federate the node to an existing deployment manager during the augmentation process, or federate it later using the **addNode** command.

1. In the Federation page, choose to federate the node into the deployment manager now as part of the profile augmentation, or at a later time and apart from profile augmentation.
   - If you choose to federate the node as part of the profile augmentation, specify the host name or IP address and SOAP port of the deployment manager, and an authentication user ID and password if administrative security is enabled on the deployment manager. Leave the **Federate this node later** check box deselected. Then click **Next**.

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).

Attention: Federate the custom node during profile augmentation only if all the following conditions are true:

- You do not plan to use this custom node as a migration target.
- No other node is being federated. (Node federation must be serialized.)
- The deployment manager is running.
- The deployment manager is an IBM Business Process Manager deployment manager.
- The deployment manager is at a release level the same or higher than the release level of the custom profile you are augmenting.
- The deployment manager has a JMX administrative port enabled. The default protocol is SOAP. (Click **System administration > Deployment manager > Administration services** in the administrative console of the deployment manager to verify the preferred connector type.)

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** to exit from it, and then make different selections on the Federation page.

- If you choose to federate the node at a later time and apart from profile augmentation, select the **Federate this node later** check box and click **Next**.

The Profile Summary page is displayed.

2. In the Profile Summary page, click **Augment** to augment the profile or **Back** to change the characteristics of the profile.

   When the profile augmentation is complete, the Profile Complete page is displayed with the message **The Profile Management tool augmented the profile successfully**.

   Attention: If errors are detected during profile augmentation, other messages might appear in place of the success message, for example:

   - **The Profile Management tool augmented the profile but errors occurred**, which indicates that profile augmentation completed but errors were generated.
   - **The Profile Management tool cannot augment the profile**, which indicates that profile augmentation failed completely.

   The Profile Complete page identifies the log file to reference in order to troubleshoot the problems.

3. In the Profile Complete page, ensure that **Launch the First steps console** is selected and click **Finish** to exit. Also, close the Profiles page, which is open in a separate window. Use the First steps console access the product documentation.

You have augmented a WebSphere Application Server or WebSphere Application Server Network Deployment profile into a Process Center profile.

If you did not federate the profile during profile augmentation, federate it now. The node within the profile is empty until you federate the node and use the deployment manager to customize the node.

Augmenting profiles using the manageprofiles command-line utility:

Augmentation is the ability to change an existing profile with an augmentation template. You can augment existing WebSphere Application Server or WebSphere Application Server Network Deployment profiles into IBM Business Process Manager profiles.You can augment existing WebSphere Application Server or WebSphere Application Server Network Deployment profiles into WebSphere Enterprise Service Bus profiles. You can augment a profile by using the **manageprofiles** command-line utility.

Before using this procedure, ensure that you have done the following tasks:

- You have reviewed the list of prerequisites for creating or augmenting a profile at Prerequisites for creating or augmenting profiles.
- You have shut down any servers associated with the profile that you plan to augment.
- If you plan to augment a stand-alone server or custom profile, you have determined if it has already been federated to a deployment manager:
  - If the profile you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.
  - If the profile you want to augment has not already been federated to a deployment manager, when you do federate it later by using the **addNode** command, the following must be true of the deployment manager with which it is federated in order for the augmentation to complete successfully:
    - It must be running.
    - It must be an IBM Business Process Manager deployment manager profile.
    - It must be at a release level the same or higher than that of the profile you are augmenting.
      - IBM Business Process Manager profiles cannot use a WebSphere Enterprise Service Bus deployment manager.
      - WebSphere Enterprise Service Bus profiles can use a WebSphere Enterprise Service Bus deployment manager or IBM Business Process Manager deployment manager.
    - It must have a JMX administrative port enabled. The default protocol is SOAP.
- You have reviewed the manageprofiles parameters and default values in manageprofiles parameters.
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Security role required for this task: See Granting write permission of files and directories to nonroot users for profile creation .

To use the **manageprofiles** command-line utility to augment a profile, perform the following steps.

1. Determine the template that the existing profile was created with (deployment manager, stand-alone, or managed). You can determine the template that was used for creating the profile by viewing the profile registry in *install_root*/properties/profileRegistry.xml. Do not modify this file, use it only to view the templates.
2. Find the appropriate template to augment to. You can augment an existing WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager or WebSphere ESB profile.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates.

   The following profile templates are available:
   - default.procsvr: for Process Server stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
   - default.procctr: for Process Center stand-alone profiles, which define stand-alone servers with capabilities and functionality specific to IBM BPM Standard and Express.
   - dmgr.procsvr: for a Process Server deployment manager profile, which defines a deployment manager for IBM BPM Standard. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - dmgr.procctr: for a Process Center deployment manager profile, which defines a deployment manager for IBM BPM Standard. A *deployment manager* provides one administrative interface to a logical group of servers on one or more workstations.
   - managed.procsvr: for a Process Server custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Standard. If you have decided that your solution requires a network deployment configuration, your runtime environment requires one or more managed nodes. 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. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.

- `managed.procctr` for a Process Center custom profile, which, when federated to a deployment manager, defines a managed node for IBM BPM Standard. If you have decided that your solution requires a deployment environment, your runtime environment requires one or more managed nodes. 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. Do not federate a node unless the deployment manager you are federating to is at a release level the same or higher than that of the custom profile you are creating.
- `default.esbserver`: for a WebSphere Enterprise Service Bus stand-alone server profile, which defines a stand-alone server.
- `dmgr.esbserver`: for a WebSphere Enterprise Service Bus deployment manager profile, which defines a deployment manager.
- `managed.esbserver`: for a WebSphere Enterprise Service Bus custom profile, which, when federated to a deployment manager, defines a managed node.

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 directory.

3. Create a response file. Do not supply a **-profilePath** parameter, and replace "create" with "augment" when creating the response file. For the complete list of parameters and their default values, see manageprofiles parameters.

   Sample response files are available under the `install_root/BPM/samples/manageprofiles/` directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for 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. See Creating a response file using the IBM Business Process Manager samples.
4. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - Linux UNIX **manageprofiles.sh -response** *myResponseFile*
   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. 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.

You can see that your profile augmentation completed successfully if you receive a `INSTCONFSUCCESS: Profile augmentation succeeded.` message, and you can check the following log file:

- Linux UNIX *install_root*/logs/manageprofiles/*profile_name*_augment.log
- Windows *install_root*\logs\manageprofiles*profile_name*_augment.log

Run the Installation Verification Test (IVT) tool to verify that the profile was augmented successfully. To do this, run the following command:

- Linux UNIX **On Linux and UNIX platforms:** *profile_root*/bin/wbi_ivt.sh

- Windows **On Windows platforms:** *profile_root*\bin\wbi_ivt.bat

Augmenting Process Server stand-alone profiles using the manageprofiles command-line utility:

Augmentation is the ability to change an existing profile with an augmentation template. You can augment existing WebSphere® Application Server or WebSphere Application Server Network Deployment profiles into IBM Business Process Manager profiles. You can augment a profile from the command line using the **manageprofiles** command-line utility.

- You have reviewed the list of prerequisites for creating or augmenting a profile at "Prerequisites for creating or augmenting profiles" on page 115.
- You have shut down any servers associated with the profile that you plan to augment.
- If you plan to augment a stand-alone server or custom profile, you have determined if it has already been federated to a deployment manager:
  - If the profile you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.
  - If the profile you want to augment has not already been federated to a deployment manager, when you do federate it via the **addNode** command later, the following must be true of the deployment manager with which it is federated in order for the augmentation to complete successfully:
    - It must be running.
    - It must be at a release level the same or higher than that of the profile you are augmenting.
    - It must have a JMX administrative port enabled. The default protocol is SOAP.
    - It must have already been augmented into an IBM Business Process Manager or WebSphere Enterprise Service Bus profile, depending on the product you have installed.
- You have reviewed example profile augmentation commands in this section.
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Security role required for this task: See "Granting write permission of files and directories to nonroot users for profile creation" on page 116.

Determine the template that the existing profile was created with (deployment manager, stand-alone, or managed). You can determine the template that was used for creating the profile by viewing the profile registry in *install_root*/properties/profileRegistry.xml. Do not modify this file, use it only to view the templates. For this procedure it is assumed that you are augmenting a Process Server stand-alone profile.

This task describes how to use **manageprofiles** to augment Process Server stand-alone profiles.

To use the **manageprofiles** command-line utility to augment a stand-alone profile, perform the following steps.

1. Find the appropriate template to augment to. You can augment an existing WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager or WebSphere ESB profile.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates.

   The following profile templates are available:
   - default.procsvr: for a Process Server stand-alone profile, which defines a stand-alone server that includes the capabilities and functionality of IBM Business Process Manager Standard and Express configurations.
   - default.esbserver: for a WebSphere Enterprise Service Bus stand-alone server profile, which defines a stand-alone server.

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.

2. Create a response file. Do not supply a **-profilePath** parameter, and replace "create" with "augment" when creating the response file. For the complete list of parameters and their default values, see manageprofiles parameters.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for 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. See Creating a response file using the IBM Business Process Manager samples.

3. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.

   - Linux UNIX **manageprofiles.sh -response** *myResponseFile*
   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. 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.

You can see that your profile augmentation completed successfully if you receive a INSTCONFSUCCESS: Profile augmentation succeeded. message, and you can check the following log file:

- Linux UNIX *install_root*/logs/manageprofiles/*profile_name*_augment.log
- Windows *install_root*\logs\manageprofiles*profile_name*_augment.log

Run the Installation Verification Test (IVT) tool to verify that the profile was augmented successfully. To do this, run the following command:

- Linux UNIX **On Linux and UNIX platforms:** *profile_root*/bin/bpm_ivt.sh
- Windows **On Windows platforms:** *profile_root*\bin\bpm_ivt.bat

Augmenting Process Center stand-alone profiles using the manageprofiles command-line utility:

Augmentation is the ability to change an existing profile with an augmentation template. You can augment a profile from the command line using the **manageprofiles** command-line utility.

- You have reviewed the list of prerequisites for creating or augmenting a profile at "Prerequisites for creating or augmenting profiles" on page 115.
- You have shut down any servers associated with the profile that you plan to augment.
- If you plan to augment a stand-alone server or custom profile, you have determined if it has already been federated to a deployment manager:
  - If the profile you want to augment has already been federated to a deployment manager, you cannot augment it using the **manageprofiles** command-line utility.

– If the profile you want to augment has not already been federated to a deployment manager, when you do federate it via the **addNode** command later, the following must be true of the deployment manager with which it is federated in order for the augmentation to complete successfully:
  - It must be running.
  - It must be at a release level the same or higher than that of the profile you are augmenting.
  - It must have a JMX administrative port enabled. The default protocol is SOAP.
  - It must have already been augmented into an IBM Business Process Manager or WebSphere Enterprise Service Bus profile, depending on the product you have installed.

- You have reviewed example profile augmentation commands in this section.
- You have verified that you are not already running the **manageprofiles** command-line utility on the same profile. If an error message is displayed, determine if there is another profile creation or augmentation action in progress. If so, wait until it completes.

Security role required for this task: See "Granting write permission of files and directories to nonroot users for profile creation" on page 116.

Determine the template that the existing profile was created with (deployment manager, stand-alone, or managed). You can determine the template that was used for creating the profile by viewing the profile registry in *install_root*/properties/profileRegistry.xml. Do not modify this file, use it only to view the templates. For this procedure it is assumed that you are augmenting a Process Center stand-alone profile.

This task describes how to use **manageprofiles** to augment Process Center stand-alone profiles.

To use the **manageprofiles** command-line utility to augment a stand-alone profile, perform the following steps.

1. Find the appropriate template to augment to. You can augment an existing WebSphere Application Server or WebSphere Application Server Network Deployment profile into an IBM Business Process Manager or WebSphere ESB profile.

   Templates for each profile are located in the *install_root*/profileTemplates/BPM directory for BPM templates.

   The following profile templates are available:
   - default.procctr: for a Process Server stand-alone profile, which defines a stand-alone server that includes the capabilities and functionality of IBM Business Process Manager Standard and Express.

   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.
2. Create a response file. Do not supply a **-profilePath** parameter, and replace "create" with "augment" when creating the response file. For the complete list of parameters and their default values, see manageprofiles parameters.

   Sample response files are available under the install_root/BPM/samples/manageprofiles/ directory. Choose an appropriate response file based on the profile that you want to create (stand-alone or network, Process Center or Process Server) and customize the file for 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. See Creating a response file using the IBM Business Process Manager samples.

3. Run the **manageprofiles** command from the command line, using the **-response** parameter and the name of the response file that you created.
   - Linux UNIX **manageprofiles.sh -response** *myResponseFile*
   - Windows **manageprofiles.bat -response** *myResponseFile*

   The command displays status as it runs. Wait for it to finish. 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.

Configuring databases

Before starting a profile, you need to have configured the databases that are to be used with the profile.

You must have planned your database requirements, including a list of all databases and schema names. For more information, see Planning your database configuration

Creating databases

If you did not create databases while creating profiles, you can use the SQL scripts to create them.

You can create the databases as part of creating a stand-alone or deployment manager profile, you can use the database design tool (dbDesignGenerator), you can manually create the databases, or you can create the databases by running the database script files after profile creation. In a network deployment environment, you must create the databases before starting the deployment manager and creating custom profiles.

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.

To create the databases by running the generated SQL scripts:

1. Find the scripts in the following directories:
   - For the Process Server database:
     install_root\dbscripts\ProcessServer*db_type*\createDatabase.sql
   - For the Performance Data Warehouse database:
     install_root\dbscripts\PerformanceDW*db_type*\createDatabase.sql
2. Make any required changes to the appropriate script. Look for @ to find out where changes are needed. For example, replace **@DB_NAME@** with the database name you would like.

   Note: For SQL Server, 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:38
```

```
at com.microsoft.sqlserver.jdbc.SQLServerPreparedStatement$PrepStmtExecCmd.doExecute(SQLServerPreparedStatement.java:
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.

3. Run the appropriate script and make sure that it completes without errors.

Related tasks:

"Creating the Process Server or Process Center database tables"
Run the SQL scripts to create the database tables for your IBM Process Server or IBM Process Center configuration.

"Creating the Performance Data Warehouse database tables" on page 226
Run the SQL scripts to create the database tables for your IBM Performance Data Warehouse.

Creating the Process Server or Process Center database tables

Run the SQL scripts to create the database tables for your IBM Process Server or IBM Process Center configuration.

You have performed all of the steps required for your configuration and have selected not to run the database scripts to initialize the databases during the configuration. You have also created the database in which you want to create the Process Server or Process Center database tables. For information about creating the database, see *Creating databases*.

The procedure in this task describes how to run the Process Server or Process Center SQL scripts that were produced when you completed your configuration.

To run the Process Center or Process Server SQL scripts that were produced when you completed your configuration follow the steps below:

Note: The Process Server does not support schema. You must login as the user and then execute the SQL file.

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/*DB_product* at profile creation time. For example,

   C:*install_root*\profiles\Proc01\dbscripts\ProcessServer\DB2
2. Connect to your database. For example, run **db2 connect to *databaseName***.
3. Create the tables for Process Server or Process Center.

   From the directory navigated to in step 1, run **createTable_ProcessServer.sql** on the database you configured for the Process Server or Process Center (BPMDB).

   Make sure all SQL statements succeed without any errors.
4. Create the table procedures for Process Server or Process Center.

   From the directory navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server or Process Center (BPMDB).

   Make sure all SQL statements succeed without any errors.

   If you are using DB2 Universal, DB2 Universal for z/OS, or Microsoft SQL Server, use "GO" as a delimiting character when executing the stored procedure. For example, **db2 -tdGO -vf createProcedure_ProcessServer.sql**.

You have created the database tables for your Process Server or Process Center configuration and have completed the database configuration.

You can now load the database with system information and start the servers or clusters on your Process Server or Process Center configuration.

Related tasks:

"Creating databases" on page 224
If you did not create databases while creating profiles, you can use the SQL scripts to create them.

Creating the Performance Data Warehouse database tables

Run the SQL scripts to create the database tables for your IBM Performance Data Warehouse.

You have performed all of the steps required for your configuration and have selected not to run the database scripts to initialize the databases during the configuration. You have also created the database in which you want to create the Performance Data Warehouse database tables. For information about creating the database, see *Creating databases*.

The procedure in this task describes how to run the Performance Data Warehouse SQL scripts that were produced when you completed your configuration.

To run the Performance Data Warehouse SQL scripts that were produced when you completed your configuration follow the steps below:

Note: The Performance Data Warehouse does not support schema. You must login as the user and then execute the SQL file.

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/*DB_product* at profile creation time. For example,

   C:*install_root*\profiles\Proc01\dbscripts\PerformanceDW\DB2
2. Connect to your database. For example, run **db2 connect to *databaseName***.

3. Create the tables for the Performance Data Warehouse.

   From the directory navigated to in step 1, run **createTable_PerformanceDW.sql** on the database 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.

You can now load the database with system information and start the servers or clusters on your Performance Data Warehouse.

Configuring a Microsoft SQL Server database

You can create an IBM Process Server stand-alone profile for use with Microsoft SQL Server.

Prerequisites

Before creating a profile, you must install Microsoft SQL Server on the server that hosts the database.

Database privileges and security considerations

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.

Table 114 shows the database privileges that are required to access the data store.

Table 114.

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 for Microsoft SQL Server:

You must configure XA transactions after the database is installed and before you start the server. The Microsoft 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 start up: **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 Microsoft Site using 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 master database (e.g. for lombardi user add master database in User mappings and check SqlJDBCXAUser role).

Creating a stand-alone profile for use with Microsoft SQL Server:

You can create a Process Server stand-alone profile for use with Microsoft SQL Server by passing the required parameters using the Profile Management Tool or the manageprofiles command-line utility. You can also create the profile using the design file, which is generated by the database design tool (DDT).

Before creating a profile, complete the following prerequisites:

- Install Microsoft SQL Server on the server that hosts the database.
- Create the `CMNDB` (CommonDB) and `BPEDB` (Business Process Choreographer), BPMDB (Process Server) and PDWDB (Performance Data Warehouse) databases. The following example command is used to create a database for Microsoft SQL Server:

  ```
  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 the BPMDB (Process Server) and PDWDB (Performance Data Warehouse) databases must be case-insensitive.
- If Business Space is configured, it creates tables in the `CMNDB` database with a schema name of `IBMBUSSP`. To create the messaging engines tables in the `CMNDB` database, you must manually create the schemas as

described in step 2 on page 233. If you are using a local database, the Common Event Infrastructure database is created when the profile is created; otherwise, you must use the script that is generated when the profile is created to create the Common Event Infrastructure database.

- If you are going to use the Common Event Infrastructure, you must create the CEI database manually. See *Configuring a Common Event Infrastructure (CEI) database*.

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 can configure the CommonDB, Process Server, Performance Data Warehouse, Business Space, Service Component Architecture (SCA) System Messaging Engine and SCA Application Messaging Engine when the stand-alone profile is created.

Configure the Business Process Choreographer container, Business Process Choreographer Messaging Engine, and Business Process Choreographer Explorer using the `bpeconfig.jacl` script or the administrative console. Refer to step 3 on page 234 for information about how to configure Business Process Choreographer.

1. Create the profile using either the Profile Management Tool, the manageprofiles command-line utility, or by importing the `dbDesign` file, which is generated by the DDT.
   - To create the profile using the Profile Management Tool, see "Creating Process Server stand-alone profiles using the Profile Management Tool" on page 121. Table 115 lists the fields that you must complete on the Database Configuration (Part 2) page and Required database configuration fields for Microsoft SQL Server - Part 3.

Table 115. Required database configuration fields for Microsoft SQL Server - Part 2

Field	Action needed
JDBC driver	Select from the following options • **Microsoft SQL Server JDBC 2.0** **Note:** JDBC 3.0 is also supported. Select **Microsoft SQL Server JDBC 2.0** for JDBC 3.0. • **Microsoft SQL Server JDBC 1.2** • **DataDirect Connect JDBC 4.0.**
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. • **`Confirm password`** Confirm the password by reentering it.

Table 115. Required database configuration fields for Microsoft SQL Server - Part 2 (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 a password to authenticate with the Process Server database. • **Confirm password** Confirm the password by reentering it.
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 by reentering it.
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 116. Required database configuration fields for Microsoft SQL Server - Part 3

Field	Action needed
Common Event Infrastructure bus messaging engine	For the Common Event Infrastructure bus messaging engine, enter values for the following parameters: • **User name** Enter the Common Event Infrastructure bus messaging engine user name. • **Password** Enter a password to authenticate with the Common Event Infrastructure bus messaging engine. • **Confirm password** Confirm the password by reentering it.

Table 116. Required database configuration fields for Microsoft SQL Server - Part 3 (continued)

Field	Action needed
SCA application bus messaging engine	For the SCA application bus messaging engine, enter values for the following parameters: • **User name** Enter the SCA application bus messaging engine user name. • **Password** Enter a password to authenticate with the SCA application bus messaging engine. • **Confirm password** Confirm the password by reentering it.
SCA system bus messaging engine	For the SCA system bus messaging engine, enter values for the following parameters: • **User name** Enter the SCA system bus messaging engine user name. • **Password** Enter a password to authenticate with the SCA system bus messaging engine. • **Confirm password** Confirm the password by reentering it.
Process Server bus messaging engine	For the Process Server bus messaging engine, enter values for the following parameters: • **User name** Enter the Process Server bus messaging engine user name. • **Password** Enter a password to authenticate with the Process Server bus messaging engine. • **Confirm password** Confirm the password by reentering it.
Performance Data Warehouse bus messaging engine	For the Performance Data Warehouse bus messaging engine, enter values for the following parameters: • **User name** Enter the Performance Data Warehouse bus messaging engine user name. • **Password** Enter a password to authenticate with the Performance Data Warehouse bus messaging engine. • **Confirm password** Confirm the password by reentering it.

During a Process Server stand-alone profile configuration, the Profile Management Tool performs the following actions:

- Assigns customized values to ports, to the location of the profile, and to the names of the profile, node, server, host, and cell (when applicable)
- Configures the common database
- Configures the Process Server and Performance Data Warehouse Databases

– Creates the tables in each of the respective databases if the **-dbDelayConfig** parameter is set to **false**. If this parameter is set to **true**, you must manually run the SQL scripts, which are located in the *install_root*/profiles/*profile_name*/dbscripts directory.

  Note: If you are using a remote database and want to delay running the database scripts, set the **-dbDelayConfig** parameter to **true**.
– Deploys the administrative console and the WebSphere Application Server sample application
– Deploys the default application (which contains the Snoop, Hello, and HitCount servlets)
– Creates a web server definition
– Enables administrative security
– If your operating system and the privileges of your user account permit the creation of services, creates a system service to run the server

- To create the profile using the **manageprofiles** command-line utility, see "Creating Process Server stand-alone profiles using manageprofiles" on page 170.

  The following example commands are used to create a stand-alone profile that includes the CommonDB, Common Event Infrastructure, Messaging Engines, and Business Space components in one database.

  For Microsoft SQL Server JDBC 1.2 driver:

  ```
  install_root/bin/manageprofiles -create -templatePath install_root/profileTemplates/BPM/
  default.procsvr.adv -dbType MSSQLSERVER_MICROSOFT -dbJDBCClasspath
  path to JDBC driver -dbDriverVersion 1.2 -dbUserId userID -dbPassword password -
  dbCommonForME true -dbCeiMeSchemaName
  ceiSchema -dbSysMeSchemaName sysSchema
  -dbAppMeSchemaName appSchema
  ```

  For Microsoft SQL Server JDBC 2.0 driver:

  ```
  install_root/bin/manageprofiles -create -templatePath install_root/profileTemplates/BPM/
  default.procsvr.adv -dbType MSSQLSERVER_MICROSOFT -dbJDBCClasspath
  path to JDBC driver -dbDriverVersion 2.0 -dbUserId userID -dbPassword password -
  dbCommonForME true -dbCeiMeSchemaName
  ceiSchema -dbSysMeSchemaName sysSchema
  -dbAppMeSchemaName appSchema
  ```

  Table 117 shows the **manageprofiles** parameters that are available to configure the common database on Microsoft SQL Server.

Table 117. Available manageprofiles parameters to configure the common database using Microsoft SQL Server

Parameters	Description
-dbJDBCClasspath *jdbc_driver_location*	The default is <install_root>/jdbcdrivers/<*dbProduct*>, where ***<dbProduct>*** , where dbProduct=**SQLServer**
-dbType *db_type*	The database type. Set one of the following values: • **MSSQLSERVER_DATADIRECT** for a Microsoft SQL Server database using a DataDirect driver • **MSSQLSERVER_MICROSOFT** for a Microsoft SQL Server database using Microsoft JDBC driver V1.2 or V2.0
-dbCreateNew true | false	Indicates whether you will create or reuse a database. Valid values are **true** or **false**. Default value is **true**.
-dbDelayConfig true | false	Indicates whether you will create the table after the profile is created. Valid values are **true** or **false**. The parameter is set to **false** by default. If you are using a remote database and want to delay running the database scripts, set this parameter to **true**.

Table 117. Available manageprofiles parameters to configure the common database using Microsoft SQL Server (continued)

Parameters	Description
-dbDriverVersion *db_driver_version*	The database driver version. This parameter is valid only for Microsoft SQL Server. For a SQL Server database, specify either **1.2** for Microsoft SQL JDBC driver V1.2 or **2.0** for Microsoft SQL JDBC driver V2.0. If not specified, this value automatically defaults to **2.0**.
-dbHostName *db_host_name*	The database server host name or IP address. The default value is **localhost**.
-dbName *db_name*	The name of the database. The default value is **CMNDB**.
-dbOutputScriptDir *db_output_dir*	The value must be an absolute path. If you set a relative path, the SQL scripts will not be exported or executed, which will result in numerous exceptions during server startup.The location for exported database scripts. The default value is **dbscripts\CommonDB\DB2**
-dbPassword *db_pswd*	The password that is required for database authentication. This parameter is required.
-dbServerPort *db_port_number*	The database server port number. Depending on the database that you are using, you can specify a different port number instead of the default port number. The default value is **1433**.
-dbUserId *db_userid*	Specifies the user ID that has privileges to create and drop the databases. The WebSphere data source uses this ID to authenticate the database connection. For Microsoft SQL Server databases, it specifies the SQL Server user ID that will own the database tables.

- To create the database configuration by importing the `dbDesign` file, which is generated by the DDT, select the **Use a database design file** option, which is available for stand-alone server profiles created using the Advanced option and is displayed in the Database Configuration page of the Profile Management Tool.
  a. Select **Use a database design file** .
  b. Click **Browse**.
  c. Specify the fully qualified path name for the design file and then click **Next**.
  d. To run the database scripts automatically (as part of the profile creation process), select the **Run database scripts to create the database tables (must not select if using a remote database)** check box. If you do not select the checkbox, you or the database administrator can run the scripts manually after profile creation completes.
  e. Click **Next**

  If you choose to specify a design file, the design file location is passed to the command line to complete the database configuration. For more information about using a design file for database configuration, see "Creating database design files by using the database design tool" on page 237.

2. Create the following schemas in the `CMNDB` database as owner `sdo` 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 messaging engine or while the messaging engine is starting.

   - `BPMPRS00` (Process Server messaging engine)
   - `BPMPER00` (Performance Data Warehouse messaging engine)

where CMN is the first three characters of the common database name and BPM is the first three characters of the Process Server and Performance Data Warehouse databases.

3. Configure Business Process Choreographer.
   a. Planning the BPEDB database
   b. Using the bpeconfig.jacl script to configure Business Process Choreographer
   c. Creating a Microsoft SQL Server database for Business Process Choreographer
4. Optional: If you chose to delay running the database scripts in the Profile Management Tool or the manageprofiles command-line utility, you must manually create the database tables by executing the following SQL scripts:

   Important: Before you can run the scripts, you must copy the *install_root*/profiles/*profile_name*/dbscripts folder to the database machine.
   a. *install_root*/profiles/*profile_name*/dbscripts/CommonDB/SQLServer/configCommonDB
   b. *install_root*/profiles/*profile_name*/dbscripts/BusinessSpace/SQLServer/configBusinessSpaceDB
   c. install_root/profiles/profile_name/dbscripts/ProcessServer
   d. install_root/profiles/profile_name/dbscripts/PerformanceDW
5. Start the server.

Creating network deployment environments for use with Microsoft SQL Server:

This topic describes how to create a network deployment environment for use with Microsoft SQL Server.

Before creating a profile, complete the following prerequisites:

- Install Microsoft SQL Server on the server that hosts the database.
- Create the BPMDB (Process Server) and PDWDB (Performance Data Warehouse) databases. The following example command is used to create a database for Microsoft SQL Server:

  ```
  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 the BPMDB (Process Server) and PDWDB (Performance Data Warehouse) databases must be case-insensitive.
- If you are going to use the Common Event Infrastructure, you must create the CEI database manually. See *Configuring a Common Event Infrastructure (CEI) database*.

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 can configure the CommonDB when you create the Deployment Manager profile (IBM Business Process Manager Advanced only); however, the remaining components must be configured using the Deployment Environment panels in the administrative console. The components to be configured are:

- Common Event Infrastructure
- Business Space
- Messaging Engines

1. Create the Deployment Manager profile Use one of the following methods:

- Using the Profile Management Tool. For more information, see "Creating Process Server deployment manager profiles using the Profile Management Tool" on page 142.
- Using the **manageprofiles** command. For more information, see "Creating Process Server deployment manager and custom profiles using manageprofiles" on page 172.

2. Start the deployment manager using one of the following methods:
   - Windows From the **Start** menu, select **IBM** > **BPM Advanced** > **Profiles** > *profile_name* > **Start the deployment manager**.
   - In the First Steps console, click **Start the deployment manager**.
   - Use the **startManager** command.
3. Create at least one node (managed profile) for use in the deployment environment. For more information, see "Creating Process Server deployment manager and custom profiles using manageprofiles" on page 172.
4. Create the deployment environment:
   a. In the administrative console, select **Servers** > **Deployment Environment**.
   b. Click **New**.
   c. Provide the information for each step until the step to configure the database.
   d. On the Database page, update the default values for the components that your environment is using

      Make sure you enter the correct values for the user name and schema name for components below. Deployment Environment configuration does not create any schemas and users as part of configuration. These should exist before the generation of the deployment environment is done. In SQL Server you need to make sure that the default schema for the user is set in the database. It is recommended that for each user you set the same value for the schema in the database - if you do not set the default schema for each user then it would be defaulted to 'dbo' and all the components would get configured with that schema resulting in a non-working environment.The database panel should have values of the schema which correspond to that user. If there is no option to enter a schema value in the field its expected that the default schema which is the same as the user would be set in the database.
   e. Complete the rest of the steps to create the environment and save the settings. You can see **Servers** > **Deployment Environment** but the deployment environment is not started. Do not start the deployment environment at this time.
5. Optional: If you cleared **Create Tables** when you created the profile in 4, generate the scripts for the message engine.
   a. In the administrative console, select **Servers** > **Deployment Environment** > *your_deployment_environment* > **Deferred Configuration**.
   b. On the command line, go to where you want to generate the scripts.
   c. Run `sibDDLGenerator.bat` utility to generate the scripts for each of the schemas required in your environment. For more information about running the utility, see the Deferred Configuration page. The schema names are the values you have chosen in the database panel above.

      ```
      sibDDLGenerator.bat -system sqlserver -version 2005 -platform windows
      -schema WPRCM00 -user user_name -statementend ; > output_script_filename
      ```

      Remember to use the correct schema, which is listed in the Deferred Configuration page, and user name. Also, redirect the result to a file. Otherwise, the generated script is printed at the command prompt instead of in a file.

      Note: If you configured the databases using a database design file, it is not necessary to run the `sibDDLGenerator.bat` utility. For more information, see "Creating database design files by using the database design tool" on page 237.
6. In the administrative console, select **Servers** > **Deployment Environment** > *your_deployment_environment* > **Deferred Configuration** and click **Configuration Done**.

7. Log off of the administrative console, shut down the deployment manager, and then shut down all of the custom profiles.
8. Optional: Clean all applicable profile logs or save them in another directory. You may want to clean or move the logs as they will be appended with the last configuration. This can make it difficult to view the most current information.
9. Start the custom profiles, start the deployment manager, and then log in to the administrative console.
10. Start the deployment environment:
    a. In the administrative console, start the deployment environment by clicking **Servers** > **Server Types** > **Deployment Environments**. Select the check box next to the deployment environment and clicking **Start**.
    b. After 5 to 10 minutes (or longer, depending on the system), refresh the deployment environment page; the Status of the deployment environment changes to **started**.
11. Optional: Check the status of the following items:
    a. In the administrative console, select **Applications** > **Enterprise Applications** and check that the installed applications started successfully.
    b. Select **Resources** > **JDBC** > **Data sources** and test that the connection of every component that is not related to the message engine (that is, every component that does not include **ME** in the name) is successful.

Using Windows authentication when using the SQL Server database:

IBM Business Process Manager profiles may use Windows Authentication for SQL Server data sources. When using Windows Authentication, connections to the database will not use the authentication alias set on the data source for authenticating to the database. Instead, the Microsoft SQL Server client driver will use the current user credentials of which the server is running under when making a connection to a SQL Server database.

The following limitations and restrictions apply:

- Only the Microsoft SQL Server Driver supports Windows Authentication in this configuration.
- The profile must be running on Windows.
- The user that the profile is started under must be authorized to the SQL Server database in advance using the SQL Server management tools.
- If the SQL Server is remote to the Windows system where the profile is running, the profile must be started under a Windows Domain account that has been authorized to the SQL Server database.

1. Add the `.dll` files for the driver to the IBM Business Process Manager Installation. The `.dll` files can be obtained with a SQL Server driver from Microsoft. The `.dll` files are not shipped with BPM.
    a. Obtain the driver package from Microsoft.
    b. Locate the `sqljdbc_auth.dll` file and copy it to both the `was.install.root/java/lib` and `was.install.root/java/jre/bin` directories.

    Important: The `sqljdbc_auth.dll` file must be copied to both locations for the server to work correctly. You will see the following error if the `sqljdbc_auth.dll` file is not copied to the correct locations:

```
Caused by: com.microsoft.sqlserver.jdbc.SQLServerException: This driver is not configured for integrated authenticat
at com.microsoft.sqlserver.jdbc.SQLServerException.makeFromDriverError(SQLServerException.java:170)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.sendLogon(SQLServerConnection.java:2338)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.logon(SQLServerConnection.java:1929)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.access$000(SQLServerConnection.java:41)
at com.microsoft.sqlserver.jdbc.SQLServerConnection$LogonCommand.doExecute(SQLServerConnection.java:1917)
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.SQLServerConnection.connectHelper(SQLServerConnection.java:1061)
```

```
at com.microsoft.sqlserver.jdbc.SQLServerConnection.login(SQLServerConnection.java:833)
at com.microsoft.sqlserver.jdbc.SQLServerConnection.connect(SQLServerConnection.java:716)
at com.microsoft.sqlserver.jdbc.SQLServerDriver.connect(SQLServerDriver.java:841)
```

2. Configure a profile for Windows Authentication.
   a. Create a profile and specify SQL Server as the database type. Any values can be entered for the database user name and password values as these will be removed when converting to Windows Authentication.

      Important: For stand-alone profiles, you must specify a different username for each messaging engine as the user name will be used as the schema name for the messaging engines.
   b. Run the following command before starting the server:

      ```
      JACL

      $AdminTask setDatasourcesToWindowsAuthentication

      Jython

      AdminTask.setDatasourcesToWindowsAuthentication()
      ```

      This command updates the **integratedSecurity** property on all of the SQL Server data sources to a value of **true**. It will also modify the **url** element in the `98Database.xml` files to include the **integratedSecurity** property with a value of **true**.
3. Start the server.

Creating database design files by using the database design tool

Use the database design tool to create and generate a design of your database configuration. The design can be for a specific component or for an enterprise-level database configuration supporting the full functionality of IBM Business Process Manager.

Related concepts:

"Examples: Using a database design file with the manageprofiles command" on page 188
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

Creating a database design file for a stand-alone profile or deployment environment by using the database design tool:

You can use the database design tool to generate a design file for database tables that can be used by profile creation or when using the deployment environment wizard. The database design tool generates the design file from user-interactive input or from an existing design file.

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 (DBA) or solution architect. Alternatively, it might be a description of required parameters and properties.
- 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 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.

Before you run the database design tool, ensure that you have made the following decisions:

- The type of deployment environment in which the database will be used (stand-alone profile or network deployment environment) based on scalability and high-availability requirements.
- The location of database tables.
- Details about the database type, specifically, but not limited to, the following items:
  - Type of database (DB2, Oracle, DB2 for zOS, SQL Server)
  - Location of the JDBC driver on the system where the server profile will be created
  - User ID and password for authenticating to the database

Tip: Plan for database use when you review information about your planned usage of IBM Business Process Manager so that you make the necessary decisions on information needed by the database design tool.

This task describes how to use the database design tool to create a database design file for a stand-alone profile or deployment environment. The input for the database design tool is either user-interactive input or an existing design file. The available options change depending on your environment.

The **DbDesignGenerator** command has the following options.

```
-? , -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. Access the **DbDesignGenerator** command and run the file.

   You can find the **DbDesignGenerator** command in the following location:

   - Windows *install_root*\util\dbUtils

     For example, **C:\Program Files\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat**
   - Linux UNIX */install_root*/util/dbUtils

     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; for example:

```
[info] Please pick one of the following [database pattern(s)] :

(1)bpm.advanced.nd.topology
(2)bpm.advanced.standalone
(3)bpm.standard.standalone
(4)wesb.nd.topology
(5)wesb.standalone
```

3. To create a database design pattern for the stand-alone profile or deployment environment that you plan to configure, type the number for the appropriate option and press Enter. For a stand-alone profile, select options that include ".standalone;" for a deployment environment, 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 information similar to the following 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 value

[info] Please pick one of the following [database component(s)] :

(1)[CommonDB]   WBI_CommonDB : [master] [status = not complete]
(2)[BPCReporting]       WBI_BPCEventCollector :  [status = not complete]
(3)[BPC]        WBI_BPC :  [status = not complete]
(4)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = not complete]
(5)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(6)[BSpace]     WBI_BSPACE :  [status = not complete]
(7)[SibME]      WBI_BPC_ME :  [status = not complete]
(8)[SibME]      WBI_CEI_ME :  [status = not complete]
(9)[SibME]      WBI_SCA_APP_ME :  [status = not complete]
(10)[SibME]     WBI_SCA_SYS_ME :  [status = not complete]
(11)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = not complete]
(12)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = not complete]
(13)[save and exit]
```

4. Type the number for the appropriate option to configure the master database component, and press Enter. You can see the database components that can be configured for the previously selected environment. The database component listed as the master component lists **[master]** beside the name and must be configured first.

   For example, to configure the master component for the **(1)bpm.advanced.nd.topology** design pattern, type the number 1 to select option **(1)[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 ] CommonDB.WBI_CommonDB :  : DbType key is not set.

Edit this database component? (y/n) [default=y] :
```

5. To edit the database component and select the database type that you are configuring, type `y` and press Enter.

   After you choose to edit the database component, you see information similar to the following example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

6. Type the number that corresponds to the database type that you want to use for your environment, and press Enter. You obtain a set of prompts to specify the database properties. These prompts vary, depending on the database type that you plan to use.

   For example, type the number 1 to select **(1)DB2-distributed** as the database type. After you select this database type for configuration of the Common database, you see information 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=] :
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] :1
The user ID you use for administrative security[default=] :
The password for the name specified with the adminUserName parameter[default=] :1
Regular pagesize[default=32k] :
Regular TableSpace[default=WBISPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=WBITEMPSPACE] :
```

7. At each prompt, if a default value is listed, enter the appropriate value for your database configuration, or press Enter to accept the default value. The administrative security prompt (if present) refers to the user name and password for the WebSphere 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 :
```

8. 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-distributed** database type:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider # XA data source # DB2 Universal JDBC Driver Provider (XA)
(2)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. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider # XA data source # DB2 Universal JDBC Driver Provider (XA)** as the database provider, type the number 1 and press Enter. After you select this database provider, you see information 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 Universal JDBC 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, enter the appropriate value for your database configuration, or if a default value is listed, press Enter to accept the default value. If you are asked whether you want to create the database tables during configuration, specify **No** 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 value

[info] Please pick one of the following [database component(s)] :

(1)[CommonDB]   WBI_CommonDB : [master] [status = complete]
(2)[BPCReporting]       WBI_BPCEventCollector :  [status = complete]
(3)[BPC]        WBI_BPC :  [status = complete]
(4)[BPM_PerformanceDW]  BPM_PerformanceDW :  [status = complete]
(5)[BPM_ProcessServer]  BPM_ProcessServer :  [status = not complete]
(6)[BSpace]     WBI_BSPACE :  [status = complete]
(7)[SibME]      WBI_BPC_ME :  [status = complete]
(8)[SibME]      WBI_CEI_ME :  [status = complete]
(9)[SibME]      WBI_SCA_APP_ME :  [status = complete]
(10)[SibME]     WBI_SCA_SYS_ME :  [status = complete]
(11)[SibMe]     BPM_PerformanceDW_ME : [parent = BPM_PerformanceDW] [status = complete]
(12)[SibMe]     BPM_ProcessServer_ME : [parent = BPM_ProcessServer] [status = complete]
(13)[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]**.

9. Optional: 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: If your database type is 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. 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.
   - 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.

- 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.

10. When all database components for your database pattern have been configured and are listed as **[status = complete]** in the database design tool, enter the appropriate number to select **[save and exit]**, and press Enter. For example, after you finish configuring the **(1)bpm.advanced.nd.topology** database pattern, type the number 13 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] :
    ```

11. Enter the location where you want to save the database design file, and press Enter. 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] :
    ```

12. Enter the file name for the generated database design file, and press Enter. After you enter the file name at the prompt, you see information similar to the following example:

    ```
    generate database scripts? (y/n) [default=y] :
    ```

13. 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. Specify the full path of the output directory that will contain the scripts for that database component, and press Enter.

    After you type `y` and press Enter to indicate that you want to generate database scripts, you see information similar to the following example for each database component:

    ```
    Please enter the output directory for WBI_CommonDB [default=DB2-distributed-CommonDB] :
    ```

    After you type the location for the output directory and press Enter, you see information similar to the following example after each entry:

    ```
    [info] The script(s) have been generated in C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-CommonDB
    ```

After you enter the values for each prompt, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

A database design file and, optionally, database scripts are created at the locations that you specified.

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.

Related concepts:

"Examples: Using a database design file with the manageprofiles command" on page 188
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

Creating a database design file for a specific component by using the database design tool:

You can use the database design tool to generate a design file for database tables required by specific components. The database design tool generates the design file from user-interactive input or from an existing design file.

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 (DBA) or solution architect. Alternatively, it might be a description of required parameters and properties.
- 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 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.

Before you run the database design tool, ensure that you have made following decisions:

- The type of deployment environment in which the database will be used (stand-alone profile or network deployment environment) based on scalability and high-availability requirements.
- The location of database tables.
- Details about the database type, specifically, but not limited to, the following items:
  - Type of database (DB2, Oracle, DB2 for zOS, SQL Server)
  - Location of the JDBC driver on the system where the server profile will be created
  - User ID and password for authenticating to the database

Tip: Plan for database use when you review information about your planned usage of IBM Business Process Manager so that you make the necessary decisions on information needed by the database design tool.

This task describes how to use the database design tool to create a database design file for a specific component. The input for the database design tool is either user-interactive input or an existing design file. The available options change depending on your environment.

The **DbDesignGenerator** command has the following options.

```
-? , -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 step 1 to step 9 on page 246 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. For more information about the considerations for creating messaging engine data stores in a DB2 for z/OS subsystem, see Creating the messaging engine data stores.

1. Access the **DbDesignGenerator** command and run the file.

   You can find the **DbDesignGenerator** command in the following location:

   - Windows *install_root*\util\dbUtils

     For example, **C:\Program Files\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat**
   - Linux UNIX */install_root*/util/dbUtils

     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]
   ```

2. To select the option **(2)Create a database design for a single component**, type the number 2 and press Enter.

   You are prompted for a component; for 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)commondb
   (8)sca
   (9)sibme
   ```

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 see information similar to the following example:

```
[info] Please pick one of the following [database type(s)] :

(1)DB2-distributed
(2)DB2-zOS
(3)Oracle
(4)SQL Server
```

4. Type the number that corresponds to the database type that you want to use for your environment, and press Enter. You obtain a set of prompts to specify the database properties. The prompts vary, depending on the database type that you plan to use.

   For example, type the number 1 to select **(1)DB2-distributed** as the database type. After you select this database type for configuration of the BPM Process Server database, you see information 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] :1
The user ID you use for administrative security[default=] :
The password for the name specified with the adminUserName parameter[default=] :1
Regular pagesize[default=32k] :
Regular TableSpace[default=TWPSSPACE] :
Temporary pagesize[default=32k] :
Temporary TableSpace[default=TWPSTEMPSPACE] :
```

5. At each prompt, enter the appropriate value for your database configuration, or if a default value is listed, press Enter to accept the default value. The administrative security prompt (if present) refers to the user name and password for the WebSphere administrative console.

   After you complete the last prompt, 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 :
```

6. 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 decided to configure the data source for a database after you selected **DB2-distributed** as your database type, you see information similar to the following example:

```
[info] Please pick one of the following [database provider(s)] :

(1)DB2 Universal JDBC Driver Provider # XA data source # DB2 Universal JDBC Driver Provider (XA)
(2)DB2 Using IBM JCC Driver # XA data source # DB2 Using IBM JCC Driver (XA)
```

   a. Type the number for the appropriate option to select the database provider for the data source, and press Enter. For example, to select the option for **(1)DB2 Universal JDBC Driver Provider # XA data source # DB2 Universal JDBC Driver Provider (XA)** as the database provider, type the number 1 and press Enter. After you select this database provider for the data source, you see information 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 Universal JDBC 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, if a default value is listed, press Enter to accept the default, or enter the appropriate value for your configuration.

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] :
```

7. Enter the location where you want to save the database design file, and press Enter. After you enter the location, you see information similar to the following example:

```
Please enter the output filename [default=BPM_ProcessServer_DB2-distributed.properties] :
```

8. Enter the file name for the generated database design file and press Enter. After you enter the file name, you see information similar to the following example:

```
generate database scripts? (y/n) [default=y] :
```

9. Optional: If you also want to generate database scripts based on the information provided to the database design tool, perform the following steps:

a. Type `y` and press Enter.

After you type `y` and press Enter to indicate that you want to generate database scripts, you see information similar to the following example:

```
Please enter the output directory for BPM_ProcessServer [default=DB2-distributed-BPM_ProcessServer] :
```

b. Specify the full path of the output directory that will contain the scripts for that database component, and press Enter.

After you enter the location for the output directory, you see information similar to the following example:

```
[info] The script(s) have been generated in C:\IBM\WebSphere\AppServer\util\dbUtils\DB2-distributed-BPM_ProcessServe
```

After you enter the values for each prompt, you see information similar to the following example:

```
[info] thanks, quitting now ...
```

A database design file is created and, optionally, database scripts are created at the location 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 concepts:

"Examples: Using a database design file with the manageprofiles command" on page 188
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

Database design tool examples:

You can use the database design tool to generate a design file for different types of databases, including DB2, Oracle, and SQL Server.

DB2

If you select **bpm.standard.standalone** or **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 : [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 :5

[status] bpm.standard.standalone is complete with 0 remaining item(s):
```

If you select **wesb.standard** or **wesb.nd.topology**, after you configure the master component, all database components are listed as complete.

```
[info] Please pick one of the following [database component(s)] :

(1)[CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BSpace] WBI_BSPACE :  [status = complete]
(3)[SibMe] WBI_CEI_ME :  [status = complete]
(4)[SibMe] WBI_SCA_APP_ME :  [status = complete]
(5)[SibMe] WBI_SCA_SYS_ME :  [status = complete]
(6)[save and exit]

Please enter the number for the database component :6

[status] wesb.standalone is complete with 0 remaining item(s):
```

Oracle

If you select **bpm.advanced.standalone** or **bpm.advanced.nd.topology**, after you configure the **CommonDB**, you must manually configure the **BPM_ProcessServer** and **BPM_PerformanceDW** components for the required database authentication.

```
[info] Please pick one of the following [database component(s)] :

(1)[CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPCReporting] WBI_BPCEventCollector :  [status = complete]
(3)[BPC] WBI_BPC :  [status = complete]
(4)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = not complete]
(5)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(6)[BSpace] WBI_BSPACE :  [status = complete]
(7)[SibME] WBI_BPC_ME :  [status = complete]
(8)[SibME] WBI_CEI_ME :  [status = complete]
(9)[SibME] WBI_SCA_APP_ME :  [status = complete]
(10)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(11)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(12)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(13)[save and exit]

Please enter the number for the database component :4
--------------------------------------------------------------------------------

[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)[CommonDB] WBI_CommonDB : [master] [status = complete]
(2)[BPCReporting] WBI_BPCEventCollector :  [status = complete]
```

```
(3)[BPC] WBI_BPC :  [status = complete]
(4)[BPM_PerformanceDW] BPM_PerformanceDW :  [status = complete]
(5)[BPM_ProcessServer] BPM_ProcessServer :  [status = not complete]
(6)[BSpace] WBI_BSPACE :  [status = complete]
(7)[SibME] WBI_BPC_ME :  [status = complete]
(8)[SibME] WBI_CEI_ME :  [status = complete]
(9)[SibME] WBI_SCA_APP_ME :  [status = complete]
(10)[SibME] WBI_SCA_SYS_ME :  [status = complete]
(11)[SibMe] BPM_PerformanceDW_ME :  [status = complete]
(12)[SibMe] BPM_ProcessServer_ME :  [status = complete]
(13)[save and exit]

Please enter the number for the database component :5
-------------------------------------------------------------------------------

[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
[ 3 ] BPM_ProcessServer.BPM_ProcessServer : databaseObjects : required property 'adminPassword' for SECURITY_ADMIN_PASSWORD

Edit this database component? (y/n) [default=y] :
```

SQL Server

If you select **bpm.standard.standalone** or **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] :
```

Related concepts:

"Examples: Using a database design file with the manageprofiles command" on page 188
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

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.

Related concepts:

"Examples: Using a database design file with the manageprofiles command" on page 188
If you create a database design file using the database design tool, the generated file contains the values for the manageprofiles command.

Loading the database with system information

The profile creation process collects all database parameters related to the profile that you are creating and writes this configuration data to an XML file. You must run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

This command retrieves the database information from the `98database.xml` file to make a connection to the 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. For more information, see "Encrypting passwords" on page 319.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the 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.

- 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.
- 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 stand-alone or deployment manager profile directory. For example:

```
C:/<install_root>/profiles/ProcCtr01/bin
<install_root>\profiles\Dmgr01\bin
```

Run the bootstrap utility using the following syntax:

- Linux UNIX **bootstrapProcessServerData.sh -profilePath** *profile_path* **-dbType** *db_type* **-dbJDBCClasspath** *classpath* **[-nodeName** *node_name* **-serverName** *server_name***]**
- Windows **bootstrapProcessServerData.bat -profilePath** *profile_path* **-dbType** *db_type* **-dbJDBCClasspath** *classpath* **[-nodeName** *node_name* **-serverName** *server_name***]**

where:

- **-profilePath** is the location where the profile was created. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-dbType** is the database type, such as DB2_UNIVERSAL ORACLE, or MSSQLSERVER_MICROSOFT. See Supported database types for the appropriate value. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-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. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-nodeName** is the name of the node. This parameter is required with **-serverName** for an ND environment. Do not specify for stand-alone.
- **-serverName** is the name of the server. This parameter is required with **-nodeName** for an ND environment. Do not specify for stand-alone.
- **-clusterName** (for 7.5.0.1 and later only) is the name of the application target cluster. For an ND environment, you can specify this parameter instead of the **-nodeName** and **-serverName** parameters.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center.

Important: For SQL Server, 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 a server that is part of an ND environment:

```
bootstrapProcessServerData -profilePath c:/BPM/profiles/Dmgr01
             -dbType DB2_UNIVERSAL -dbJDBCClasspath c:/BPM/db2/java
             -nodeName node01 -serverName server1
```

Bootstrap data onto a stand-alone profile server:

```
bootstrapProcessServerData -profilePath "c:/Program Files/IBM/BPM/
  profiles/AppSrv01" -dbType DB2_UNIVERSAL -dbJDBCClasspath "C:/Program Files/BPM/db2/java"
```

You can start the stand-alone server or first cluster member.

Creating and configuring the DB2 for z/OS database

If your deployment environment relies on a remote DB2 for z/OS database, use the procedures and reference information in this section to help you configure the database and create the database tables.

Create the DB2 for z/OS databases and storage groups using SPUFI, DSNTEP2, or DButility.sh:

The profile creation process generates Data Definition Language (DDL) scripts that you can use to create the DB2 database objects for the configuration. There are several tools that you can use to run the DDL scripts to create the database objects for your configuration. You can also use tools such as SPUFI or DSNTEP2 to create and populate the database.

Before you create the DB2 databases and storage groups, you must complete the following tasks:

- Create the server configuration. See *Roadmap: Installing and configuring IBM BPM Standard Roadmap: Installing and configuring IBM BPM Express* for information about how to create a configuration for a stand-alone server and network deployment environment.
- Make sure that the DDL has been generated for all the components you want to configure the database with. You can generate the DDL by completing the following tasks:
  - Designing the database configuration

    For a network-deployment environment, using the database design tool (DDT) is recommended.

    For a stand-alone server environment, the database panels of the Profile Management Tool are usually enough to for stand-alone profiles, although you can use the DDT.

    The output of the DDT is a design document (xml file) of the database configuration and, optionally, the SQL scripts to create the database tables.
  - Prepare to use the DDL files
    - You might need to copy the DDL files from the IBM Business Process Manager file system into a partitioned dataset (PDS). You can use a tool such as **Ddl2Pds.sh** to copy the files.
    - There is no restriction on the naming or organization conventions that apply to the database objects.
    - The CEI DDL and the SIB DDL files need to be customized before they can be run.

      Note: You can use the sample SIB DDL provided for single database configuration.

You can run the DDL scripts using **DBUtility.sh**, SPUFI, or DSNTEP2. 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 objects, particularly in a production environment. The tools can produce an audit trail of the DB2 database commands that have been issued.

If you want to create the database objects across multiple databases but still want to work in the USS environment, you can run the DDL scripts using the **DBUtility.sh** script several times specifying different components for each database name.

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.

1. Create the databases and storage groups.
2. Populate the databases using the generated DDL scripts. The location of the generated DDL scripts depends on how they were generated.

   You can find the **DbDesignGenerator** command in the following location:

   - Windows *install_root*\util\dbUtils

For example, **C:\Program Files\IBM\WebSphere\AppServer\util\dbUtils> DbDesignGenerator.bat**

- Linux UNIX */install_root*/util/dbUtils

  For example, **/opt/IBM/WebSphere/AppServer/util/dbUtils> DbDesignGenerator.sh**

For DDL generated by other means, the DDL is in the directories under the following locations:

- WAS_HOME/profiles/default/dbScripts for a stand-alone configuration.
- WAS_HOME/profiles/default/dbScripts for a network deployment configuration.

Where WAS_HOME is the top directory of your WebSphere Application Server configuration.

3. If you are running the DDL from a USS environment, assign the appropriate permissions to the copies of the files; for example:

   ```
   chmod 755 createTable_AppScheduler.sql
   ```

4. Edit the values in the file to suit your needs. The database names, storage groups and schema names are customized by the product configuration process. Check the values in each file to make sure they match the values that you entered in the response file that provided input to the configuration script and are suitable for your database.

   Note: The files can be provided in ASCII format. If the tools that you use to view, edit, and run the scripts require the scripts to be in EBCDIC format, use the **iconv** command to convert the file to EBCDIC. For example:

   ```
   iconv –t IBM-1047 –f ISO8859-1 createTable_AppScheduler.sql >
   createTable_AppScheduler_EBCDIC.sql
   ```

   If you have converted the file from ASCII format to EBCDIC but need to run the file in ASCII format, use **iconv** to convert the file back to ASCII. For example:

   ```
   iconv -t ISO8859-1 -f IBM-1047 createTable_AppScheduler_EBCDIC.sql >
   createTable_AppScheduler.sql
   ```

5. Optional: If you want to create database objects outside of the USS environment, for example, by using SPUFI or DSNTEP2, you can use the supplied Ddl2Pds.sh script to copy the customized DDL from USS to a partitioned dataset. For example, to copy the DDL for the IBM Business Process Manager Common component, enter a command similar to the following from the /zos.config/samples directory:

```
./Ddl2Pds.sh -Source
/WebSphere/V7S05Z1/AppServer/profiles/default/dbscripts/CommonDB/DB2zOS/S5CELLDB -PDS HEALDR.DDL2PDS.TEST -Component
WPS
```

6. Run the customized scripts 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.

   DBUtility.sh
   DBUtility.sh is a utility that is supplied with IBM Business Process Manager for z/OS and installed in the installation file system. For example: /bin/DBUtility.sh. You can use this utility to create the database and storage groups, as well as to run the SQL to create the database tables later, from USS. **DBUtility.sh** uses ASCII input. Here is an example of the syntax used with the **DBUtility.sh** script:

```
   /WebSphere/V7S03Z1/AppServer/profiles/default/bin/DBUtility.sh
createTable
-DdbStorageGroup=S3DBSTO
-DdbSchemaName=S3CELL
-DsqlScriptName.default=createTable_AppScheduler.sql
-DsqlScriptPath.default=/WebSphere/V7S03Z1/AppServer/profiles/default/dbscripts/CommonDB/DB2zOS/S3CELLDB
/createTable_AppScheduler.sql
-DdbType=DB2UDBOS390
-DdbName=S3CELLDB
-DprofileName=default
-DprofilePath=/WebSphere/V7S03Z1/AppServer/profiles/default
-DdbJDBCProperties=/wps/dbscripts/db2v9
```

```
-DdbConnectionLocation=DSN810PP
-DdbJDBCClasspath=/usr/lpp/db2910/db2910/jcc/classes
-DdbUserId=wsadmin
-DdbPassword=password
-DdbDelayConfig=false
-DdbCreateNew=false
-DdbHostName=winmvsp1.hursley.ibm.com
-DdbServerPort=448
>/tmp/output.out 2>>/tmp/error.out
```

7. Verify that the database, storage group, and tables have been created successfully with no errors by inspecting the output.
8. If you are creating a stand-alone configuration, verify the IBM Business Process Manager installation:
   a. Start the server.
   b. Open the administrative console by opening a browser window and typing the URL of the server that you want to view. For example:

      http://*server_name.domain_name:port_number*/admin
   c. Log in to the administrative console.
   d. Verify that you can see IBM Business Process Manager for z/OS on the Welcome page. You can click it for more information.
   e. Navigate around the console to check that the server has a status of started. Also check that all the applications are started, and that the messaging engines are started. If anything has failed to start, you can look in the server job logs for "SEVERE" or "WARNING" messages that provide details about the failure.

The DB2 databases and storage groups are created and populated with the necessary database objects, such as tables and indexes.

If you are creating a stand-alone configuration, you can now deploy applications to the server.

If you are creating a network deployment configuration, you must create one or more empty nodes to add to the deployment manager cell. See Configuring the software after a Custom installation to create one Deployment manager and Custom profiles.

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 sub-set of DB2 privileges to the JCA authentication alias user ID.

The DDL for the Service Integration Bus already contains 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 any GRANT statements.

Use a schema name that is not the same as the JCA authentication alias to prevent the alias user ID having the power to drop tables. (The power 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 the IBM Business Process Manager to function while not allowing the alias user ID to have DROP capability, create some GRANT statements by copying the DDL and editing it to construct GRANT commands from the CREATE commands. Create GRANT commands like:

```
GRANT ALL PRIVILEGES ON TABLE
cell.tablename TO userid/sqlid
```

Where *userid/sqlid* is the JCA authentication alias user ID.

Setting the correct schema name for the SIBs:

To ensure the SIB messaging engines can access the appropriate DB2 tables, set the correct schema name for the SIB messaging tables to use to access the DB2 tables.

Start the server (stand-alone server or deployment manager).

Use the administrative console to change the schema names.

1. Log in to the administrative console.
2. Navigate to **Service Integration** > **Buses**.
3. For each bus:
   a. Select **Messaging engines**, 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 tables for this SIB.
   d. Click **Apply**.
   e. Save your configuration changes.
4. Log out of the administrative console.
5. Stop, then restart the server.
6. Look in the output of the Adjunct job log for successful SIB messaging engine startup messages. For example:

```
BBOO0222I: "BusName"
CWSID0016I: Messaging engine MessagingEngineName is in state Started.
```

The schema name used by the SIB messaging tables to access the DB2 tables is changed.

Verifying the installation with DB2 for z/OS:

When verifying an installation with a DB2 for z/OS database, it is important to check the Servant and Adjunct job logs to see whether there are any error messages that might indicate problems accessing the data store.

1. Ask your DB2 system administrator to check the authorities 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.
2. Ask your DB2 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 to people to use. For example, correcting storage groups and VCATs is not easy after the tables and indexes have been used.
3. Log in to the administrative console.
4. In the administrative console, check that all the applications are started, the messaging engines are started, and all the data sources can be accessed using the **Test Connection** option. If any application has failed to start, look in the Servant and Adjunct job logs for SEVERE or WARNING messages that provide detail about the failure.
   - If you see DB2 errors such as SQLCODE -204, in the administrative console, set the correct schema name or currentSQLID value in the custom properties section of the data sources. If the schema name is not the same as the user ID in the JCA authentication aliases, the SQL requests try to find tables qualified by the user ID in the JCA authentication alias.
   - If you see DB2 deadlock errors such as SQLCODE -913 Reason Code 00C90088, set the RRULOCK DB2 parameter to YES to prevent tablespace locks on IBM Business Process Manager tables.

If all the messaging engines have initialized correctly, and you do not see any other errors related to opening JDBC connections, you can continue to customize your configuration of IBM Business Process Manager.

Modifying the transaction log options for a DB2 database

When you configure DB2 for use with IBM Business Process Manager, you must modify the transaction log options.

1. Start a DB2 command line processor.
2. Run the following commands:

```
CONNECT TO [DB_name]
UPDATE DB CFG FOR DB_name USING LOGFILSIZ 4096 IMMEDIATE
UPDATE DB CFG FOR DB_name USING LOGSECOND 64 IMMEDIATE
CONNECT RESET
```

3. Stop and restart DB2.

Configuring a network deployment environment

After you have finished installation, you can build a network deployment configuration.

Creating a network deployment environment

You can create a network deployment environment by using either the Deployment Environment wizard or the administrative console.

The information in this section assumes that you have run the installer to perform a Custom installation, and have created the deployment manager and custom profiles.

Creating a standardized network deployment configuration:

After performing a Custom installation and creating the deployment manager and custom (managed node) profiles, you can create a standardized network deployment configuration.

The information in this section describes how to use the Deployment Environment wizard to create a *standardized* network deployment configuration. A standardized network deployment environment is a configuration created from the topology pattern templates packaged with the software.

The information in this section assumes that you have run the installer and have performed a Custom installation and that you have created the deployment manager and custom (managed node) profiles.

For information about using wsadmin to create a network deployment configuration, see *Creating deployment environments using the command line*.

Related concepts:

"Overview: Deployment environment topologies and patterns" on page 24
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 41
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Creating deployment environments using the command line" on page 272
You can use wsadmin to create a Process Server and Process Center deployment environment. The **createDeploymentEnvDef** and **generateDeploymentEnv** provide a command-line equivalent to creating the deployment environment using the deployment environment wizard.

Creating the Process Server deployment environment using a pattern:

After determining the pattern on which to base your network deployment configuration, use the Deployment Environment Configuration wizard to create the IBM BPM Standard Process Server deployment environment that is based on the pattern.

Required security role for this task: When security and role-based authorization are enabled, you must log in to the administrative console as an administrator or configurator to perform this task.

You should have planned the patterns and features that you want to configure. For more information, see Planning a network deployment environment.

It is assumed that you have installed the product and that you have created the deployment manager profile and the associated nodes.

Additionally, one of the steps in the Deployment Environment Configuration wizard includes importing a database design document. The database design document defines the database configuration for the selected deployment environment features. IBM Business Process Manager includes a response-driven database design tool (DDT) that creates a database design document based on user inputs. In addition to creating the design document, the DDT provides an option to create the database tables as well. Typically, the person running the DDT would choose to create the database tables at that point. The document can then be used by the IBM Business Process Manager deployment environment wizard to configure the databases used in the deployment environment. For more information about the DDT and database configuration in general, see Configuring databases.

This task describes the procedure for creating a standardized deployment environment that is based on a specific pattern and uses the Deployment Environment Configuration wizard.

Note: If you make an error while you are working in the wizard, you can go back by clicking **Back**.

1. From the administrative console, go to the Deployment Environments page. For example, click **Servers** > **Deployment Environments**
2. Launch the Deployment Environment Configuration wizard by clicking **New** on the Deployment Environments page.
   a. The **Create a deployment environment based on a pattern** option is selected. **Create a deployment environment based on a pattern** is the system default and it is the option described in this topic.

      Deployment environment patterns capture commonly used business integration topologies. A pattern provides you with a template for the deployment environment that you are creating.

      Note: Patterns have a direct relationship to the products supported by the configured deployment manager. IBM Business Process Manager supports a specific set of patterns, with the

Remote messaging and remote support pattern being the system default. If your deployment manager supports other products in addition to IBM Business Process Manager, additional patterns may apply. Consult product-specific documentation for information on patterns as they apply to the products.

For information on the types of patterns provided with IBM Business Process Manager, see Topology types and deployment environment patterns.

b. Enter a unique name for the deployment environment in the **Deployment environment name** field.

c. Optional: To view all of the configuration steps in the wizard, select **Detailed: Show all steps**.

If you choose **Fast path: Show only needed steps** the wizard displays only those pages that **do not** have assigned default values. Choose **Fast path: Show only needed steps** only if you are agreeable to accepting the system-provided default values for the deployment environment configuration.

This topic assumes that you have chosen **Detailed: Show all steps**

d. Click **Next** to display the Deployment Environment Features page.

3. On the Deployment Environment Features page, select the feature for the deployment environment and click **Next** to either view a list of compatible features, or to view a list of deployment environment patterns. Features represent the runtime processing capabilities of your deployment environment.

The list of available features on the Deployment Environment Features page is based on the deployment manager profile. If your deployment manager profile has been augmented to include other products alongside IBM Business Process Manager (for example, IBM Business Monitor , then the Deployment Environment Features page also lists these features.

If you have installed and configured a profile for IBM Business Process Manager, then the Deployment Environment Features page includes the following details:

- For IBM Business Process Manager Standard:
  - **BPMSPS**, for an IBM BPM Standard, Process Server deployment manager profile, which provides a Process Server deployment environment that supports business processes, human tasks, and business rules.
  - **BPMSPC**, for an IBM BPM Standard, Process Center deployment manager profile, which provides a Process Center deployment environment that supports business processes, human tasks, and business rules.
- For IBM Business Process Manager Advanced:
  - **WESB**, for WebSphere Enterprise Service Bus, which provides a deployment environment that supports mediations.
  - **BPMAPS**, for an IBM BPM Advanced, Process Server deployment manager profile, which provides a Process Server deployment environment that supports mediations, business processes, human tasks, Business Space functions, and business rules.
  - **BPMAPC**, for an IBM BPM Advanced, Process Center deployment manager profile, which provides a Process Center deployment environment that supports mediations, business processes, human tasks, Business Space functions and business rules.

The default value for the deployment environment feature matches the runtime capabilities of your deployment manager.

4. On the Select compatible deployment environment features page, select additional features as necessary and click **Next** to view the list of patterns associated with your primary and ancillary feature selections.

Note: The Select compatible deployment environment features page is displayed only if the deployment manager has been augmented with other business process management (BPM) features, such as IBM Business Monitor.

For an understanding of the relationship of features and compatible features, see the information on deployment environments in the Planning section.

5. On the Select the deployment environment pattern page, select the pattern for the selected deployment environment, then click **Next** to display the Select Nodes page.

   The list of patterns that display on the Deployment Environment Patterns page is dynamic. This list is activated by, and dependent on, the following environment conditions and configuration decisions:

   - The platform on which you have installed the software
   - The selections that you have made on the Select the deployment environment feature page and the Select compatible deployment environment features page.

   For a detailed description of the relationship of patterns to features, see Topology patterns and supported BPM product features

6. Optional: On the Select Nodes page, select the nodes to be included in the deployment environment then click **Next** to display the Clusters page.

   Select nodes that have the required capabilities for the environment you selected in step 3 on page 257. For example, if you selected **BPMSPC** as your Deployment Environment type, the nodes selected should address the capabilities of that environment type.

   Select at least one node for the deployment environment. For high-availability and failover environments, select at least two nodes. For scalability, select all nodes.

   To include a node, select the check box next to the node name. Use **Node Mapping** to map the selected node to another node name.

7. Optional: On the Clusters page, assign the required number of cluster members on each node for each cluster *type* (Application Deployment Target, Messaging Infrastructure and Supporting Infrastructure) of the deployment environment.

   By default one cluster member is assigned on each node for each function. You change the number by replacing the number in each column. If you are unfamiliar with the different cluster roles and functions provided by each type of cluster, see "Topology types and deployment environment patterns."

   A 0 (zero) value for a node means that the node does not contribute to the selected function, based on features that you have selected.

   After assigning cluster members, you can click **Next** to display the Cluster naming pages for each cluster type of the deployment environment. The Cluster naming sub-steps that display will vary depending on the deployment environment pattern selected.

   The system generates default values for cluster names and cluster member names.

   If you do not want to customize cluster names or cluster member names, you can use the wizard navigation pane to go directly to the REST Services page in a following step.

   Each substep page is structured in the same fashion, and is described in Customize the cluster names and cluster member names.

   a. Optional: Customize the cluster names and cluster member names.

      Use the Cluster Naming page to customize cluster names or cluster member names for the cluster type. There is one substep page for each cluster *type* in the pattern that you have selected. For example, if you selected a **Remote messaging and remote support pattern**, there are 3 sub-steps, one for each type of cluster (Application Deployment Target, Messaging Infrastructure and Supporting Infrastructure) in that pattern.

      The information on each substep page is as follows:

      Cluster

      A read-only field specifying the functional role of the cluster.

      The value varies depending on the cluster type, as follows:

      - Application Deployment Target
      - Messaging Infrastructure

- Supporting Infrastructure
- Web Application Infrastructure

For information on the functional role provided by each cluster type, see Topology types and deployment environment patterns

Cluster Name
Contains the system-generated default value for the cluster name.

The default values are based on a naming convention of **<Deployment Environment Name>.<Cluster type name>**, where**cluster type name** is one of the following values:

- AppTarget
  For clusters performing the role of application deployment target
- Messaging
  For clusters performing the role of messaging infrastructure
- Support
  For clusters performing the role of supporting infrastructure
- Web
  For clusters performing the role of supporting web applications.

  Note: This cluster type name applies for BPM configurations in which WebSphere Business Monitor is the primary feature / product.

Cluster Member Name
Accept the system-generated default value or specify a name of your choosing.

The default value for the cluster member name is based on the following naming convention: **<cluster name>.<node name>.<node number sequence>** .

The number of cluster member names that display in the table match the number of cluster members that you entered for the cluster type column and node row on the Clusters page. See the preceding step for the Clusters page.

8. Optional: On the Import the database configuration page, click **Browse** to go the database design document or enter the path to the database design document and then click **Next** to go to the Data sources page. The design document can be based on a database design that you created using the database design tool (DDT), or it can be the supplied design document based on the pattern and feature that you have selected.

   Note: The database design document that you import for the deployment environment does not change the commonDB created at Profile Creation time.
9. Required: On the Database page, configure the database parameters for data sources of the deployment environment, then click **Next** to go to the Security page.

   Note: The database specified in this panel must already exist. Deployment environment configuration never creates a new database.

   For DB2 and SQL Server databases, IBM Process Server and IBM Performance Data Warehouse should not use the same database as the rest of the components. However, if you are using an Oracle database, IBM Process Server and IBM Performance Data Warehouse can use the same database instance, but should use different users.

   On this page, define the database information for the components that are included in this deployment environment. Where possible, the wizard supplies default information for the parameters, but change those values to match the values that you defined when you planned the environment.

   Note: If you imported a database design document, the information on the Database page reflects the data source configuration as it exists in the database design document that you imported.

Whether or not this step displays for a fast path deployment environment configuration is conditional. This step displays for a fast path deployment environment configuration if more than one database has been defined.

This step always displays if you are using DB2 for z/OS or an Oracle database provider.

Note: The default schema names that are displayed on this page might conflict with your site naming convention or might conflict with existing schemas. As such, it is likely that you will need to change the schema name. Pay close attention to the values specified to avoid potential naming conflicts.

Oracle database considerations:

- Make sure that the username/schema name are exactly the same. The user specified should exist in the database before generating the environment.

SQL Server considerations:

- Make sure that the username/schema exist before the configuration is done. The schema value should be the default schema for the user chosen.

For a production environment, you should set the same values for **User name** and **Schema name** and you should deselect **Create tables**. For a production environment, create the required schemas manually and use the SQL files generated to create the tables.

Note: You cannot select **Create tables** for Business Space (the option is unavailable for selection). The SQL files for Business Space need to be run manually. For information on running the SQL manually for Business Space, see *Configuring Business Space database tables*.

You can edit all key parameters, such as the database name, whether or not to create tables, the data source runtime user name, and the password for the deployment environment.

You can select which database to use for the given component.

DB2 for z/OS: The **Create tables** option cannot be used if you are using a DB2 for z/OS database provider.

Steps that cannot be completed through the Deployment Environment Configuration wizard, and which need to be completed manually, are listed on the Deferred Configuration page.

10. On the Process Server page, set the values for the Process Server configuration as follows:
    - **Environment name**

      Enter an environment name of the Process Server.

      An environment name is the name by which this server or cluster will be known to a Process Center user.
    - **Environment type**

      From the pull-down list, select the Environment type for the Process Server you are configuring.

      The Environment type refers to how the Process Server is used. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Server you are configuring, will be accessed and used to review content and new functionality.

      There are three types of environments available for selection:

      Production
      Select **Production** if the server will serve in a production capacity.

      Stage Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.

      Test Select **Test** if the server you are configuring will be used as a testing environment.
    - **Use server offline**

Indicate whether the server you are configuring is an offline server.

An offline server is a Process Server that is not connected to the Process Center.

Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

- **Protocol**

  Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name or virtual host in a load-balanced environment**

  Type the host or virtual host that this Process Server needs 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**

  Type 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.

11. On the Security page, configure the authentication aliases WebSphere uses when accessing secure components

    You can change the authentication alias user name and password on this page. These aliases are used to access secure components but do not provide access to data sources

12. Optional: On the System web applications page, set the context root for component-based web applications in your deployment environment or accept the system-provided default values for the context roots. Then click **Next** to display the Summary page.

    The System web applications page displays for deployment environments using the Remote messaging, support and web applications pattern.

    The table contains the following control information.

    `Web Application`
    The name of the Web application.

    Some of the components that are part of the deployment environment you are creating contain web applications. The **Web application** column can include the following components:

    - Business Process Choreographer Explorer
    - Business Rules Manager

    `Context Root`
    The current value of the context root for the component.

    By default, the default context root for the web application applies. You can change the context roots by typing over the value in the **Context Root** field.

    Note: The Business Space context root is read only and cannot be edited.

13. Verify that the information on the Summary page is correct and perform the following substeps:
    a. Optional: If you do not want to save the deployment environment configuration, you can click **Cancel**.
    b. Optional: If you want to exit without generating the configuration, click **Finish**.

       To get back to the panel (if you exited without completing), perform the following from the administrative console: **Deployment Environments** > *name of deployment environment* > **Generate Environment** .
    c. To save the deployment environment configuration, click **Finish** and from within the Messages window, click **Save**.

Clicking **Save** saves the deployment environment to the master configuration. If an error occurs during deployment environment generation, the configuration settings are saved to the master configuration.

d. Check for deferred configuration steps

   Select **Deployment Environments** > *name of deployment environment* > **Deferred Configuration**

   You need to address any existing deferred configuration steps before starting the Deployment Environment.

e. If you are satisfied with the deployment environment configuration and you have addressed any of the deferred configuration steps, click **Finish and Generate Environment** to save and complete the configuration of the deployment environment.

When the configuration completes, you can examine the configuration files to view the changes.

Either save the changes to the master configuration or discard them.

Related concepts:

"Overview: Deployment environment topologies and patterns" on page 24
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 41
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Completing the database configuration" on page 278
Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

"Loading the database with system information" on page 249
The profile creation process collects all database parameters related to the profile that you are creating and writes this configuration data to an XML file. You must run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating the Process Center deployment environment using a pattern:

After determining the pattern on which to base your network deployment configuration, use the Deployment Environment Configuration wizard to create the IBM® Process Center deployment environment that is based on the pattern.

On the administrative console of the deployment manager navigate to **Servers > Deployment Environments**.

Required security role for this task: When security and role-based authorization are enabled, you must log in to the administrative console as an administrator or configurator to perform this task.

The procedure for creating deployment environments using the deployment environment wizard includes steps for selecting patterns and features, and therefore it is assumed that you have read and understood the information on patterns and features documented in the planning section.

It is assumed that you have installed the product and that you have created the deployment manager profile and the associated nodes.

Additionally, one of the steps in the Deployment Environment Configuration wizard includes importing a database design document. The database design document defines the database configuration for the selected deployment environment features. IBM Business Process Manager includes a response-driven database design tool (DDT) that creates a database design document based on user inputs. The document then can be used by the DDT to create the database scripts and by the IBM Business Process Manager

deployment environment wizard to configure the databases used in the deployment environment. For more information on the DDT and for more information on database configuration in general, see *Configuring databases*.

This task describes the procedure for creating a deployment environment that is based on a specific pattern and uses the Deployment Environment Configuration wizard.

Note: If you make an error while you are working in the wizard, you can go back by clicking **Back**.

1. From the administrative console, go to the Deployment Environments page by clicking **Servers** > **Deployment Environments** .
2. Launch the Deployment Environment Configuration wizard by clicking **New** on the Deployment Environments page.
   a. The **Create a deployment environment based on a pattern** option is selected. **Create a deployment environment based on a pattern** is the system default and it is the option described in this topic.

      Deployment environment patterns capture commonly used business integration topologies. A pattern provides you with a template for the deployment environment that you are creating.

      Note: Patterns have a direct relationship to the products supported by the configured deployment manager. IBM Business Process Manager supports a specific set of patterns, with the *Remote messaging and remote support* pattern being the system default. If your deployment manager supports other products in addition to IBM Business Process Manager, additional patterns may apply. Consult product-specific documentation for information on patterns as they apply to the products.

      For information about the patterns included with and supported by IBM Business Process Manager, see Overview: Deployment environment topologies and patterns.
   b. Enter a unique name for the deployment environment in the **Deployment environment name** field.
   c. Optional: To view all of the configuration steps in the wizard, select **Detailed: Show all steps**.

      If you choose **Fast path: Show only needed steps** the wizard displays only those pages that **do not** have assigned default values. Choose **Fast path: Show only needed steps** only if you are agreeable to accepting the system-provided default values for the deployment environment configuration.

      This topic assumes that you have chosen **Detailed: Show all steps**
   d. Click **Next** to display the Deployment Environment Features page.
3. On the Deployment Environment Features page, select the feature for the deployment environment and click **Next** to either view a list of compatible features, or to view a list of deployment environment patterns. Features represent the runtime processing capabilities of your deployment environment.

   The list of available features on the Deployment Environment Features page is based on the deployment manager profile. If your deployment manager profile has been augmented to include other products alongside IBM Business Process Manager (for example, IBM Business Monitor , then the Deployment Environment Features page also lists these features.

   If you have installed and configured a profile for IBM Business Process Manager, then the Deployment Environment Features page includes the following:

   - For IBM Business Process Manager Standard:
     - **BPMSPS**, for an IBM BPM Standard, Process Server deployment manager profile, which provides a Process Server deployment environment that supports business processes, human tasks, and business rules.
     - **BPMSPC**, for an IBM BPM Standard, Process Center deployment manager profile, which provides a Process Center deployment environment that supports business processes, human tasks, and business rules.

- For IBM Business Process Manager Advanced:
  - **WESB**, for WebSphere Enterprise Service Bus, which provides a deployment environment that supports mediations.
  - **BPMAPS**, for an IBM BPM Advanced, Process Server deployment manager profile, which provides a Process Server deployment environment that supports mediations, business processes, human tasks, Business Space functions and business rules.
  - **BPMAPC**, for an IBM BPM Advanced, Process Center deployment manager profile, which provides a Process Center deployment environment that supports mediations, business processes, human tasks, Business Space functions and business rules.

4. On the Select compatible deployment environment features page, select additional features as necessary and click **Next** to view the list of patterns associated with your feature selections.

   Note: The Select compatible deployment environment features page is displayed only if the deployment manager has been augmented with other business process management (BPM) features, such as IBM Business Monitor.

   For an understanding of the relationship of features and compatible features, see the information on deployment environments in the Planning section.

5. On the Select the deployment environment pattern page, select the pattern for the selected deployment environment, then click **Next** to display the Select Nodes page.

   The list of patterns that display on the Deployment Environment Patterns page is dynamic. This list is activated by, and dependent on, the following environment conditions and configuration decisions:

   - The platform on which you have installed the software
   - The selections that you have made on the Select the deployment environment feature page and the Select compatible deployment environment features page.

6. Optional: On the Select Nodes page, select the nodes that you want to include in this deployment environment, then click **Next** to display the Clusters page.

   Select nodes that have the required capabilities for the environment you selected in step 3 on page 263. For example, if you selected **BPMSPC** as your Deployment Environment type, the nodes selected should address the capabilities of that environment type.

   Select at least one node for the deployment environment. For high-availability and failover environments, select at least two nodes. For scalability, select all nodes.

   To include a node, select the check box next to the node name. Use **Node Mapping** to map the selected node to another node name.

7. Optional: On the Clusters page, assign the required number of cluster members on each node for each cluster *type* (Application Deployment Target, Messaging Infrastructure and Supporting Infrastructure) of the deployment environment.

   By default one cluster member is assigned on each node for each function. You change the number by replacing the number in each column. If you are unfamiliar with the different cluster roles and functions provided by each type of cluster, see "Topology types and deployment environment patterns."

   A 0 (zero) value for a node means that the node does not contribute to the selected function, based on features that you have selected.

   After assigning cluster members, you can click **Next** to display the Cluster naming pages for each cluster type of the deployment environment. The Cluster naming substeps that display will vary depending on the deployment environment pattern selected.

   The system generates default values for cluster names and cluster member names.

   If you do not want to customize cluster names or cluster member names, you can use the wizard navigation pane to go directly to the REST Services page in a following step.

   a. Optional: Customize the cluster names and cluster member names.

      Use the Cluster Naming page to customize cluster names or cluster member names for the cluster type. There is one substep page for each cluster *type* in the pattern that you have selected.

For example, if you selected a **Remote messaging and remote support pattern**, there are 3 substeps, one for each type of cluster (Application Deployment Target, Messaging Infrastructure and Supporting Infrastructure) in that pattern.

The information on each substep page is as follows:

Field	Description	Value
Cluster	A read-only field specifying the functional role of the cluster.	The value varies depending on the cluster type, as follows: • Application Deployment Target • Supporting Infrastructure • Messaging Infrastructure • Web Application Infrastructure For information on the functional role provided by each cluster type, see Topology types and deployment environment patterns
Cluster name	The system-generated default value for the cluster name.	The default values are based on a naming convention of ***Deployment Environment Name.Cluster type name***, where ***Cluster type name*** is one of the following values: • AppTarget For clusters performing the role of application deployment target • Messaging For clusters performing the role of messaging infrastructure • Support For clusters performing the role of supporting infrastructure • Web For clusters performing the role of supporting web applications. **Note:** This cluster type name applies for BPM configurations in which WebSphere Business Monitor is the primary feature / product.
Cluster member name	The system-generated default value for the cluster member name. Servers that are a part of a cluster are called cluster members.	Accept the system-generated default value or specify a name of your choosing. The default value for the cluster member name is based on the following naming convention: ***cluster name.node name.node number sequence***. The number of cluster member names that display in the table match the number of cluster members that you entered for the cluster type column and node row on the Clusters page.

8. Optional: On the Import the database configuration page, click **Browse** to go the database design document or enter the path to the database design document and then click **Next** to go to the Data sources page. If you import a design document, the information from the design document is reflected on the Database page of the wizard. The design document can be based on a database

design that you created using the database design tool (DDT), or it can be the supplied design document based on the pattern and feature that you have selected.

Note: The database design document that you import for the deployment environment does not change the commonDB created at Profile Creation time.

9. Required: On the Database page, configure the database parameters for data sources of the deployment environment, then click **Next** to go to the Security page.

   Note: The database specified in this panel must already exist. Deployment environment configuration never creates a new database.

   For DB2 and SQL Server databases, IBM Process Server and IBM Performance Data Warehouse should not use the same database as the rest of the components. However, if you are using an Oracle database, IBM Process Server and IBM Performance Data Warehouse can use the same database instance, but should use different users.

   On this page, define the database information for the components that are included in this deployment environment. Where possible, the wizard supplies default information for the parameters, but change those values to match the values that you defined when you planned the environment.

   Note: If you imported a database design document, the information on the Database page reflects the data source configuration as it exists in the database design document that you imported. If you make changes to the data source configuration after importing a database design document, your changes might be incompatible with the DDL generated by the database design tool and the original values.

   Whether or not this step displays for a fast path deployment environment configuration is conditional. This step displays for a fast path deployment environment configuration if more than one database has been defined.

   This step always displays if you are using DB2 for z/OS or an Oracle database provider.

   Note: The default schema names that are displayed on this page might conflict with your site naming convention or might conflict with existing schemas. As such, it is likely that you will need to change the schema name. Pay close attention to the values specified to avoid potential naming conflicts.

   Oracle database considerations:

   - Make sure that the username/schema name are exactly the same. The user specified should exist in the database before generating the environment.

   SQL Server considerations:

   - Make sure that the username/schema exist before the configuration is done. The schema value should be the default schema for the user chosen.

   For a production environment, you should set the same values for **User name** and **Schema name** and you should deselect **Create tables**. For a production environment, create the required schemas manually and use the SQL files generated to create the tables.

   You can edit all key parameters, such as the database name, whether or not to create tables, the data source runtime user name, and the password for the deployment environment.

   You can select which database to use for the given component.

   DB2 for z/OS: The **Create tables** option cannot be used if you are using a DB2 for z/OS database provider.

   Steps that cannot be completed through the Deployment Environment Configuration wizard, and which need to be completed manually, are listed on the Deferred Configuration page.

10. On the Process Center page, set the values for the Process Center configuration as follows:

    - **Environment name**

      Enter an environment name of the Process Server.

An environment name is the name by which this server or cluster will be known to a Process Center user.

- **Environment type**

  From the pull-down list, select the Environment type for the Process Center you are configuring.

  The Environment type refers to how the Process Center is used. For example, in what capacity will the Process Server be used - *production*, *stage* or *test* . Load testing might be done on a test server, while a stage environment type might be used as a temporary location to host changes before putting those changes into production. You might specify **Stage** as the **Environment type** if the Process Center you are configuring, will be accessed and used to review content and new functionality.

  There are three types of environments available for selection:

  Production
  Select **Production** if the server will serve in a production capacity.

  Stage Select **Stage** if the server will serve as a staging platform to be used as a preproduction server.

  Test Select **Test** if the server you are configuring will be used as a testing environment.

- **Use server offline**

  Indicate whether the server you are configuring is an offline server.

  An offline server is a Process Server that is not connected to the Process Center.

  Offline servers can still be used when deploying snapshots of process applications. However the method for deploying process applications to an offline process server differs from the method for deploying process applications to an online process server.

- **Protocol**

  Select either **http://** or **https://** as the connection protocol to the Process Center.

- **Host name or virtual host in a load-balanced environment**

  Type the host or virtual host that this Process Server needs 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**

  Type 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.

11. On the Security page, configure the authentication aliases WebSphere uses when accessing secure components

    You can change the authentication alias user name and password on this page. These aliases are used to access secure components but do not provide access to data sources

12. Optional: On the System web applications page, set the context root for component-based web applications in your deployment environment or accept the system-provided default values for the context roots. Then click **Next** to display the Summary page.

    The System web applications page displays for deployment environments using the Remote messaging, support and web applications pattern.

    The table contains the following control information.

    `Web Application`
    The name of the web application.

    `Context Root`
    The current value of the context root for the component.

By default, the default context root for the web application applies. You can change the context roots by typing over the value in the **Context Root** field.

Note: The Business Space context root is read only and cannot be edited.

13. Verify that the information on the Summary page is correct and perform the following substeps:
    a. Optional: If you do not want to save the deployment environment configuration, you can click **Cancel**.
    b. Optional: If you want to exit without generating the configuration, click **Finish**.
    c. To save the deployment environment configuration, click **Finish** and from within the Messages window, click **Save**.

       Clicking **Save** saves the deployment environment to the master configuration. If an error should occur during deployment environment generation, the configuration settings will have been saved to the master configuration.
    d. Check for deferred configuration steps

       Select **Deployment Environments** > *name of deployment environment* > **Deferred Configuration**

       You need to address any existing deferred configuration steps before starting the Deployment Environment.
    e. If you are satisfied with the deployment environment configuration and you have addressed any of the deferred configuration steps, click **Finish and Generate Environment** to save and complete the configuration of the deployment environment.

When the configuration completes, you can examine the configuration files to view the changes.

Either save the changes to the master configuration or discard them.

Related concepts:

"Overview: Deployment environment topologies and patterns" on page 24
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 41
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Completing the database configuration" on page 278
Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

"Loading the database with system information" on page 249
The profile creation process collects all database parameters related to the profile that you are creating and writes this configuration data to an XML file. You must run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

Creating a customized network deployment configuration:

After you perform a custom installation and create the deployment manager and custom (managed node) profiles, you can create a customized network deployment configuration.

The information in this section describes how to use the administrative console to create a *customized* network deployment configuration. A customized network deployment environment is a configuration that you create from the administrative console, as opposed to a configuration from the Deployment Environment wizard.

This section assumes that the following information is true:

- You have run the installer to create a Custom installation.

- You have created the deployment manager and custom (managed node) profiles.
- You understand the differences between creating a standardized network deployment environment and a customized network deployment environment.
- You are familiar with network deployment topologies and configurations and the administrative console.

Important: Before you create a customized network deployment configuration, consider using the Deployment Environment wizard to create your network deployment environment.

Any operation that you can perform from the administrative console can also be performed with wsadmin. Additionally, command assistance is available for a subset of administrative console actions. When available, command assistance displays the wsadmin scripting command for the last console action that you performed. For information about command assistance, see Administrative console actions with command assistance.

Creating and configuring servers and clusters:

You can use the administrative console to create and configure the servers and clusters for IBM Business Process Manager.

The information in this section describes how to create servers and clusters for IBM Business Process Manager manually using the administrative console.

Creating a cluster:

The following instructions explain how to create a cluster with one cluster member. The benefit of using the administrative console to create a cluster is that you can undo your changes as you go and you can use a graphical user interface.

Before you create a cluster using the administrative console, start the deployment manager.

The following procedure describes how to create a cluster with one cluster member using the administrative console. Note that the tasks performed from the administrative console that are described in this topic can also be performed using administrative scripting. For information on the **createCluster** parameters, see ClusterConfigCommands command group for the AdminTask object in the WebSphere Application Server information center.

For information on using the wsadmin tool to create cluster members, see Creating cluster members using scripting.

Consider to create a cluster even if a single server is currently sufficient for your high availability and scalability requirements because it is easier to add more servers to the cluster later.

1. Log in to the administrative console and navigate to **Servers** > **Clusters** > **WebSphere application server clusters**.
2. Click **New** to display the Create new cluster page.
3. From the Create new cluster page, enter basic cluster information:
   a. Type a name for the cluster in the **Cluster name** field.
   b. Select **Prefer local** if you want to enable host-scoped routing optimization. This option is enabled by default. When this option is enabled, if possible, EJB requests are routed to the client host. This option improves performance because client requests are sent to local enterprise beans.

      Note: If you enable the preferLocal optimization, the deployment manager must be running to affect the configuration. If the deployment manager is shut down, preferLocal optimization is not performed and requests might be dispersed across all the members of the cluster

c. Select **Configure HTTP session memory-to-memory** replication if you want a memory-to-memory replication domain created for this cluster.

   The replication domain is given the same name as the cluster and is configured with the default settings for a replication domain. When the default settings are in effect, a single replica is created for each piece of data and encryption is disabled. Also, the Web container for each cluster member is configured for memory-to-memory replication.

   To change these settings for the replication domain, click **Environment** > **Replication domains** > ***replication_domain_name***. To modify the Web container settings, click **Servers** > **Clusters** > **WebSphere application server clusters** > ***cluster_name*** > **Clusters members** > **cluster_member_name**. Then, in the **Container settings** section, click **Web container settings** > > **Web container** > **Session management** > **Distributed environment** settings in the administrative console. If you change these settings for one cluster member, you might also need to change them for the other members of this cluster.

4. Click **Next** to go to the Create first cluster member page.
5. From the Create first cluster member page, enter information about the cluster member.
   a. Enter the member name in the **Member name** field
   a. From the **Select node** list, click the node in which you want to define the server.
   b. In the **Weight** field, enter the weight value for the cluster member.

      The weight value controls the amount of work that is directed to the application server. If the weight value for this server is greater than the weight values that are assigned to other servers in the cluster, then this server receives a larger share of the workload. The weight value represents a relative proportion of the workload that is assigned to a particular application server. The value can range from 0 to 20.

      - On a **z/OS system** weight is used to balance some of the workload types, but others are balanced by the z/OS system. For HTTP requests, weights are used to distribute HTTP traffic between the Web server plug-in and the controller handling the clustered application server. Assign a higher weight value to the application server that should receive the HTTP traffic.
      - For Web services calls, information is transferred from a servant in one application server to a controller in another application server. The application server that receives the call has the highest weight value.
      - Weight has no affect on Internet Inter-ORB Protocol (IIOP) requests. IIOP requests are distributed to the correct application server using the sysplex distributor.

   c. Select **Generate unique HTTP ports** (the default option) if you want to generate unique port numbers for every HTTP transport that is defined in the source server.

      When this option is selected, this cluster member does not have HTTP transports or HTTP transport channels that conflict with any of the other servers that are defined on the same node. If you clear the **Generate unique HTTP ports** check box, all of the cluster members will share the same HTTP ports.
6. From the section, **Select basis for first cluster member**, select from the following options:
   - Create the member using an application server template

     This is the typical way of creating a cluster. Select **defaultProcessServer**.

     If you select this option and click **Next**, a blank form is displayed which you can use to define additional cluster members. The server you have just created is listed at the bottom of the screen.

     a. Click **Next**.
     b. Check the details on the summary screen and click **Next**.
     c. Save your configuration changes.

        The cluster you have just created is displayed in the list.
     d. Customize the port numbers to suit your configuration.
   - Create the member using an existing application server as a template

     This option is not supported.

- Create the member by converting an existing application server

  Note: Do not select this option. WebSphere Application Server added a new parameter named **resourcesScope** to the createCluster and createClusterMember commands that allows you to control how the resources will be processed when the first cluster member is added to a cluster. Those parameters are described in the technote titled New parameter named resourcesScope was added to the createCluster and createClusterMember commands.

  It is required to use the **resourcesScope** parameter with the value **cluster** for IBM Business Process Manager. The **resourcesScope** parameter is not currently exposed in the administrative console. Using the administrative console to create a cluster using an existing single server as the first cluster member is not supported on IBM Business Process Manager. Selecting this option will result in the following error message in the administrative console or the SystemOut.log of the deployment manager:

  ```
  resourcesScope parameter needs to be set to 'cluster' if creating a cluster from an existing server
  ```

  Using the command line to create a cluster using an existing single server as the first cluster member is valid. You must set the value of the **resourcesScope** to **Cluster**. For example,

  ```
  $AdminTask createCluster {-clusterConfig
  {-clusterName newcluster -preferLocal true}
  -convertServer {-serverNode NODE1Node01 -serverName testserver
  -resourcesScope cluster}}
  ```

  For information on the **createCluster** parameters, see ClusterConfigCommands command group for the AdminTask object in the WebSphere Application Server information center.

  For information on using the wsadmin tool to create cluster members, see Creating cluster members using scripting.

- None

  Works always.

7. Click **Next.**
8. Create additional cluster members.

   Before you create additional cluster members, check the configuration settings of the first cluster member. These settings are displayed at the bottom of the Create additional cluster members panel of the Create a new cluster wizard. For each additional member that you want to create:

   a. Specify a unique name for the member. The name must be unique within the node.
   b. Select the node to which you want to assign the cluster member.
   c. Specify the weight you want given to this member. The weight value controls the amount of work that is directed to the application server. If the weight value for the server is greater than the weight values that are assigned to other servers in the cluster, then the server receives a larger share of the workload. The value can range from 0 to 20.
   d. Select **Generate unique HTTP ports** if you want to generate unique port numbers for every HTTP transport that is defined in the source server.
   e. Click **Add member**. You can edit the configuration settings of any of the newly created cluster members other than the first cluster member, or you can create additional cluster members. Click **Previous** to edit the properties of the first cluster member. The settings for the first cluster member become the settings for the cluster member template that is automatically created when you create the first cluster member.

9. When you finish creating cluster members, click **Next**.
10. View the summary of the cluster and then click **Finish** to create the cluster, click **Previous** to return to the previous wizard panel and change the cluster, or click **Cancel** to exit the wizard without creating the cluster.
11. To further configure a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** , and then click the name of the cluster. Only the **Configuration** and **Local Topology** tabs display until you save your changes.

12. Click **Review** to review your cluster configuration settings. Repeat the previous step if you need to make additional configuration changes.
13. If you do not want to make any additional configuration changes, select **Synchronize changes with Nodes** and then click **Save**. Your changes are saved and synchronized across all of your nodes.

    Note: If you click **Save** , but do not select **Synchronize changes with Nodes**, when you restart the cluster, the product does not start the cluster servers because it cannot find them on the node. If you want to always synchronize your configuration changes across your nodes, you can select Synchronize changes with Nodes as one of your console preferences.
14. Restart the cluster.

The cluster is created with your chosen server in the selected managed node as the first cluster member.

Creating a new server:

Most installations require several servers to handle the application serving needs of the production environment. You can use the command-line tool or the administrative console to create the servers you need.

Determine if you want to include the new server in a cluster. If this server is going to be part of a cluster, you must create the server with the Create a new cluster wizard instead of the Create a new application server wizard.

Important: This task creates a managed server. If you want a stand-alone server, do not follow these steps. Instead, create a stand-alone server profile.

To create a new managed server, perform the following steps.

Follow the instructions in Creating application servers, selecting the template or a suitable user-defined template from the Select a server template page. **Restriction:** The "Start components as needed" capability is not supported.

Configure the components you need on the server. See **Configuring components** for more information.

Creating deployment environments using the command line:

You can use wsadmin to create a Process Server and Process Center deployment environment. The **createDeploymentEnvDef** and **generateDeploymentEnv** provide a command-line equivalent to creating the deployment environment using the deployment environment wizard.

Related concepts:

"Creating a standardized network deployment configuration" on page 255
After performing a Custom installation and creating the deployment manager and custom (managed node) profiles, you can create a standardized network deployment configuration.

"Overview: Deployment environment topologies and patterns" on page 24
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 41
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Completing the database configuration" on page 278
Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

Creating deployment environment definitions using the command line:

You can create a deployment environment definition using the **wsadmin** command. Running **createDeploymentEnvDef** provides the definition of the deployment environment.

You must be on the deployment manager to create the deployment environment definition.

Required security role for this task: When security and role-based authorization are enabled, you must use a userid and password with administrator or operator authority to perform this task.

IBM Business Process Manager supports a specific set of patterns, **Remote messaging and remote support** being the pattern to employ for a network deployment production environment. If your deployment manager supports other products in addition to IBM Business Process Manager, the patterns for those products may apply. Consult product-specific documentation for information on patterns as they apply to the products.

This task creates a deployment environment definition that is based on a specific pattern and uses the **wsadmin** command.

You can use the **wsadmin** command to create the same deployment environment as you can create from the administrative console. This capability allows you to run the administrative task to create a deployment environment definition with all the default values based on an existing configuration. The existing configuration being the configuration that you created at profile creation time. The command also includes an optional property that imports a database design document. The database design document holds the database configuration for the topology you are creating.

When you generate the deployment environment, the information about whether to create tables is taken from the design document. Make sure that the createTables parameter is correctly set in the database design file that you specify.

Important: If you use the createTables parameter, the databases must already exist. Do not use createTables for a production environment where you want to customize the generated database scripts. Do not use createTables if you have a remote database server.
For DB2 and SQL Server databases, IBM Process Server and IBM Performance Data Warehouse should not use the same database as the rest of the components. However, if you are using an Oracle database, the IBM Process Server and IBM Performance Data Warehouse can use the same database instance, but should use different users.

For Oracle databases, make sure that the user name and schema name are exactly the same. The user must exist in the database before you generate the environment.

For SQL Server databases, make sure that the user name and schema exist before the configuration is done. The schema value must be the default schema for the user chosen.

For a production environment, set the same values for user name and schema name and do not select createTables. Create the required schemas manually and use the generated SQL files to create the tables.

A deployment environment definition describes the specific component, cluster/node/server configuration, resources and related configuration parameters that make up a deployment environment. This can also be referred to as an instance of a deployment environment configuration. A deployment environment configuration can be exported into a deployment environment definition. You can import a deployment environment definition to add a new deployment environment configuration to your system.

1. Open a command window.

   The **wsadmin** command can be found in either the *install_root*/profiles/*dmgr profile*/bin directory, or the *install_root*/bin directory.
2. At the command prompt, enter the **wsadmin** command to enter the **wsadmin** environment.
3. Use the **createDeploymentEnvDef** command to create the deployment environment definition with a specific name for a particular runtime and pattern.

   Note: If administrative security is on, you will be prompted for a user ID and password, if you do not supply it in the command.

This example creates a deployment environment definition for a remote messaging and remote support pattern on the IBM Business Process Manager runtime, with myDepEnv on the host myDmgr with administrative security enabled. The example imports a database design document named **bpmps.nd.topology.dbDesign**:

Note: The value you assign to *-topologyRuntime* varies depending on the IBM BPM configuration (Advanced or Standard) and the environment selection. For example:

- For IBM BPM Standard, **-topologyRuntime** can be:
  - **BPMSPS**, for IBM BPM Standard Process Server
  - **BPMSPC**, for IBM BPM Standard Process Center
- For IBM BPM Advanced, **-topologyRuntime** can be:
  - **BPMAPS**, for IBM BPM Advanced Process Server
  - **BPMAPC**, for IBM BPM Advanced Process Center

Note: If you disable administrative security, you do not need to provide a user ID and password.

After you have imported or created a deployment environment on a deployment manager, you can configure the deployment environment using the generateDeploymentEnv command.

Related concepts:

"Overview: Deployment environment topologies and patterns" on page 24
A network deployment environment can have many topologies, and can be created from several standard topology patterns.

"Topology patterns and supported product features" on page 41
A topology is the physical layout of the deployment environment. The product features and default usage depends on your choice of topology pattern.

Related tasks:

"Completing the database configuration" on page 278
Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

"Generating deployment environments using the command line"
You can generate deployment environments using the **wsadmin** interface. This capability allows you to configure multiple deployment environments unattended on a deployment manager using a script.

Adding nodes to a deployment environment definition using the command line:

You can add nodes to a deployment environment definition using the **wsadmin** command.

The task assumes that the node has been federated to the deployment manager.

This command to add a node to the deployment environment definition will fail if the topology is already configured.

You must be on the deployment manager to add nodes to the deployment environment.

Required security role for this task: When security and role-based authorization are enabled, you must use a userid and password with administrator or operator authority to perform this task.

This task adds a federated node to a deployment environment definition and uses the **wsadmin** command.

1. Open a command window.

   The **wsadmin** command can be found in either the *install_root*/profiles/*dmgr profile*/bin directory, or the *install_root*/bin directory.
2. At the command prompt, enter the **wsadmin** command to enter the **wsadmin** environment.
3. Enter the **addNodeToDeploymentEnvDef** command to add the node to the deployment environment definition.

   Note: If administrative security is on, you will be prompted for a user ID and password, if you do not supply it in the command.

This example adds a node (**MyNode**) to deployment environment definition (**myDepEnv**) with administrative security enabled:

Attention: If you are adding a node to a single cluster topology pattern, the value for **-toplogyRole** must be set to **ADT**. Deployment environment topology patterns are specified when you create the deployment environment using either the **createDeploymentEnvDef** command or the Deployment Environment Configuration wizard.

Note: If you disable administrative security, you do not need to provide a user ID and password.

Generating deployment environments using the command line:

You can generate deployment environments using the **wsadmin** interface. This capability allows you to configure multiple deployment environments unattended on a deployment manager using a script.

You must enter the commands on the deployment manager on which you are configuring deployment environments.

Required security role for this task: When security and role-based authorization are enabled, you must log in to the administrative console as an administrator or configurator to perform this task.

After you have imported or created deployment environments on a deployment manager, you can configure the deployment environments using the **generateDeploymentEnv** command.

1. Enter the **wsadmin** environment.
2. Enter the **generateDeploymentEnv** command for each topology you are configuring.

The following command configures the eastEnvironment topology on host myDmgr.

```
wsadmin -connType SOAP -host myDmgr -port 8879
> $AdminTask generateDeploymentEnv {-topologyName eastTopology}
> $AdminConfig save
```

Note: If administrative security is enabled, you are prompted for a user ID and password after the system processes the **wsadmin** command.

Save the configured deployment environments. From the command line, enter **$AdminConfig save**.

Validating the deployment environment definition from the command line:

You can validate the deployment environment definition using the **wsadmin** command.

The task assumes that the node has been federated to the deployment manager.

You must be on the deployment manager where you are validating the deployment environment definition.

Required security role for this task: When security and role-based authorization are enabled, you must use a userid and password with administrator or operator authority to perform this task.

This task validates the deployment environment definition and uses the **wsadmin** command.

1. Open a command window.

   The **wsadmin** command can be found in either the *install_root*/profiles/*dmgr profile*/bin directory, or the *install_root*/bin directory.
2. At the command prompt, enter the **wsadmin** command to enter the **wsadmin** environment.
3. Enter the **validateDeploymentEnvDef** command to validate the deployment environment definition.

   Note: If administrative security is on, you will be prompted for a user ID and password, if you do not supply it in the command.

This example validates the deployment environment definition (**myDepEnv**) with administrative security enabled:

```
wsadmin -connType SOAP -host myDmgr -port 8879 -user dmgrAdmin -password -dmgrPass
> $AdminTask validateDeploymentEnvDef { -topologyName topOne}
```

Note: If you disable administrative security, you do not need to provide a user ID and password.

Displaying deployment environment status using the command line:

You can display the current status of a deployment environment using the **wsadmin** command.

The admin client must connect to the deployment manager for which you are displaying the status.

Required security role for this task: When security and role-based authorization are enabled, you must use a userid and password with administrator or operator authority to perform this task.

This task displays the current status of a deployment environment and uses the **wsadmin** command.

1. Open a command window. .

   The **wsadmin** command can be found in either the *install_root*/profiles/*dmgr profile*/bin directory, or the *install_root*/bin directory.
2. At the command prompt, enter the **wsadmin** command to enter the command environment.

   Note: Make sure **wsadmin** connects to the correct deployment manager, when running in connected mode.
3. Use the **showDeploymentEnvStatus** command to show the current status of the deployment environment.

   Note: If administrative security is on, you will be prompted for a user ID and password, if you do not supply it in the command.
   The following table lists the results that might be returned.

   Note: Some of the states listed in the table are valid for configured topologies only. The states that are apply to configured topologies only are noted as such.

Table 118. States of a topology instance in order of least to most available

State	Description
Incomplete	The deployment environment is not missing any elements but is incomplete in some way. Incomplete state may mean the deployment environment is missing a required role, node, comp or dependencies . The warning message contains additional details.
Complete	This state is also known as *Not configured* and it means that the configuration is known and complete but has not yet been generated.
Configured	This means the configuration is in synch.
Partially configured	The deployment environment has been generated but deferred configuration has not been completed.
Unknown	The system cannot determine the current state of the deployment environment. A resync operation could be performed on this state.
Stopped	State applies to configured topologies only.All deployment targets in the topology are stopped.
Running	State applies to configured topologies only.The deployment environment is available and all functions are running.
Partially started	State applies to configured topologies only.The deployment environment is available but at least one function is partially running.
Starting	State applies to configured topologies only.The deployment environment is starting.
Partially stopped	State applies to configured topologies only.The deployment environment is available but at least one function is stopped or partially stopped.
Stopping	State applies to configured topologies only.The deployment environment is stopping
Unavailable	State applies to configured topologies only.The deployment environment state is unavailable.

This example displays the status of a deployment environment (**MyDepEnv**) on the host (**myDmgr**) with administrative security enabled.

Note: If you are running the admin client from the deployment manager bin folder, you do not need to include the **-host** and **-port** parameters in the command.

```
wsadmin -connType SOAP -host myDmgr -port 8879 -user dmgradmin -password dmgrpass
> $AdminTask showDeploymentEnvStatus {-topologyName myDepEnv}
```

The **-connType** parameter specifies the type of connection to be used; the default argument is **SOAP**.

Note: As the default is **SOAP**, you do not need to give explicitly if SOAP is the connection type that is being used.

The **-host** parameter specifies the host used for the SOAP or RMI connection. The default value for **-host** is the local host.

Note: If the node is running on the local host, you do not need to specify **-host**.

Note: If you disable administrative security, you do not need to provide a user ID and password.

Completing the database configuration

Before you start the clusters in your network deployment environment, you must complete the database configuration by creating the database tables.

Creating the Process Server or Process Center database tables:

Run the SQL scripts to create the database tables for your IBM Process Server or IBM Process Center configuration.

You have performed all of the steps required for your configuration and have selected not to run the database scripts to initialize the databases during the configuration. You have also created the database in which you want to create the Process Server or Process Center database tables. For information about creating the database, see *Creating databases*.

The procedure in this task describes how to run the Process Server or Process Center SQL scripts that were produced when you completed your configuration.

To run the Process Center or Process Server SQL scripts that were produced when you completed your configuration follow the steps below:

Note: The Process Server does not support schema. You must login as the user and then execute the SQL file.

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/*DB_product* at profile creation time. For example,

   C:*install_root*\profiles\Proc01\dbscripts\ProcessServer\DB2
2. Connect to your database. For example, run **db2 connect to *databaseName***.
3. Create the tables for Process Server or Process Center.

   From the directory navigated to in step 1, run **createTable_ProcessServer.sql** on the database you configured for the Process Server or Process Center (BPMDB).

   Make sure all SQL statements succeed without any errors.
4. Create the table procedures for Process Server or Process Center.

   From the directory navigated to in step 1, run **createProcedure_ProcessServer.sql** on the database you configured for the Process Server or Process Center (BPMDB).

   Make sure all SQL statements succeed without any errors.

If you are using DB2 Universal, DB2 Universal for z/OS, or Microsoft SQL Server, use "GO" as a delimiting character when executing the stored procedure. For example, **db2 -tdGO -vf createProcedure_ProcessServer.sql**.

You have created the database tables for your Process Server or Process Center configuration and have completed the database configuration.

You can now load the database with system information and start the servers or clusters on your Process Server or Process Center configuration.

Related tasks:

"Creating databases" on page 224
If you did not create databases while creating profiles, you can use the SQL scripts to create them.

Creating the Performance Data Warehouse database tables:

Run the SQL scripts to create the database tables for your IBM Performance Data Warehouse.

You have performed all of the steps required for your configuration and have selected not to run the database scripts to initialize the databases during the configuration. You have also created the database in which you want to create the Performance Data Warehouse database tables. For information about creating the database, see *Creating databases*.

The procedure in this task describes how to run the Performance Data Warehouse SQL scripts that were produced when you completed your configuration.

To run the Performance Data Warehouse SQL scripts that were produced when you completed your configuration follow the steps below:

Note: The Performance Data Warehouse does not support schema. You must login as the user and then execute the SQL file.

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/*DB_product* at profile creation time. For example,

   C:*install_root*\profiles\Proc01\dbscripts\PerformanceDW\DB2
2. Connect to your database. For example, run **db2 connect to *databaseName***.
3. Create the tables for the Performance Data Warehouse.

   From the directory navigated to in step 1, run **createTable_PerformanceDW.sql** on the database 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.

You can now load the database with system information and start the servers or clusters on your Performance Data Warehouse.

Loading the database with system information

The profile creation process collects all database parameters related to the profile that you are creating and writes this configuration data to an XML file. You must run the **bootstrapProcessServerData** command before you try to start or use the IBM Business Process Manager server.

This command retrieves the database information from the 98database.xml file to make a connection to the 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. For more information, see "Encrypting passwords" on page 319.

When you run the **bootstrapProcessServerData** command, configuration data for the BPM applications is loaded into the 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.

- 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.
- 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 stand-alone or deployment manager profile directory. For example:

```
C:/<install_root>/profiles/ProcCtr01/bin
<install_root>\profiles\Dmgr01\bin
```

Run the bootstrap utility using the following syntax:

- Linux UNIX **bootstrapProcessServerData.sh -profilePath** *profile_path* **-dbType** *db_type* **-dbJDBCClasspath** *classpath* **[-nodeName** *node_name* **-serverName** *server_name***]**
- Windows **bootstrapProcessServerData.bat -profilePath** *profile_path* **-dbType** *db_type* **-dbJDBCClasspath** *classpath* **[-nodeName** *node_name* **-serverName** *server_name***]**

where:

- **-profilePath** is the location where the profile was created. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-dbType** is the database type, such as DB2_UNIVERSAL ORACLE, or MSSQLSERVER_MICROSOFT. See Supported database types for the appropriate value. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-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. This parameter is not required for IBM Business Process Manager 7.5.0.1 and later.
- **-nodeName** is the name of the node. This parameter is required with **-serverName** for an ND environment. Do not specify for stand-alone.
- **-serverName** is the name of the server. This parameter is required with **-nodeName** for an ND environment. Do not specify for stand-alone.
- **-clusterName** (for 7.5.0.1 and later only) is the name of the application target cluster. For an ND environment, you can specify this parameter instead of the **-nodeName** and **-serverName** parameters.

The parameters are case-sensitive.

You have loaded the database with system information prior to successfully starting the Process Server or Process Center.

Important: For SQL Server, 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 a server that is part of an ND environment:

```
bootstrapProcessServerData -profilePath c:/BPM/profiles/Dmgr01
             -dbType DB2_UNIVERSAL -dbJDBCClasspath c:/BPM/db2/java
             -nodeName node01 -serverName server1
```

Bootstrap data onto a stand-alone profile server:

```
  bootstrapProcessServerData -profilePath "c:/Program Files/IBM/BPM/
    profiles/AppSrv01" -dbType DB2_UNIVERSAL -dbJDBCClasspath "C:/Program Files/BPM/db2/java"
```

You can start the stand-alone server or first cluster member.

Configuring components

You can configure individual components for IBM Business Process Manager.

Components can be configured in one of three ways:

1. Some IBM Business Process Manager components can be configured at profile creation time. This is particularly the case for a stand-alone server, for which most of the components may be configured at profile creation time.
2. For a network deployment cell, components may be configured by building and generating a Deployment Environment. By setting up a Deployment Environment, you build server clusters and configure the IBM Business Process Manager components on them.

   Note: Deployment Environments are not available for a stand-alone server.
3. The IBM Business Process Manager servers and clusters (and the components that run on them) can be configured individually, using either the administrative console or administrative scripts.

This information in this section describes how to configure individual components for IBM Business Process Manager.

Configuring a Process Server

You can use the administrative console to configure an application server or cluster as a Process Server. By configuring a server or cluster as a Process Server, you enable the server or cluster to support process applications and their associated services.

This task describes how to use the administrative console to configure a server or cluster as a Process Server.

For information about configuring a server or cluster as a Process Server using wsadmin scripting, including parameter definitions and examples, see the configureProcessServer command in the Reference documentation.

Note:

If you are using a stand-alone server profile, or have previously configured Process Server support for the server or cluster, you can review your current configuration but cannot change it in the administrative console.

1. Launch the administrative console
2. From the administrative console, select a path for configuring a server or a cluster.

   To configure a server, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name* > **Process Server**.

   To configure a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* > **Process Server**
3. Set the parameters to configure the server or cluster as a Process Server.

   For a description of all parameters, go to the panel and select **Page help** or, see Process Server in *Administrative console help* section of the Reference documentation.
4. Save the configuration.

You have configured the server or cluster as a Process Server.

Configure any other Business Process Manager components and products that are part of your installation.

When configuring Business Process Manager components using the administrative console, you will need to configure Performance Data Warehouse after you have configured Process Server.

A `TeamWorksConfiguration.running.xml` file is generated from several local configuration XML files when each server starts. This file is located at *BPM_ROOT*`\profiles\`*profile_name*`\config\cells\`*cellName*`\nodes\`*nodeName*`\servers\`*serverName*`\process-center\TeamWorksConfiguration.running.xml`.

Check the contents of `TeamWorksConfiguration.running.xml`. You might need to edit the configuration files that are used to generate the `TeamWorksConfiguration.running.xml` file.

If changes are required for the URL, IP addresses, and ports, then update the `99Local.xml` and the `100Custom.xml` configuration files and restart the server(s). You must update these files when you add a web server to your cluster because information from these files are used for generating application URLs. Make sure that you make identical changes for these files on all affected nodes, the `99Local.xml` and `100Custom.xml` files are local to the systems on which they reside. They are not replicated automatically between nodes. For more information about updating the xml files, see the Changing server properties and Customizing the Process Server/Process Center cluster to work with a web server topics.

Configuring a Process Center

You can use the administrative console to configure an application server or cluster as a Process Center. By configuring a server or cluster as a Process Center, you enable the server or cluster to support a shared development environment where Process Designer and Integration Designer can share assets such as process applications and their associated services.

This task describes how to use the administrative console to configure a server or cluster as a Process Center.

For information about configuring a server or cluster as a Process Center using wsadmin scripting, including parameter definitions and examples, see the configureProcessCenter command in the Reference documentation.

Note:

If you are using a stand-alone server profile, or have previously configured Process Center support for the server or cluster, you can review your current configuration but cannot change it in the administrative console.

1. Launch the administrative console
2. From the administrative console, select a path for configuring a server or a cluster.

   To configure a server, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name* > **Process Center**.

   To configure a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** > ***cluster_name*** > **Process Center**
3. Set the parameters to configure the server or cluster as a Process Center.

   For a description of all parameters, go to the panel and select **Page help** or, see Process Center in *Administrative console help* section of the Reference documentation.
4. Save the configuration.

You have configured the server or cluster as a Process Center.

Configure any other Business Process Manager components and products that are part of your installation.

When configuring Business Process Manager components using the administrative console, you will need to configure Performance Data Warehouse after you have configured Process Center.

A `TeamWorksConfiguration.running.xml` file is generated from several local configuration XML files when each server starts. This file is located at *`BPM_ROOT`*`\profiles\`*`profile_name`*`\config\cells\`*`cellName`*`\nodes\`*`nodeName`*`\servers\`*`serverName`*`\process-center\TeamWorksConfiguration.running.xml`.

Check the contents of `TeamWorksConfiguration.running.xml`. You might need to edit the configuration files that are used to generate the `TeamWorksConfiguration.running.xml` file.

If changes are required for the URL, IP addresses, and ports, then update the `99Local.xml` and the `100Custom.xml` configuration files and restart the server(s). You must update these files when you add a web server to your cluster because information from these files are used for generating application URLs. Make sure that you make identical changes for these files on all affected nodes, the `99Local.xml` and `100Custom.xml` files are local to the systems on which they reside. They are not replicated automatically between nodes. For more information about updating the xml files, see the Changing server properties and Customizing the Process Server/Process Center cluster to work with a web server topics.

Configuring the Business Performance Data Warehouse component on a server or cluster

You can use the administrative console to configure the Business Performance Data Warehouse component on a server or cluster.

Before you configure the Performance Data Warehouse component on a server or cluster, you must first configure the corresponding Process Server or Process Center. In a network deployment environment the two components may be on the same server or cluster or split across multiple servers or clusters.

This task describes how to use the administrative console to configure the Performance Data Warehouse component on a server or cluster.

For information about configuring the Performance Data Warehouse component on a server or cluster using wsadmin scripting, including parameter definitions and examples, see the configurePerfDW command in the Reference documentation.

Note:

If you are using a stand-alone server profile, or have previously configured Performance Data Warehouse support for the server or cluster, you can review your current configuration but cannot change it in the administrative console.

1. Launch the administrative console
2. From the administrative console, select a path for configuring a server or a cluster.

   To configure a server, click **Servers** > **Server Types** > **WebSphere application servers** > *server_name* > **Performance Data Warehouse Server**.

   To configure a cluster, click **Servers** > **Clusters** > **WebSphere application server clusters** > *cluster_name* > **Performance Data Warehouse Server**
3. Set the parameters to configure the Performance Data Warehouse component on a server or cluster.

   For a description of all parameters, go to the panel and select **Page help** or, see Performance Data Warehouse in *Administrative console help* section of the Reference documentation.
4. Save the configuration

You have configured the Performance Data Warehouse component on a server or cluster.

Configure any other Business Process Manager components and products that are part of your installation.

Configuring Common Event Infrastructure

You can configure Common Event Infrastructure resources, or change existing resources, using the server AdminTask object

Use the administrative console to configure CEI when you are installing it in a network deployment environment or in a cluster or in a stand-alone server configuration.

You can also use the wsadmin command to configure CEI, or you can use the command to alter an existing CEI configuration. In either case, you would change the configuration of CEI by using the server AdminTask object to run administrative commands.

After changing CEI configuration, you must restart the server or cluster.

Common Event Infrastructure components:

Common Event Infrastructure components are installed as a set of applications, services, and resources on the server.

When you configure Common Event Infrastructure, a number of components are created and deployed on your server.

Common Event Infrastructure service

A service installed into the server, that enables applications and clients to use Common Event Infrastructure. You can view the configuration of the Common Event Infrastructure service in the administrative console, as follows:

- For a server, click **Servers** > **Application Servers** > *server_name* > **Business Integration** > **Common Event Infrastructure** > **Common Event Infrastructure Service**.
- For a cluster, click **Servers** > **Clusters** > *cluster_name* > **Business Integration** > **Common Event Infrastructure** > **Common Event Infrastructure Service**.

If the check box labeled Enable the event infrastructure server is selected, then the service is installed and running or it will start after you restart your server or cluster. If it is cleared, then the service is not installed or will be uninstalled after you restart your server or cluster

Event service settings
A set of properties used by the event service that enable event distribution and persistence using the data store. Typically, no configuration is necessary for this resource, but you might need to create additional event service settings if you want to set up multiple event services in the same cell. To view the event service settings, click **Service integration** > **Event service** > **Event service settings**.

Event messaging configuration
The resources that support asynchronous event transmission to the event service using the Java Messaging Service (JMS). The default messaging configuration uses the server embedded messaging. You can optionally configure an external JMS provider for event messaging.

Event database
The event database is used to persistently store events received by the event service. You can configure an external event database on the following products: DB2, Oracle, and SQLServer.

Event filter plug-in
A filter plug-in is used to filter events at the source using XPath event selectors. To configure the filter properties, click **Service Integration** > **Common Event Infrastructure** > **Event Emitter Factories** > **Event Filter Settings**.

Emitter factory
An emitter factory is an object used by event sources to create emitters; an emitter is used to send events to the event service. The properties of an emitter factory affect the behavior of any emitter that is created using that emitter factory. To view the available emitter factories, click **Service Integration** > **Common Event Infrastructure** > **Event Emitter Factories**.

Event service transmission
An event service transmission is an object defining properties that determine how emitters access the event service synchronously using EJB calls; these properties are used by emitter factories when creating new emitters. You can view or change the available event service transmissions from the emitter factory settings.

JMS transmission
A JMS transmission is an object that defines properties that determine how emitters access the event service asynchronously using a JMS queue; these properties are used by emitter factories when creating new emitters. You can view or change the available JMS transmissions from the emitter factory settings.

Event group

An event group is a logical collection of events used to categorize events according to their content. When querying events from the event service or subscribing to event distribution, an event consumer can specify an event group to retrieve only the events in that group. Event groups can also be used to specify which events should be stored in the persistent data store. To view the available event groups in the administrative console, click **Service integration** > **Common Event Infrastructure** > **Event service** > **Event services** > *event_service* > **Event groups**.

Configuring the Common Event Infrastructure using the administrative console:

ConfigureCommon Event Infrastructure by using the server administrative console.

Open the Common Event Infrastructure Server panel of administrative console:

If you are configuring a server, select **Servers > Server Types > WebSphere application servers > *server_name* > Business Integration > Common Event Infrastructure > Common Event Infrastructure Server**.

If you are configuring a cluster, click **Servers > Clusters > WebSphere application server clusters > *cluster_name* > Business Integration > Common Event Infrastructure > Common Event Infrastructure Server**.

1. Enable the deployment of the Common Event Infrastructure enterprise application by selecting the check box labeled **Enable the event infrastructure server**. If the server has already been configured, then you can enable or disable it by selecting or clearing the check box. If the enable check box is cleared then Common Event Infrastructure has not been configured, or has had a previous configuration disabled but the server has not been restarted. An information message shows you whether this deployment target has Common Event Infrastructure configured. If the server has already been configured, you can change the data source settings for the event database, the message store, or both.

   Note: If you select the check box to enable the Common Event Infrastructure server and the server has not yet been configured, then the parameters shown is used to configure it unless you change them.

   - If you are performing the configuration the first time, then the event data source tables are created on the common database. If there is already a Common Event Infrastructure server configuration, then you need to create a database.
   - The messaging service is created under a unique schema under the common database.

   When the server/cluster on which Common Event Infrastructure has been configured is restarted, then the new changes take effect.
2. Configure (or change the current settings for an existing configuration of) the event database by using one of the following methods to populate the fields with the appropriate settings.
   - Click **Edit** for a database configuration panel with a more extensive list of options than the ones listed on the panel.
   - Use the fields on the panel to enter the information:

   a. **Database name** – the name of the database you use to store events.

   b. **Create Tables** – select this check box if you want to create the database tables on the event database.

      Note: If you are configuring Common Event Infrastructure to use a database on another server, then you are not be able to create the tables using this control. Instead, you will have to use the database scripts that will be generated after you complete the rest of this configuration. In this case, you can click **Edit** to show the data source detail panel, which tells you the location of the database creation scripts.

   c. **Username** and **Password** – for authenticating into the event database.

   d. **Server** – name of the server where the event database is located.

   e. **Provider** – choose a provider for your database from the menu.

   Note: The **Schema** field is activated if the database is created using DB2 on the z/OS platform. In all other cases, the schema field is disabled.

   Important: If the tables exist on the target database, then the configuration can fail.
3. Select whether the Common Event Infrastructure bus is to be**Local** on the server, or **Remote** and reside on another server. If you choose remote, then select the remote location from the menu or click **New** to create a new remote bus.
4. Configure Common Event Infrastructure support for messaging.
   - Click Edit for a database configuration panel with a more extensive list of options than the ones listed on the panel.
   - Use the fields on the panel to enter the information:

   a. **Database name** – enter the name of the database you use to store messages.

b. **Schema** – enter a name for the schema, or accept the default name given.
c. **Username** and **Password** – for authenticating into the messaging database.
d. **Server** – name of the server where the messaging database is located.
e. **Provider** – choose a provider for your database from the menu.

5. Create a messaging authentication alias for the Common Event Infrastructure bus.
   a. Select **Additional Properties > JMS Authentication Alias**.
   b. Enter the user ID and password you use for secure communications across the System Integration Bus. You can accept the default configured values of "CEI" for both the user ID and password if security is disabled. If security has been enabled, then enter the user ID and password used for the bus authentication. In a production environment, you would select your own user ID and password to secure the system.
   c. Click **OK**.
6. Click **OK** or **Apply**.
7. Restart your server or cluster.

All the major parts of Common Event Infrastructure are now configured and running on your server or cluster. The configuration includes the event data store, the messaging engine, and the event application. This single panel can be used in place of many commands and steps you would otherwise use to configure Common Event Infrastructure.

After you have restarted your server or cluster, you will be able to store service component events that are emitted from your applications. You can now change the runtime properties of the Common Event Infrastructure server by selecting the **Common Event Infrastructure Destination** panel. You can choose whether to start the Common Event Infrastructure server at startup, and specify the emitter factory JNDI name where the events are sent.

Deploying the Common Event Infrastructure application:

Before you can use Common Event Infrastructure, you must first deploy the event service and associated resources in the server runtime environment.

The Common Event Infrastructure enterprise application includes the runtime components of the event service and the default messaging configuration used for asynchronous event submission.

To deploy the event service:

From the wsadmin tool, run the **deployEventService** administrative command in batch or interactive mode. The parameters of the **deployEventService** administrative command are as follows:

nodeName
The name of the node where the event service to be deployed. This parameter is optional; if you do not specify a node name, the default is the current node. If you specify a node name, then you must also specify the server name using the **serverName** parameter. This parameter is not valid if you are deploying the event service in a cluster.

serverName
The name of the server where the event service to be deployed. This parameter is required only if you specify a node; it is not valid if you are deploying the event service in a cluster.

clusterName
The name of the cluster where the event service to be deployed. This parameter is optional and must not be specified if you are deploying at the node or server scope.

enable
Indicates whether the event service to be started automatically when the server starts. The default value is **true**.

After the administrative command completes, the Common Event Infrastructure event service and default messaging configuration are deployed at the specified scope.

If WebSphere security is enabled, you must also configure the JMS authentication alias and password using the **setEventServiceJmsAuthAlias** administrative command.

If you are deploying the event service in a cluster, you must also manually configure the event database.

Deploying Common Event Infrastructure in a cluster:

There are several ways you can deploy Common Event Infrastructure resources in a cluster environment.

Deploying Common Event Infrastructure in an existing cluster:

You can deploy the event service application in an existing cluster.

Deploying the event service application in a cluster is essentially the same as deploying the application on a stand-alone server. However, in a cluster environment, no default event database is configured.

To deploy and configure Common Event Infrastructure in a cluster environment:

1. Run the **deployEventService** administrative command as you would for a stand-alone server, but specifying the name of the cluster. Use the clusterName parameter to specify the cluster.
2. On the deployment manager system, run the database configuration administrative command. Specify the cluster name using the clusterName parameter. This command generates the database configuration script.
3. Copy the generated database configuration script to the database system.
4. Run the database configuration script on the database system to create the event database.
5. On the deployment manager system, run the **enableEventService** command to enable the event service. Use the clusterName parameter to specify the name of the cluster.

Creating a cluster by converting an existing Common Event Infrastructure server:

You can create a cluster by converting an existing stand-alone server that is already configured with Common Event Infrastructure.

Before you can convert the existing server, make sure that it is fully configured for Common Event Infrastructure. The configuration includes deploying the event service application and configuring the event database.

To create the cluster:

1. Follow the typical WebSphere process for converting a stand-alone server into the first member of a new cluster. When the server is converted, the following steps take place:
   - Common Event Infrastructure resources available at the scope of the server are moved to the new cluster scope.

     Default database: If the existing server was configured with a non-supported database, the database resources are not moved to the cluster scope. Instead, these resources are removed. In this situation, the event service in the cluster is disabled by default.
   - The deployed event service application target list is modified to remove the converted server and add the new cluster.
2. Optional: If the converted server was configured with a non-supported database, you must configure a new event database for the cluster and then enable the event service:

a. On the deployment manager system, run the database configuration administrative command. Specify the cluster name using the clusterName parameter. This command generates the database configuration script.
b. Copy the generated database configuration script to the database system.
c. Run the database configuration script on the database system to create the event database.
d. On the deployment manager system, run the **enableEventService** command to enable the event service. Use the clusterName parameter to specify the name of the cluster.

Creating a cluster by using an existing Common Event Infrastructure server as a template:

You can create a cluster by specifying an existing Common Event Infrastructure server as a template.

Before you can create a cluster using this method, you must have an existing server that is fully configured for Common Event Infrastructure. The configuration includes deploying the event service application and configuring the event database.

To create the cluster:

1. Follow the typical WebSphere process for creating new cluster, using the existing Common Event Infrastructure server as a template for the first cluster member. When the first member is created, the following steps take place:
   - Common Event Infrastructure resources available at the scope of the existing server are copied to the new cluster scope.

     Default database: If the existing server was configured with a non-supported database, the database resources are not copied to the cluster scope. The default database configuration is not supported in a cluster. In this situation, the event service in the cluster is disabled by default.
   - The deployed event service application target list is modified to include the new cluster.
2. Optional: If the existing server was configured with a non-supported database, you must configure a new event database for the cluster and then enable the event service:
   a. On the deployment manager system, run the database configuration administrative command. Specify the cluster name using the clusterName parameter. This command generates the database configuration script.
   b. Copy the generated database configuration script to the database system.
   c. Run the database configuration script on the database system to create the event database.
   d. On the deployment manager system, run the **enableEventService** command to enable the event service. Use the clusterName parameter to specify the name of the cluster.

Configuring event messaging:

You can modify the messaging configuration used for JMS transmission of events to the event service.

You will create the messaging infrastructure for Common Event Infrastructure when you use the administrative console panel to configure Common Event Infrastructure on a server. Generally, the messaging configuration will use the default messaging provider and create a single JMS queue for asynchronous transmission of events to the event service. You can, if necessary, modify this messaging configuration.

Configuring additional JMS queues:

If you are using the default event messaging configuration, you can add additional JMS queues for transmission of events to the event service.

To configure additional JMS queues to use the default messaging configuration, you can set up multiple JMS queues that are routed to the service integration bus queue destination. The Common Event Infrastructure service integration bus queue destination depends upon the scope at which the event service is deployed:

Scope	Service integration bus queue destination
Server	*node.server*.CommonEventInfrastructureQueueDestination
Cluster	*cluster*.CommonEventInfrastructureQueueDestination

Configuring event messaging using an external JMS provider:

If you do not want to use the default embedded messaging configuration for event transmission, you can configure asynchronous message transport to use an external Java Messaging Service (JMS) provider.

Before you can configure event messaging using an external JMS provider, you must first create a JMS queue and connection factory using the appropriate interfaces for your JMS provider. You must also create a listener port or activation specification.

To configure event messaging using an external JMS provider:

From the wsadmin tool, run the **deployEventServiceMdb** administrative command in batch or interactive mode. The parameters of the **deployEventServiceMdb** command are as follows:

applicationName
The application name of the event service message-driven bean to be deployed. This parameter is required.

nodeName
The name of the node where the event service message-driven bean is to be deployed. If you specify a node name, you must also specify a server name. The node name is an optional parameter; the default value is the current node. Do not specify this parameter if you are deploying the application in a cluster.

serverName
The name of the server where the event service message-driven bean is to be deployed. This parameter is required if you are deploying the application at server scope; otherwise it is optional. Do not specify a server name if you are deploying the application in a cluster.

clusterName
The name of the cluster where the event service message-driven bean is to be deployed. Specify this parameter only if you are deploying the application in a cluster.

listenerPort
The name of the listener port used by the event service message-driven bean to publish events. The specified listener port must exist. You must specify either a listener port or an activation specification, but not both.

activationSpec
The JNDI name of the activation specification used by the event service message-driven bean to publish events. The specified activation specification must exist. You must specify either a listener port or an activation specification, but not both.

qcfJndiName
The JNDI name of the JMS queue connection factory to be used by the event service message-driven bean. This parameter is required if you specify an activation specification; otherwise it is optional. If you specify a queue connection factory and a listener port, the queue connection factory must match the one configured for the listener port.

The **deployEventServiceMdb** administrative command deploys the message-driven bean for the event service, configured for the specified listener port or activation specification. It also creates an emitter factory and JMS transmission using the external JMS configuration. Applications can use either the default emitter factory (which is configured to use the default messaging configuration) or the new emitter factory (which uses the external JMS provider).

If you want to set up more than one JMS queue to the event service, you can run this command multiple times, specifying different enterprise application names and JMS queues. Each time you run the script, it deploys an additional message-driven bean and configures new resources to use the specified JMS queue.

Configuring the JMS authentication alias:

If WebSphere security is enabled and you want to use asynchronous JMS messaging to submit events to the event service, you must configure the JMS authentication alias.

To configure the JMS authentication alias:

From the wsadmin tool, run the **setEventServiceJmsAuthAlias** administrative command in batch or interactive mode. The parameters of the **setEventServiceJmsAuthAlias** command are as follows:

userName
The name of the user to be used for the JMS authentication alias. This parameter is required.

password
The password of the user to be used for the JMS authentication alias. This parameter is required.

nodeName
The name of the node where you want to update or create the JMS authentication alias. If you specify a node name, you must also specify a server name. Do not specify a node name if you are configuring the authentication alias in a cluster.

serverName
The name of the server where you want to update or create the JMS authentication alias. This parameter is required only if you specify a node; it is not valid if you are configuring the authentication alias in a cluster.

clusterName
The name of the cluster where you want to update or create the JMS authentication alias. Specify this parameter only if you are configuring the authentication alias in a cluster; if you specify a cluster name, do not specify a node or server name.

The JMS authentication alias used by the event service objects is updated at the specified scope; if the authentication does not exist, it is created using the specified values.

Configuring the event database:

You can configure the event data source using commands that are specific for each supported database product.

The event database is required to support persistence of events. If you did not use the Common Event Infrastructure configuration panel in the administrative console, you still have the option of creating the event database by using the commands described here.

Event database limitations:

Some limitations apply to configurations of the event database using certain database software.

Refer to the following table to see which limitations might apply to your environment.

Table 119. Event database limitations

Database type	Limitations
Oracle	• The Oracle 11 JDBC thin driver imposes some size restrictions for string values if you are using a Unicode character set. You may receive an Oracle ORA-01461 error when events containing large values (such as a long message attribute) are stored in the event database. For more information about this restriction, refer to the Oracle 11 documentation. To avoid this problem, use the Oracle 11 OCI driver or the Oracle 11 thin driver. • Oracle database software treats a blank string as a NULL value. If you specify a blank string as an event attribute value, that string is converted to a NULL when it is stored in an Oracle event database.
SQL Server	• The SQL Server database must be configured to use mixed authentication mode. Trusted connections are not supported. • The XA stored procedures must be installed. These stored procedures are provided with the JDBC driver from Microsoft Corporation. • The sqljdbc.dll file must be available in a directory specified on the PATH statement. This file is provided with the JDBC driver from Microsoft Corporation. • The Distributed Transaction Coordinator (DTC) service must be started.

Configuring a DB2 event database (Linux, UNIX, and Windows systems):

You can configure an external event database using DB2 Universal Database on a Linux, UNIX, or Windows system.

To configure a DB2 event database on a Linux, UNIX, or Windows system:

1. Start the wsadmin tool.
2. Use the AdminTask object to run the **configEventServiceDB2DB** administrative command in batch or interactive mode. The minimum required parameters of the **configEventServiceDB2DB** command are as follows:

   createDB
   Indicates whether the administrative command creates and run the database configuration scripts. Specify **true** or **false**. If this parameter is set to **false**, the scripts are created but are not run. You must then run the database configuration scripts to complete the database configuration.

   nodeName
   The name of the node that contains the server where the event service data source is created. If you specify a node name, you must also specify a server name. You must specify one of the following:
   - Node name and server name
   - Cluster name

   serverName
   The name of the server where the event service data source is created.

clusterName
The name of the cluster where the event service data source is created. If you specify a cluster name, do not specify node and server names.

jdbcClassPath
The path to the JDBC driver. Specify only the path to the driver file; do not specify the file name.

dbHostName
The host name of the server where the database is installed.

dbUser
The DB2 user ID to use when creating the event database. The specified user ID must have sufficient privileges to create and drop databases.

dbPassword
The DB2 password to use.

Other parameters might be required for your environment. For a complete list of parameters and usage information, refer to the help for the **configEventServiceDB2DB** administrative command.

The administrative command creates the required data source at the specified scope; if you specified **true** for the createDB parameter, the command also runs the generated database configuration script to create the database.

The generated database configuration scripts are stored by default in the *profile_root*/databases/event/*node*/*server*/dbscripts/db2 directory. (In a Network Deployment environment, these scripts are stored under the deployment manager profile directory.) If you specified a value for the optional outputScriptDir parameter, the scripts are stored in that location instead. You can use these scripts to manually configure the event database at any time.

Configuring a DB2 database on a z/OS system:

You can configure an event database on a z/OS system using DB2 database software.

To configure the DB2 database from a remote client, you must have the DB2 Connect product installed with the latest fix packs.

To configure the event database:

1. Linux UNIX Windows If you are configuring the z/OS event database from a Linux, UNIX, or Windows client system, follow these steps to create and catalog the database:
   a. On the z/OS system, use the DB2 administration menu to create a subsystem.
   b. Optional: Create the storage group you want to use for the event database. You can also use an existing storage group (for example, **sysdeflt**).
   c. Enable the 4 K, 8 K, and 16 K buffer pools you want to use for the event database.
   d. Grant the necessary permissions to the user ID you want the data source to use. This user ID must have rights to access the database and storage group you created; it must also have permission to create new tables, table spaces, and indexes for the database.
   e. Catalog the remote database. Run the following commands, either in a script or in a DB2 command-line window:

      ```
      catalog tcpip node zosnode remote hostname server IP_port
          system db_subsystem
      catalog database db_name as db_name at node zosnode authentication DCS
      ```

      For more information about how to catalog a node and its databases, refer to the DB2 Connect documentation.
   f. Verify that you can establish a connection to the remote subsystem. You can run the following command to perform the verification:

      ```
      db2 connect to subsystem user userid using password
      ```

g. Bind to the host database. Run the following commands:

```
db2 connect to db_name user userid using password
db2 bind db2_root/bnd/@ddcsmvs.lst blocking all sqlerror continue message
     mvs.msg grant public
db2 connect reset
```

For more information about binding a client to a host database, refer to the DB2 Connect documentation.

2. On the WebSphere system, start the wsadmin tool.
3. Use the AdminTask object to run the **configEventServiceDB2ZOSDB** administrative command in batch or interactive mode. The minimum required parameters of the **configEventServiceDB2ZOSDB** command are as follows:

createDB

Linux UNIX Windows Indicates whether the administrative command creates and runs the database configuration scripts. This parameter applies only if you are running the administrative command from a Linux, UNIX, or Windows client system. Specify **true** or **false**.

If this parameter is set to **false**, or if you are running the command on the z/OS system, the scripts are created but are not run. You must then run the database configuration scripts to complete the database configuration.

nodeName
The name of the node that contains the server where the event service data source is created. If you specify a node name, you must also specify a server name. You must specify one of the following:

- Node name and server name
- Cluster name

serverName
The name of the server where the event service data source is created.

clusterName
The name of the cluster where the event service data source is created. If you specify a cluster name, do not specify node and server names.

jdbcClassPath
The path to the JDBC driver. Specify only the path to the driver file; do not specify the file name.

dbHostName
The host name of the server where the database is installed.

dbUser
The DB2 user ID to use when creating the event database. The specified user ID must have sufficient privileges to create and drop databases.

dbPassword
The DB2 password to use.

dbPort
The DB2 instance port.

dbSubSystemName
The name of the database subsystem.

storageGroup
The storage group for the event database and the event catalog database.

eventDBName
The event database name to be created.

eventCatalogDBName
The event catalog database to be created.

bufferPool4K
The name of the 4K buffer pool.

bufferPool8K
The name of the 8K buffer pool.

bufferPool16K
The name of the 16K buffer pool.

Other parameters might be required for your environment. For a complete list of parameters and usage information, refer to the help for the **configEventServiceDB2ZOSDB** administrative command.

The administrative command creates the required data source at the specified scope; if you are running the command on a Linux, UNIX, or Windows DB2 client and you specified **true** for the createDB parameter, the command also runs the generated database configuration script to create the database. On a z/OS system, you must use the SQL Processor Using File Input (SPUFI) facility to run the generated DDL files. The DDL files are stored in the *profile_root*/databases/event/*node*/*server*/db2zos/ddl directory.

The generated database configuration scripts are stored by default in the *profile_root*/databases/event/*node*/*server*/dbscripts/db2zos directory. (In a Network Deployment environment, these scripts are stored under the deployment manager profile directory.) If you specified a value for the optional outputScriptDir parameter, the scripts are stored in that location instead. You can use these scripts to manually configure the event database at any time.

After you have finished configuring the database, you can use the server administrative console to test the database configuration. To perform this task, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Configuring an Oracle event database:

You can configure an external event database using Oracle Database on a Linux, UNIX, or Windows system.

Before you configure an Oracle event database, you must first create the database. The Oracle SID must already exist before you run the event database configuration command. The default SID for the event database is **event**.

To configure an Oracle event database:

1. Start the wsadmin tool.
2. Use the AdminTask object to run the **configEventServiceOracleDB** administrative command in batch or interactive mode. The minimum required parameters of the **configEventServiceOracleDB** command are as follows:

   createDB
   Indicates whether the administrative command should create and run the database configuration scripts. Specify **true** or **false**. If this parameter is set to **false**, the scripts are created but are not run. You must then run the database configuration scripts to complete the database configuration.

   nodeName
   The name of the node that contains the server where the event service data source should be created. If you specify a node name, you must also specify a server name. You must specify one of the following:

   - Node name and server name
   - Cluster name

serverName
The name of the server where the event service data source should be created.

clusterName
The name of the cluster where the event service data source should be created. If you specify a cluster name, do not specify node and server names.

jdbcClassPath
The path to the JDBC driver. Specify only the path to the driver file; do not specify the file name.

oracleHome
The ORACLE_HOME directory. This parameter is required only if you specified **true** for the createDB parameter.

dbPassword
The password to use for the schema user ID created during the database configuration (the default user ID is **ceiuser**. This password is used to authenticate the Oracle database connection.

sysUser
The Oracle SYSUSER user ID. This user ID must have SYSDBA privileges.

sysPassword
The password for the specified SYSUSER user ID.

Other parameters might be required for your environment. For a complete list of parameters and usage information, refer to the help for the **configEventServiceOracleDB** administrative command.

The administrative command creates the required data source at the specified scope; if you specified **true** for the createDB parameter, the command also runs the generated database configuration script to create the database.

The generated database configuration scripts are stored by default in the *profile_root*/databases/event/*node*/*server*/dbscripts/oracle directory. (In a Network Deployment environment, these scripts are stored under the deployment manager profile directory.) If you specified a value for the optional outputScriptDir parameter, the scripts are stored in that location instead. You can use these scripts to manually configure the event database at any time.

Configuring a SQL Server event database:

You can configure an external event database using Microsoft SQL Server Enterprise on a Windows system.

To configure a SQL Server event database:

1. On the SQL Server database server system, create the directory used to contain the database files. By default, the files are written to the c:\program files\ibm\event\ceiinst1\sqlserver_data directory. If you need to specify a different location, you must edit the generated database configuration script to modify the value of the ceiInstancePrefix parameter, and then run the script manually.
2. On the server system, start the wsadmin tool.
3. Use the AdminTask object to run the **configEventServiceSQLServerDB** administrative command in batch or interactive mode. The minimum required parameters of the **configEventServiceSQLServerDB** command are as follows:

   createDB
   Indicates whether the administrative command should create and run the database configuration scripts. Specify **true** or **false**. If this parameter is set to **false**, the scripts are created but are not run. You must then run the database configuration scripts to complete the database configuration.

nodeName
The name of the node that contains the server where the event service data source should be created. If you specify a node name, you must also specify a server name. You must specify one of the following:

- Node name and server name
- Cluster name

serverName
The name of the server where the event service data source should be created. If you specify a server name, you must also specify a node name.

clusterName
The name of the cluster where the event service data source should be created. If you specify a cluster name, do not specify node and server names.

dbServerName
The server name of the SQL Server database. This parameter is required only if you specified **true** for the createDB parameter.

dbHostName
The host name of the server where the SQL Server database is running.

dbPassword
The password to use for the user ID created to own the event database tables (the default user ID is ceiuser). The WebSphere data source uses this password to authenticate the SQL Server database connection.

saUser
A user ID with privileges to create and drop databases and users. This parameter is required only if you specified **true** for the createDB parameter.

saPassword
The password for the specified SA user.

Other parameters might be required for your environment. For a complete list of parameters and usage information, refer to the help for the **configEventServiceSQLServerDB** administrative command.

The administrative command creates the required data source at the specified scope; if you specified **true** for the createDB parameter, the command also runs the generated database configuration script to create the database.

The generated database configuration scripts are stored by default in the *profile_root*/databases/event/*node*/*server*/dbscripts/dbscripts/sqlserver directory. (In a Network Deployment environment, these scripts are stored under the deployment manager profile directory.) If you specified a value for the optional outputScriptDir parameter, the scripts are stored in that location instead. You can use these scripts to manually configure the event database at any time.

Manually running database configuration scripts:

You can manually run the scripts generated by the database configuration administrative commands at any time.

Database configuration is a two-step process. The database configuration administrative command first generates a database-specific script for your environment; this generated script then configures the event database and data sources. If you specify **true** for the createDB parameter when running the administrative command, both steps happen automatically.

However, if you specify **false** for the createDB parameter, you must complete the database configuration by manually running the generated script on the target system. You might need to run the script manually in any of the following situations:

- You need to configure the event database on a different system from the one where you ran the administrative command.
- You need to re-create the event database at a later time.
- You need to modify the default options used by the generated script before running it.

Manually creating a DB2 event database on a Linux, UNIX, or Windows system:

Manually generate a database configuration script for a DB2 event database on a Linux, UNIX, or Windows server using the **cr_event_db2** command.

Manually run the generated database configuration script for a DB2 event database on a Linux, UNIX, or Windows system by completing the following steps:

1. On the server system, go to the directory containing the generated script. The default location is the *profile_root*/databases/*event*/*node*/*server*/dbscripts/db2 directory. If you specified a value for the **outputScriptDir** parameter of the database configuration administrative command, the scripts are stored in that location instead.
2. Using an ASCII text editor, make any required modifications to the configuration script. The name of the script varies depending upon the operating system in use:
   - Windows **cr_event_db2.bat**
   - Linux UNIX **cr_event_db2.sh**
3. Run the database creation script using the following syntax (remember to specify the file extension, if applicable):

   ```
   cr_event_db2 [client|server] db_user [db_password]
   ```

   The parameters are as follows:

   client|server
   Indicates whether the database is a client or server. You must specify either **client** or **server**.

   db_user
   The database user ID. This parameter is required.

   db_password
   The password for the database user. If you do not specify a password for a client database, you are prompted for it.

   For example, the following command would create the DB2 event database for a client database, using the user ID **db2admin** and the password **mypassword**:

   ```
   cr_event_db2 client db2admin mypassword
   ```
4. Restart the server. For a federated node, you must also stop and restart the node agent using the **stopNode** and **startNode** commands.

After you finish configuring the database, you can use the administrative console to test the database configuration. To do this, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Manually creating a DB2 event database on a z/OS system:

Manually generate a database configuration script for a DB2 event database on a z/OS system using a Linux, UNIX, or Windows client system using the **cr_event_db2zos** command.

Manually run the generated database configuration script for a DB2 event database on a z/OS system using a Linux, UNIX, or Windows client system by completing the following steps:

1. On the server system, go to the directory containing the generated script. The default location is the *profile_root*/databases/event/*node*/*server*/dbscripts/db2 directory. If you specified a value for the **outputScriptDir** parameter of the database configuration administrative command, the scripts are stored in that location instead.
2. Using an ASCII text editor, make any required modifications to the configuration script. The name of the script varies depending upon the operating system in use:
   - Windows **cr_event_db2zos.bat**
   - Linux UNIX **cr_event_db2zos.sh**
3. Run the database creation script using the following syntax (remember to specify the file extension, if applicable):

   ```
   cr_event_db2zos [dbName=db_name] db_user [db_password]
   ```

   The parameters are as follows:

   db_name
   The database name to use. This parameter is optional; if you do not specify a database name, a name is generated.

   db_user
   The database user ID to use. This parameter is required.

   db_password
   The password for the database user. If you do not specify the password, the DB2 database prompts you for it.

   For example, the following command would create a DB2 event database called **event**, using the user ID **db2admin** and the password **mypassword**:

   ```
   cr_event_db2zos dbName=client db2admin mypassword
   ```
4. Restart the server. For a federated node, you must also stop and restart the node agent using the **stopNode** and **startNode** commands.

After you finish configuring the database, you can use the administrative console to test the database configuration. To do this, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Manually creating an Oracle event database:

Manually generate a database configuration script for an Oracle event database using the **cr_event_oracle** command.

Manually run the generated database configuration script for an Oracle event database by completing the following steps:

1. On the server system, go to the directory containing the generated script. The default location is the *profile_root*/databases/event/*node*/*server*/dbscripts/db2 directory. If you specified a value for the **outputScriptDir** parameter of the database configuration administrative command, the scripts are stored in that location instead.
2. Using an ASCII text editor, make any required modifications to the configuration script. The name of the script varies depending upon the operating system in use:
   - Windows **cr_event_oracle.bat**
   - Linux UNIX **cr_event_oracle.sh**
3. Run the database creation script using the following syntax (remember to specify the file extension, if applicable):

```
cr_event_oracle password sys_user
  sys_password [sid=sid]
  [oracleHome=oracle_home]
```

The parameters are as follows:

password
The password for the schema user ID. This parameter is required.

sys_user
The user ID that has SYSDBA privileges in the Oracle database (typically the sys user). This parameter is required.

sys_password
The password for the specified sys user ID. If this user ID does not use a password, type **none**.

sid=*sid*
The Oracle system identifier (SID). This parameter is optional.

oracleHome=*oracle_home*
The Oracle home directory. This parameter is optional; if you do not specify a value, a generated path is used.

For example, the following command would create the Oracle event database using the schema user ID **auser** and the sys user ID **sys**:

```
cr_event_oracle auser sys syspassword sid=event oracleHome=c:\oracle
```

4. Restart the server. For a federated node, you must also stop and restart the node agent using the **stopNode** and **startNode** commands.

After you finish configuring the database, you can use the administrative console to test the database configuration. To do this, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Manually creating a SQL Server event database:

Manually generate a database configuration script for a SQL Server event database using the **cr_event_mssql** command.

Manually run the generated database configuration script for a SQL Server event database by completing the following steps:

1. On the server system, go to the directory containing the generated script. The default location is the *profile_root*/*databases*/*event*/*node*/*server*/dbscripts/db2 directory. If you specified a value for the **outputScriptDir** parameter of the database configuration administrative command, the scripts are stored in that location instead.
2. Using an ASCII text editor, make any required modifications to the cr_event_mssql.bat script.
3. Run the database creation script using the following syntax:

```
cr_event_mssql user_id password [server=server] sauser=sa_user
 sapassword=sa_password
```

The parameters are as follows:

user_id
The SQL Server login user ID that will own the created tables. This user ID must be created in SQL Server so that a JDBC connection can be made to the database. (The JDBC drivers do not support trusted connections.)

password
The password for the new login user ID that is created.

server=*server*
The name of the server that contains the SQL Server database. This parameter is optional; the default value is the local host.

sauser=*sa_user*
The **sa** user ID. This user ID must have sufficient privileges to create databases and user logins.

sapassword=*sa_password*
The **sa** password, if using mixed authentication mode. If the sa user ID does not have a password set, specify **sapassword=** with no value. Omit this parameter if you are using a trusted connection.

For example, the following command would create the SQL Server event database using the login user ID **userid**:

```
cr_event_mssql userid apassword server=myserver sauser=sa sapassword=sapassword
```

4. Restart the server. For a federated node, you must also stop and restart the node agent using the **stopNode** and **startNode** commands.

After you finish configuring the database, you can use the administrative console to test the database configuration. To do this, navigate to the appropriate JDBC data source and select the **Test Connection** option.

Upgrading the event database from a previous version:

If you have migrated from a previous version of Common Event Infrastructure and you are using event persistence, you might need to upgrade an existing event database.

Upgrading the event database is required if you are migrating from Common Event Infrastructure version 5.1 or earlier.

The database upgrade process upgrades the schema and metadata of the existing event database to the current version while preserving existing event data.

The database upgrade script upgrades the schema and metadata of the existing event database to the current version.

Unsupported versions: If your event database uses a version of database software that is no longer supported by Common Event Infrastructure 6.0, you must first migrate the database to a supported version using the appropriate procedure for the database software. You can then follow the event database upgrade process to upgrade the database.

Upgrading a DB2 event database from a previous version:

If you have an existing DB2 event database from Version 5.1 of Common Event Infrastructure on a Linux, UNIX, or Windows system, you must upgrade it to the current version.

To upgrade a DB2 event database on a Linux or UNIX system:

1. Make a backup copy of the existing event database.
2. Go to the *profile_root*/bin directory.
3. Run the DB2 upgrade script for your operating system:
   - Windows Windows systems:

     ```
     eventUpgradeDB2 runUpgrade=[true|false] dbUser=user
       [dbName=name] [dbPassword=pw]
       [dbNode=node] [scriptDir=dir]
     ```

   - Linux UNIX Linux and UNIX systems:

```
eventUpgradeDB2.sh runUpgrade=[true|false] dbUser=user
  [dbName=name] [dbPassword=pw]
  [dbNode=node] [scriptDir=dir]
```

The typical required parameters are as follows:

runUpgrade
Indicates whether you want the upgrade script to automatically run the generated DDL scripts to complete the database upgrade. This parameter is required. Specify **false** if you want to manually perform the database upgrade at a later time or on a different system.

dbUser
Specifies the DB2 user ID to use. This parameter is required.

dbName
Specifies the DB2 database name. The default name for the event database is **event**. This parameter is required if you specified **runUpgrade=true**.

dbPassword
Specifies the password for the specified DB2 user ID. This parameter is optional; if you do not specify a password, DB2 prompts you to type it.

dbNode
Specifies the database node name. This parameter is required if you are running the upgrade script from a DB2 client system.

scriptDir
Specifies the directory you want to contain the generated DDL scripts. This parameter is optional; if you do not specify a directory, the scripts are stored in the .\eventDBUpgrade\db2 directory.

To see a complete list of parameters and usage information, run the **eventUpgradeDB2** script with no parameters.

The upgrade script generates the required DDL scripts for upgrading the event database. If you specified **runUpgrade=true**, the DDL scripts are automatically run, completing the upgrade.

The following example upgrades an existing DB2 database on a Windows system:

```
eventUpgradeDB2 runUpgrade=true dbUser=db2inst1 dbName=event
```

If you specified **runUpgrade=false**, you must manually run the DDL scripts on the database system to complete the database upgrade.

Upgrading a DB2 for z/OS event database from a previous version:

If you have an existing DB2 event database from Version 5.1 of Common Event Infrastructure on a z/OS system, you must upgrade it to the current version.

To upgrade a DB2 event database on a z/OS system:

1. Make a backup copy of the existing event database.
2. Go to the *profile_root*/bin directory.
3. Run the DB2 for z/OS upgrade script for your client operating system:
   - Windows Windows systems:

     ```
     eventUpgradeDB2ZOS runUpgrade=[true|false] dbUser=user
       [dbName=name] [dbPassword=pw]
       [scriptDir=dir] storageGroup=group
       bufferPool4K=4kbufpool bufferPool8k=8kbufpool
       bufferPool16K=16kbufpool
     ```

   - Linux UNIX Linux and UNIX systems:

```
eventUpgradeDB2ZOS.sh runUpgrade=[true|false] dbUser=user
  [dbName=name] [dbPassword=pw]
  [scriptDir=dir] storageGroup=group
  bufferPool4K=4kbufpool bufferPool8k=8kbufpool
  bufferPool16K=16kbufpool
```

The typical required parameters are as follows:

runUpgrade
Indicates whether you want the upgrade script to automatically run the generated DDL scripts to complete the database upgrade. This parameter is required. Specify false if you want to manually upgrade the database at a later time or on a different system.

z/OS systems: This parameter is ignored on a native z/OS system. Automatically running the generated DDL scripts is supported only on a client system.

dbUser
Specifies the DB2 user ID to use. This parameter is required.

dbName
Specifies the DB2 database name. The default name for the event database is **event**. This parameter is required if you specified **runUpgrade=true**.

dbPassword
Specifies the password for the specified DB2 user ID. This parameter is optional; if you do not specify a password, DB2 prompts you to type it.

scriptDir
Specifies the directory you want to contain the generated DDL scripts. This parameter is optional; if you do not specify a directory, the scripts are stored in the .\eventDBUpgrade\db2zos directory.

storageGroup
Specifies the name of the storage group. This parameter is required.

bufferPool4K
Specifies the name of the 4K buffer pool. This parameter is required.

bufferPool8K
Specifies the name of the 8K buffer pool. This parameter is required.

bufferPool16K
Specifies the name of the 16K buffer pool. This parameter is required.

To see a complete list of parameters and usage information, run the **eventUpgradeDB2ZOS** script with no parameters.

The upgrade script generates the required DDL scripts for upgrading the event database. If you specified **runUpgrade=true** on a client system, the DDL scripts are automatically run, completing the upgrade.

The following example upgrades a DB2 for z/OS event database from a Windows client system:

```
eventUpgradeDB2ZOS runUpgrade=true dbUser=db2inst1 dbName=event
  storageGroup=sysdeflt bufferPool4K=BP9 bufferPool8K=BP8K9 bufferPool16K=BP16K9
```

If you specified **runUpgrade=false**, or if you ran the upgrade script on the z/OS system, you must manually run the generated DDL scripts on the z/OS system using the SQL Processor Using File Input (SPUFI) facility. This step completes the database upgrade.

Upgrading an Oracle event database from Version 5:

If you have an existing Oracle event database from Version 5.1 of Common Event Infrastructure, you must upgrade it to the current version.

To upgrade an Oracle event database:

1. Make a backup copy of the existing event database.
2. Go to the *profile_root*/bin directory.
3. Run the Oracle upgrade script for your operating system:
   - Windows systems:

     ```
     eventUpgradeOracle runUpgrade=[true|false] schemaUser=schemauser
       [oracleHome=dir] [dbName=name]
       [dbUser=sysuser] [dbPassword=pw]
       [scriptDir=dir]
     ```

   - Linux and UNIX systems:

     ```
     eventUpgradeOracle.sh runUpgrade=[true|false] schemaUser=schemauser
       [oracleHome=dir] [dbName=name]
       [dbUser=sysuser] [dbPassword=pw]
       [scriptDir=dir]
     ```

   The typical required parameters are as follows:

   runUpgrade
   Indicates whether you want the upgrade script to automatically run the generated DDL scripts to complete the database upgrade. This parameter is required. Specify **false** if you want to manually upgrade the database at a later time or on a different system.

   schemaUser
   Specifies the Oracle user ID that owns the database tables. This parameter is required.

   oracleHome
   Specifies the Oracle home directory. This parameter is required if you specified **runUpgrade=true**.

   dbName
   Specifies the Oracle database name. The default name for the event database is **event**. This parameter is required if you specified **runUpgrade=true**.

   dbUser
   Specifies the Oracle sys user ID. This parameter is required if you specified **runUpgrade=true**.

   dbPassword
   Specifies the password for the sys user ID. Do not specify this parameter if the sys user ID has no password.

   scriptDir
   Specifies the directory you want to contain the generated DDL scripts. This parameter is optional; if you do not specify a directory, the scripts are stored in the .\eventDBUpgrade\oracle directory.

   To see a complete list of parameters and usage information, run the **eventUpgradeOracle** script with no parameters.

The upgrade script generates the required DDL scripts for upgrading the event database. If you specified **runUpgrade=true**, the DDL scripts are automatically run, completing the upgrade.

The following example upgrades an existing Oracle database on a Windows system:

```
eventUpgradeOracle runUpgrade=true schemaUser=cei
  dbName=event dbUser=sys
```

If you specified **runUpgrade=false**, you must manually run the DDL scripts on the database system to complete the database upgrade.

Configuring the SMTP server

Define the Simple Mail Transfer Protocol (SMTP) server that the Process Server runtime environment should use to send e-mail notifications. After a new install, you must manually configure the SMTP server to enable mail notifications.

This topic provides the steps that are necessary to change the SMTP server settings to point to the right SMTP server. The default SMTP server settings are:

```
<server merge="mergeChildren">

        <!-- email properties -->
        <email>
            <!-- SMTP server that mail should be sent to -->
            <smtp-server>smtp.yourcompany.com</smtp-server>

        </email>
```

1. Stop the server(s).
   - For a network deployment environment:
     - Process Server and Process Center clusters:

       DMGR-profile-root\config\cells*cell-name*\clusters*ClusterName*\process-center\config\100Custom.xml
     - Process Server and Process Center cluster members:

       DMGR-profile-root\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\100Custom.xml
   - For a standalone environment:

     profile-root\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\100Custom.xml
2. Add the following to the 100Custom.xml file:

   ```
   <properties>
     <server merge="mergeChildren">

      <!-- email properties -->
      <email merge="mergeChildren">
       <!-- SMTP server that mail should be sent to -->
       <smtp-server merge="replace">SMTP.YOURCOMPANY.COM</smtp-server>
      </email>
      </server>
    </properties>
   ```

   Where ***SMTP.YOURCOMPANY.COM*** is the name of the actual SMTP server.
3. Save your changes and restart the server(s).

Advanced configuration: customizing your environment

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.

Customizing the settings used by Process Server to connect to Process Center

After you install and configure IBM Business Process Manager, you can change the Process Server from an offline server to a Process Center connected server, and vice versa.

Make sure that you have installed and configured the Process Server component of IBM Business Process Manager.

Use the procedure in this topic to customize the Process Server connection settings for either a stand-alone server environment or network deployment environment.

Typically, you manage configuration customization by editing the 100Custom.xml file. (If you must change the configuration, for example to change the address of the Process Center, you can edit the 99Local.xml configuration file). For an example of customizing and editing the 100Custom.xml file, see "Changing passwords after installation" on page 313.

For example, you can perform the following tasks:

- Update the host and port name of the connection details.

- Change Process Server from an offline server to a Process Center connected server, and vice versa. For example, if you configured Process Server as an offline server, you can change the configuration to a Process Center connected server. You can administer and manage a Process Center connected Process Server directly from the Process Center administrative console. For information about administering a Process Server through the Process Center user interface, see *Administering IBM Business Process Manager* in the information center.
- Change the connection URL.

If your Process Center is connected to a Process Server, you can manage it directly through the Process Center user interface.

Important:
Before you directly edit the `99Local.xml` and `00Static.xml` configuration files, create backup files for each.

To customize the settings used by Process Server to connect to a Process Center, complete the following steps:

1. Stop the deployment manager and the Process Server cluster or server if they are running.
2. Edit the connection values in the `99Local.xml` file.

   The directory path location of the `99Local.xml` file depends on whether your environment is stand-alone, clustered network deployment, or single server network deployment.

   For a stand-alone server environment

   ```
   <stand-alone-profile-root>\config\cells\<cell-name>\nodes\<stand-alone-node-name>\
   servers\<server-name>\process-server\config\system\99Local.xml
   ```

   For a network deployment cluster environment

   - In the network deployment Process Server cluster: `<DMGR-profile-root>\config\cells\<cell-name>\clusters\<cluster-name>\process-server\config\system\99Local.xml`
   - Each Process Server cluster member at: `<DMGR-profile-root>\config\cells\<cell-name>\nodes\<custome-node-name>\servers\<cluster-member-name>\process-server\config\system\99Local.xm`

   For a network deployment single server environment

   ```
   <DMGR-profile-root>\config\cells\<cell-name>\nodes\<custome-node-name>\servers\
   <server-name>\process-server\config\system\99Local.xml
   ```

   See the following example:

   Before the update:

   ```
   <repository-server-url>/ProcessCenter</repository-server-url>
   <repository-server-interval>-1</repository-server-interval>
   ```

   After the update:

   ```
   <repository-server-url>http://localhost:9190/ProcessCenter</repository-server-url>
   <repository-server-interval>10</repository-server-interval>
   ```

   Important: An offline server is indicated with **-1** as a value, for example, **<repository-server-interval>-1</repository-server-interval>**.
3. Restart the deployment manager
4. If you have a network deployment environment, synchronize the node agents from the administrative console. Deployment manager and node agent synchronization are not needed for a stand-alone server. For information on how to synchronize node agents, see the **syncNode** command in the WebSphere Application Server information center.
5. Restart the Process Server cluster or server.

The settings used to connect Process Server to Process Center have been customized.

Related tasks:

"Changing passwords after installation" on page 313
You can use the Process Admin console, the WebSphere Application Server administrative console, and configuration files to change the default password for the **tw_admin** and **tw_user** users in stand-alone or ND cluster environments.

Related information:

WebSphere Application Server information center

Customizing the Process Server/Process Center cluster to work with a web server

After you install and configure IBM Business Process Manager, you must customize your environment so that it can function properly as a cluster with a web server.

Make sure that the Process Server has been installed and configured, and that you have created and configured the servers and clusters. You cannot start the cluster until you complete the procedures in this topic.

Typically, you manage configuration customization by editing the `100Custom.xml` file. (If you must change the configuration, for example to change the address of the Process Center, you can edit the `99Local.xml` configuration file). The `100Custom.xml` files are located in the `config` directory:

- In the network deployment Process Server and Process Center clusters:

  DMGR-profile-root\config\cells*cell-name*\clusters*ClusterName*\process-center\config\system\100Custom.xml
- Each Process Server and Process Center cluster member at:

  DMGR-profile-root\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\100Custom.xml

For an example of customizing and editing the `100Custom.xml` file, see "Changing passwords after installation" on page 313.

Important:
Before you directly edit the `99Local.xml` and `00Static.xml` configuration files, create backup files for each.

The procedures in this topic describe how to:

- Configure the `99local.xml` file in both the Process Server and Process Center to point to a web server.
- Change the Process Server from offline mode to online mode for use with a web server.
- Set the Process Center to Process Server communication to work with HTTP over SSL or HTTP Secure (HTTPS).

1. To configure the `99local.xml` file in both the Process Server and the Process Center to point to a web server:
   a. Stop the deployment manager.
   b. Edit the `99local.xml` file on both the Process Server and Process Center cluster machines to point to the web server.
      - In the network deployment Process Server and Process Center clusters: *DMGR-profile-root*\config\cells*cell-name*\clusters*ClusterName*\process-center\config\system\99Local.xml
      - Each Process Server and Process Center cluster members at: *DMGR-profile-root*\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\system\99Local.xm

        See the following example:

        Before update:

        `http://APPSERVER_URL/ProcessCenter`

        After update:

`http://YOUR_APPSERVER_URL:80/ProcessCenter`

If there is no web server, then all URLs in the `99local.xml` files point to the respective cluster member host name and port. If there is no web server, the cluster server member xml files do not need to be changed. If you have a web server, change all values to point to the web server host name and port with the actual host name and port of the web server. If you are using the default port for http (80), then port is optional. Ensure that you do not leave any tokenized value in the `99local.xml` file.

c. If you do not plan to continue with the rest of this procedure, start the deployment manager. Otherwise, continue to the next step.

d. Synchronize the node agents from administrative console. For more information, see the **syncNode** command in the WebSphere Application Server information center.

2. To change the Process Server from offline mode to online mode for use with a web server:

a. Stop the deployment manager.

b. Edit the connection values in the `99Local.xml` file located on the Process Server cluster machine.

- In the network deployment Process Server cluster: *DMGR-profile-root*\config\cells*cell-name*\clusters*ClusterName*\process-center\config\system\99Local.xml
- Each Process Server cluster member at: *DMGR-profile-root*\config\cells*cell-name*\nodes*node-name*\servers*serverName*\process-center\config\system\99Local.xm

See the following example:

```
<repository-server-url>http://w2k8-64bitp.austin.ibm.com/ProcessCenter</repository-server-url>
<repository-server-interval>10</repository-server-interval>
(uncomment this only if you want to use https)
<!-- Force Process Center Server to use https to deploy ProcessApps and Toolkits to Process Servers -->
<!-- <deploy-snapshot-using-https>true</deploy-snapshot-using-https>
<!-- Force Process Center Server to use https to deploy ProcessApps and Toolkits to Process Servers -->
<!--
<deploy-snapshot-using-https>true</deploy-snapshot-using-https>
 --><server-name>Process Server</server-name>
<server-description>Process Server Production Cluster</server-description>
<server-host>w2k8-64bitps1.austin.ibm.com</server-host>
<server-port>80</server-port>
<environment-type>Production</environment-type>
```

In the previous example:

`<repository-server-url>http://w2k8-64bitp.austin.ibm.com/ProcessCenter</repository-server-url>`

- is the hostname of the Process Center cluster web server.

`<repository-server-interval>10</repository-server-interval>`

- is the repository server interval which is set to -1 by default, change it to a positive number such as 10. This value determines how often (measured in seconds) the Process Server sends connection data to the Process Center.

`<server-host>w2k8-64bitps1.austin.ibm.com</server-host>`

- is the host name of the Process Server cluster web server.

`<server-port>80</server-port>`

- is the Process Server web server http port. If you are using https, specify the https port.)

c. If you do not plan to continue with the rest of this procedure, start the deployment manager. Otherwise, continue to the next step.

d. Synchronize the node agents from the administrative console.

For information on how to synchronize node agents, see **syncNode** command in the WebSphere Application Server information center.

3. To set the Process Center to Process Server communication to work with HTTP over SSL or HTTP Secure (HTTPS).
   a. Import the Process Server SSL certificate into Process Center:
      1) On the Process Center administrative console, click **Security** > **SSL certificate and key management** > **Manage endpoint security configurations** > *Click on any node* > **Key stores and certificates** > **CellDefaultTrustStore** > **Signer certificates** > **Retrieve from port**.
      2) Enter an alias, the host name, and secure port of the Process Server web server. The default IHS web server secure port is 443. If there is no web server, the host name and port values are the same as the host name and port values of the Process Center cluster member.
      3) Click **Retrieve signer information**, click **Apply** and **Save**.
      4) Restart the cluster.
   b. Import the Process Center SSL certificate into Process Server:
      1) On the Process Server administrative console, go to **Security** > **SSL certificate and key management** > **Manage endpoint security configurations** > *Click on any node* > **Key stores and certificates** > **CellDefaultTrustStore** > **Signer certificates** > **Retrieve from port**.
      2) Enter an alias, the host name, and secure port of the Process Server web server. The default IHS web server secure port is 443. If there is no web server, the host name and port values are the same as the host name and port values of the Process Center cluster member.
      3) Click **Retrieve signer information**, click **Apply** and **Save**.
      4) Restart the cluster.
   c. Edit the following line in the `99local.xml` file located in Process Center cluster:
      - In the network deployment Process Center cluster: *DMGR-profile-root*`\config\cells\`*cell-name*`\clusters\`*ClusterName*`\process-center\config\system\99Local.xml`.
      - In each Process Center cluster member: *DMGR-profile-root*`\config\cells\`*cell-name*`\nodes\`*node-name*`\servers\`*serverName*`\process-center\config\system\99Local.xml`

      ```
      <deploy-snapshot-using-https>true</deploy-snapshot-using-https>
      ```

      Note: If **deploy-snapshot-using-https** is set to **true**, and all process servers are secure, then Process Center to Process Server communication will work with HTTP over SSL or HTTP Secure (HTTPS). The reverse is also true. However, if you have a mix of secure and non-secure servers, Process Center is only able to communicate with Process Servers that are configured to work with this set up.
   d. For all the URLs in `99local.xml` in the following folders, make sure that "http" is changed to "https" and that the URLs point to the secure port of the web server:
      - In the network deployment Process Server/Process Center cluster: *DMGR-profile-root*`\config\cells\`*cell-name*`\clusters\`*ClusterName*`\process-center\config\system\99Local.xml`
      - In each Process Server/Process Center cluster member: *DMGR-profile-root*`\config\cells\`*cell-name*`\nodes\`*node-name*`\servers\`*serverName*`\process-center\config\system\99Local.xml`
   e. Confirm that the following lines in the Process Server cluster `99local.xml` use "https" and point to the URL and port of the web server:

      ```
      <repository-server-url>https://w2k8-64bitp.austin.ibm.com/ProcessCenter</repository-server-url> <server-port>443<
      ```
   f. Start the deployment manager.
   g. Restart the cluster.

Related tasks:

"Changing passwords after installation" on page 313
You can use the Process Admin console, the WebSphere Application Server administrative console, and configuration files to change the default password for the **tw_admin** and **tw_user** users in stand-alone or ND cluster environments.

Related information:

WebSphere Application Server information center

Configuring Oracle Real Application Cluster (RAC) for use with IBM Business Process Manager

Oracle Real Application Clusters (RAC) is an option of an Oracle database that brings together two or more computers to form a clustered database that behaves as a single system. In a RAC database, Oracle processes that are running in separate nodes access the same data from a shared disk storage.

During the initial installation and configuration of IBM Business Process Manager it is not possible to use Oracle RAC as the target database. You must specify the SID of the single instance of the Oracle database during configuration. The JDBC URL that is automatically generated and supported for accessing the Oracle database is **jdbc:oracle:thin:@<*hostname*>:<*port number*>:<*DBName*>**. The JDBC URL must be edited as a post configuration step to use Oracle RAC.

There are two scenarios to consider:

- If you are using a Standalone profile you need to create the profile using SID as the value for the database name.
- If you are setting up a Network Deployment environment, the profiles and the clusters need to be configured using SID.

IBM Business Process Manager always creates the JDBC URL in the following format: **jdbc:oracle:thin:@[HOST][:PORT]:SID**. The format can be edited to one of the following to use Oracle RAC.

- `jdbc:oracle:thin:@//[HOST][:PORT]/SERVICE`

  Where **SERVICE** is the Oracle service name.

  Note: This new syntax can be used with the SCAN feature available on Oracle 11g R2 and can not be used without the SCAN feature.

- General format to specify a URL for an Oracle RAC:

```
jdbc:oracle:thin:@(DESCRIPTION=
(LOAD_BALANCE=on)
(ADDRESS=(PROTOCOL=TCP)(HOST=host1)(PORT=1521))
(ADDRESS=(PROTOCOL=TCP)(HOST=host2)(PORT=1521))
(CONNECT_DATA=(SERVICE_NAME=service_name)))
```

If a Oracle RAC node failover occurs, IBM Business Process Manager stops processing and you might need to restart all of the IBM Business Process Manager nodes. If you experience process-recovery issues, refer to Process recovery issues in certain situations in IBM Business Process Manager V7.5.

1. Specify the RAC URL as the Oracle URL when defining the relevant Oracle JDBC data sources.
   a. In the administrative console, select **Resources** > **JDBC** > **Data sources**.
   b. Edit all of the data sources using Oracle with the JDBC URL to use one of the formats above.

   Refer to Configuring a data source using the administrative console.
2. Update the Process Server/Process Center and Performance Data Warehouse `98Database.xml` configuration files. All instances of `<url>jdbc:oracle:thin:@`*`hostname`*`:`*`portnumber`*`:SID</url>` must be changed to the URL format mentioned above to use with Oracle RAC.

Note: The cluster-level 98Database.xml files must be updated as well as all cluster member-level 98Database.xml files. For example, to update a clustered Process Center:

a. Update *DMGR-PROFILE-DIR*\config\cells*cellName*\clusters*clusterName*\process-center\config\system\98Database.xml.

b. Update *DMGR-PROFILE-DIR*\config\cells*cellName*\nodes*nodeName*\servers*memberName*\process-center\config\system\98Database.xml for all node/member combinations of the Process Server cluster.

c. Confirm that you have updated all of the 98Database.xml files for your cluster.

Process Center: The 98Database.xml configuration file locations:

- Standalone environment

  Process Center

  PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\process-center\config\system

  Performance Data Warehouse

  PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\performance-data-warehouse\config\system

- Network Deployment environment

  Process Center (For every single server or cluster member configured with Process Center)

  DMGR-PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\process-center\config\system

  Process Center (Cluster) - Process Center is always configured on AppCluster

  DMGR-PROFILE-DIR\config\cells*cellName*\clusters*clusterName*\process-center\config\system

  Performance Data Warehouse (For every single server or cluster member configured with Process Center)

  PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\performance-data-warehouse\config\system

  Performance Data Warehouse (Cluster) - Performance Data Warehouse is always configured on AppCluster or SupportCluster

  DMGR-PROFILE-DIR>\config\cells*cellName*\clusters*clusterName*\performance-data-warehouse\config\system

Process Server: The 98Database.xml configuration file locations:

- Standalone environment

  Process Server

  PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\process-server\config\system

  Performance Data Warehouse

  PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\performance-data-warehouse\config\system

- Network Deployment environment

  Process Server (For every single server or cluster member configured with Process Center)

  DMGR-PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\process-server\config\system

  Process Server (Cluster) - Process Server is always configured on AppCluster

  DMGR-PROFILE-DIR\config\cells*cellName*\clusters*clusterName*\process-server\config\system

  Performance Data Warehouse (For every single server or cluster member configured with Process Center)

  PROFILE-DIR\config\cells*cellName*\nodes*nodeName*\servers*serverName*\performance-data-warehouse\config\system

  Performance Data Warehouse (Cluster) - Performance Data Warehouse is always configured on AppCluster or SupportCluster

  DMGR-PROFILE-DIR>\config\cells*cellName*\clusters*clusterName*\performance-data-warehouse\config\system

3. In a network deployment environment, you must synchronize the nodes that contain Process Center, Process Server, or Performance Data Warehouse cluster members.

   a. In the administrative console, click **System administration** > **Nodes**.

   b. Select all of the nodes and click **Full Resynchronize**.

   c. Stop and restart all of the clusters and servers.

Configuring an LDAP security provider

To use an additional Lightweight Directory Access Protocol (LDAP) security provider in IBM Business Process Manager, you must add the provider to the federated repository.

By default, IBM Business Process Manager is configured with a single federated repository that contains only the internal IBM BPM security provider. Additionally, you can configure an LDAP security provider, such as Microsoft Active Directory, with WebSphere federated repository.

To configure an LDAP security provider in IBM Business Process Manager, complete the following steps:

1. Log on to WebSphere administrative console as tw_user. The default password for the tw_user account is tw_user.
2. Click **Security** > **Global security**.
3. Under **User account repository**, click **Available realm definitions** > **Federated repositories**.
4. Click **Configure**.
5. Under **Related items**, click **Manage repositories**.
6. Click **Add** and specify parameters for the provider that you want to add. For example, to add Microsoft Active Directory, specify values such as the following examples:

Repository identifier	**SALOMLDAP // change to suit**
Directory type	**Microsoft Windows Active Directory**
Primary host name	**10.1.5.18**
Bind distinguished name	**cn=LDAP_USER,CN=Users,DC=COMPANYQA,DC=com**
Bind password	**pwsaaswp**

7. Click **OK** and then **Save**.
8. Click **Add Base entry to Realm** and specify values such as the following examples:

Distinguished name of a base entry that uniquely identifies this set of entries in the realm	**cn=Users,DC=COMPANYQA,DC=com**
Distinguished name of a base entry in this repository	**cn=Users,DC=COMPANYQA,DC=com**

9. Click **OK** and then **Save**.
10. On the Global Security page, click **Set as current** and then click **Apply**.
11. Shut down all IBM BPM servers. For a network deployment environment, you can shut down all the servers that are members of the same cluster at the same time by stopping the cluster.
12. Make sure that no duplicate users exist in the IBM BPM internal security provider and the security provider that you just added. If duplicate users exist, errors will occur when you run IBM Business Process Manager product components.
13. Start all IBM BPM servers. For a network deployment environment, you can start all the servers in a cluster (cluster members) in one action by starting the cluster.

    If you have configured a server cluster for your runtime environment, stop and restart all servers in the cluster.

Related tasks:

"Setting up user accounts"
You can use an internal security provider in IBM Business Process Manager to create and maintain users and groups. Additionally, you can combine the internal security provider with an external security provider such as Lightweight Directory Access Protocol (LDAP).

Setting up user accounts

You can use an internal security provider in IBM Business Process Manager to create and maintain users and groups. Additionally, you can combine the internal security provider with an external security provider such as Lightweight Directory Access Protocol (LDAP).

The internal security provider in IBM Business Process Manager includes several default users and groups. When you use the internal security provider with an external provider, the users and groups from both providers are available for selection.

Important: Do not remove the default IBM BPM administrator account, tw_admin, or the default administrator group, tw_admins. You cannot administer servers and users without these default accounts. To change the password for the tw_admin account, see Managing default users and groups.

The best way to manage security in IBM BPM is by using groups. For example, to grant administrative access to IBM BPM, add preexisting groups of users from your external security provider to tw_admins, which is a IBM BPM group whose members have administrative access to IBM BPM product components by default. Then, when changes are required, you can add or remove individual users from the groups that exist in your external security provider. This practice ensures that the security maintenance that you perform in your external provider does not require additional work in IBM BPM.

To set up your user accounts when you initially configure IBM BPM servers, complete the following steps:

1. To access the Process Admin Console, in your web browser, go to **http://*[host_name]*:*[port]*/ ProcessAdmin** . Log on using the default administrative account (tw_admin) and the default password (tw_admin).
2. Optional: Create the different types of users and groups that your users will need in IBM BPM.
3. Add members to the default IBM BPM groups or groups that you have created. You can add users and groups from any configured external provider, such as LDAP, and internal IBM BPM users and groups.
4. Add the users and groups who need access to the repository, and grant administrative access to the appropriate users. Then establish who can access each process application and toolkit. The best way to grant access to the repository is to add members to the default group, tw_authors.

Related tasks:

"Configuring an LDAP security provider" on page 312
To use an additional Lightweight Directory Access Protocol (LDAP) security provider in IBM Business Process Manager, you must add the provider to the federated repository.

Changing passwords after installation

You can use the Process Admin console, the WebSphere Application Server administrative console, and configuration files to change the default password for the **tw_admin** and **tw_user** users in stand-alone or ND cluster environments.

If you are using the internal security provider, use the following procedures to maintain user accounts. If you configured a different type of user registry, you must maintain user accounts in the user interface for that user registry.

Related tasks:

"Encrypting passwords" on page 319
When you install IBM Business Process Manager product components, passwords in the installed files are generally encrypted by default. If you need to change these passwords, you can use the IBM BPM EncryptPassword utility to encrypt the new passwords.

"Customizing the settings used by Process Server to connect to Process Center" on page 305
After you install and configure IBM Business Process Manager, you can change the Process Server from an offline server to a Process Center connected server, and vice versa.

Updating the password in the configuration file:

You need to update some configuration files in order to modify your database password.

IBM Process Center, IBM Process Server, and IBM Performance Data Warehouse store their database information in the 98Database.xml file that you need to update with the new password. To locate where the password is to be updated, open the 98Database.xml file in an editor and then search for an entry that looks similar to the following:

<encrypted-password>7Yu5Kz3XaYL5aUjbWfISHg==:VyP9e8ytnTz6623hERR4lg==</encrypted-password>

The above entry needs to be updated with the password value generated by using the encryption tool. Use the method described in the *Encrypting passwords* topic in the related links section.

Attention: Make sure the DMGR and the node agents are operating before you begin your password update. Once you have updated the 98Database.xml file with the new password, you must click **Full Synchronize** to percolate your changes to all nodes. And then, you must restart your environment to make sure the new password is activated in your network deployment environment or your stand-alone environment.

Table 1 identifies the locations of the 98Database.xml configuration file in a stand-alone environment.

Table 120. 98Database.xml Configuration file locations for a stand-alone environment

Deployment type	File location
Process Center	Process Center **<STANDALONE-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\process-center\config\system** Performance Data Warehouse **<STANDALONE-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\performance-data-warehouse\config\system**
Process Server	Process Server **<STANDALONE-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\process-server\config\system** Performance Data Warehouse **<STANDALONE-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\performance-data-warehouse\config\system**

Table 2 identifies the locations of the 98Database.xml configuration file in a network deployment environment.

Table 121. 98Database.xml Configuration file locations for a network deployment environment

Deployment type	File location
Process Center	**1 or 2 cluster topologies** Process Center **<DMGR-PROFILE-DIR>\config\cells\<cell name>\clusters\<APPLICATION-CLUSTER-NAME>\process-center\config\system** For each node used as part of the Application Cluster - **<DMGR-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\process-center\config\system** Performance Data Warehouse **<DMGR-PROFILE-DIR>\config\cells\<cell name>\clusters\<APPLICATION-CLUSTER-NAME>\performance-data-warehouse\config\system** For each node used as part of the Application Cluster - **<DMGR-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\performance-data-warehouse\config\system**
	3 or 4 cluster topologies Process Center **<DMGR-PROFILE-DIR>\config\cells\<cell name>\clusters\<APPLICATION-CLUSTER-NAME>\process-center\config\system** For each node used as part of the Application Cluster - **<DMGR-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\process-center\config\system** Performance Data Warehouse **<DMGR-PROFILE-DIR>\config\cells\<cell name>\clusters\<SUPPORT-CLUSTER-NAME>\performance-data-warehouse\config\system** For each node used as part of the Support Cluster - **<DMGR-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\performance-data-warehouse\config\system**

Process Server	**1 or 2 cluster topologies** Process Server **<DMGR-PROFILE-DIR>\config\cells\<cell name>\clusters\<APPLICATION-CLUSTER-NAME>\process-server\config\system** For each node used as part of the Application Cluster - **<DMGR-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\process-server\config\system** Performance Data Warehouse **<DMGR-PROFILE-DIR>\config\cells\<cell name>\clusters\<APPLICATION-CLUSTER-NAME>\performance-data-warehouse\config\system** For each node used as part of the Application Cluster - **<DMGR-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\performance-data-warehouse\config\system**
	3 or 4 cluster topologies Process Server **<DMGR-PROFILE-DIR>\config\cells\<cell name>\clusters\<APPLICATION-CLUSTER-NAME>\process-server\config\system** For each node used as part of the Application Cluster - **<DMGR-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\process-server\config\system** Performance Data Warehouse **<DMGR-PROFILE-DIR>\config\cells\<cell name>\clusters\<SUPPORT-CLUSTER-NAME>\performance-data-warehouse\config\system** For each node used as part of the Support Cluster - **<DMGR-PROFILE-DIR>\config\cells\<cell name>\nodes\<node name>\servers\<server name>\performance-data-warehouse\config\system**

Related tasks:

"Encrypting passwords" on page 319
When you install IBM Business Process Manager product components, passwords in the installed files are generally encrypted by default. If you need to change these passwords, you can use the IBM BPM EncryptPassword utility to encrypt the new passwords.

Changing the tw_admin password in a stand-alone environment:

You can use the Process Admin Console and the `100Custom.xml` configuration file to change the default password for the **tw_admin** user in a stand-alone environment.

Important: If you are using the internal security provider, use the Process Admin Console to maintain user accounts. If you configured a different type of user registry, you must maintain user accounts in the user interface for that user registry.

For example, if you used federated repositories with the file-based repository, which is the default repository in a WebSphere Application Server Network Deployment environment, use the WebSphere Application Server administrative console to make changes to user accounts.

For example, if you use federated repositories with one or more LDAP repositories, use the LDAP user interface to make changes to user accounts. If **tw_admin** is a user from **LDAP** for example, then the password must be changed in the LDAP.

1. Log on to the Process Admin Console using the administrative account. Use the default **tw_admin** administrative account and the default **tw_admin** password.
2. Navigate to **User Management** > **Maintain User Settings** and change the password for the **tw_admin** user account.
3. Log out of the Process Admin Console.
4. Run the following command to generate an encrypted value for the new password: **java -cp WAS HOME\BPM\Lombardi\lib\utility.jar com.lombardisoftware.utility.EncryptPassword custom password**
5. Stop all process server or process center servers in your environment.
6. Locate the `100Custom.xml` file. For a stand-alone server environment, the file path is: `<stand-alone-profile-root>\config\cells\<cell-name>\nodes\<stand-alone-node-name>\servers\<server-name>\server_type\config\100Custom.xml`
7. Edit the `100Custom.xml` file. Edit the following section to look like this example:

```
<server merge="mergeChildren">
    <bpd-engine merge="mergeChildren">
       <system-lane-users merge="replace">
          <user login="tw_admin" password-encrypted="true" password="1TDVSsD1GFTYZxcM3TCLfQ==:COoxNinhGEedXUdnW5kISC
       </system-lane-users>
   </bpd-engine>
</server>
```

8. Save your changes.
9. Locate the `80EventManager.xml` file. The `80EventManager.xml` is in the following directory: *PROFILE_HOME*`\config\cells\`*cell_name*`\nodes\`*node_name*`\servers\`*server_name*`\`*server_type*`\config\system\99Local.xml`. The value of *server_type* is `process-server` or `process-center`.
10. Copy the following lines from the `80EventManager.xml` file to the `100Custom.xml file`:

```
<event-manager merge="mergeChildren">
   <password merge="replace">[new-password]</password>
   <password-encrypted merge="replace">true</password-encrypted>
</event-manager>
```

11. Update the RunAs roles. From the Administrative Console, click **Applications** > **Enterprise Applications** > *IBM BPM Teamworks application* > **User RunAs roles**. Change the password for the roles with which the **tw_admin** administrative user name is associated and apply the change. For example, if the **twem** and **twuser** roles are associated with the **tw_admin** user name, change the password for those roles.

Changing the tw_user password in a stand-alone environment:

You can use the Process Admin Console and WebSphere Application Server Administrative Console to change the default password for the **tw_user** user in a stand-alone environment.

Important: If you are using the internal security provider, use the Process Admin Console to maintain user accounts. If you configured a different type of user registry, you must maintain user accounts in the user interface for that user registry.

For example, if you used federated repositories with the file-based repository, which is the default repository in a WebSphere Application Server Network Deployment environment, use the WebSphere Application Server administrative console to make changes to user accounts.

For example, if you use federated repositories with one or more LDAP repositories, use the LDAP user interface to make changes to user accounts. If **tw_user** is a user from **LDAP** for example, then the password must be changed in the LDAP.

1. Log in to the Process Admin Console. Log in using the default **tw_admin** administrative account and the default **tw_admin** password.

2. Navigate to **User Management** > **Maintain User Settings** and change the password for the **tw_admin** user account.
3. Change the password for the **tw_user** account in the Process Admin Console.
4. Log out of the Process Admin Console.
5. Navigate to **Enterprise Applications** > **User RunAs Roles** > **IBM_BPM_PerformacneDW**.
6. Change the password for the roles with which the **tw_user** user name is associated and apply the change. For example, if the **twem** and **twuser** roles are associated with the **tw_user** user name, change the password for those roles.
7. Save the changes to the master configuration.
8. Restart the server.

Changing the tw_admin password in an ND cluster environment:

You can use the WebSphere Application Server administrative console and the `100Custom.xml` configuration file to change the default password for the **tw_admin** user in an ND cluster environment.

Important: If you are using the internal security provider, use this procedure to maintain user accounts. If you configured a different type of user registry, you must maintain user accounts in the user interface for that user registry.

For example, if you used federated repositories with the file-based repository, which is the default repository in a WebSphere Application Server Network Deployment environment, use the WebSphere Application Server administrative console to make changes to user accounts.

For example, if you use federated repositories with one or more LDAP repositories, use the LDAP user interface to make changes to user accounts. If **tw_admin** is a user from **NDCluster LDAP** for example, then the password must be changed in the NDCluster LDAP.

1. Log in to the WebSphere Application Server administrative console. Log in using the default **tw_admin** administrative account and the default **tw_admin** password.
2. Navigate to **Users and Groups** > **Manage Users** and locate the **tw_admin** user account.
3. Change the password for the **tw_admin** user account.
4. Log out of the administrative console.
5. Run the following command to generate an encrypted value for the new password:

   ```
   java -cp WAS HOME\BPM\Lombardi\lib\utility.jar com.lombardisoftware.utility.EncryptPassword custom password
   ```

   The system returns the encoded password, as shown in the following example:
   `1TDVSsD1GFTYZxcM3TCLfQ==:COoxNinhGEedXUdnW5kISQ==`
6. Stop all process server or process center servers in your environment.
7. Locate the `100Custom.xml` file. For a Network Deployment environment, the file path is:
   `<DMGR-profile-root>\config\cells\<cell-name>\nodes\<custome-node-name>\servers\<server-name>\server_type\config\100Custom.xml`
8. Edit the `100Custom.xml` file. Edit the following section to look like this example:

   ```
   <server merge="mergeChildren">
       <bpd-engine merge="mergeChildren">
          <system-lane-users merge="replace">
             <user login="tw_admin" password-encrypted="true" password="TDVSsD1GFTYZxcM3TCLfQ==:COoxNinhGEedXUdnW5kISQ==",
          </system-lane-users>
      </bpd-engine>
   </server>
   ```
9. Save your changes.
10. Locate the `80EventManager.xml` file. The `80EventManager.xml` is in the following directory: *PROFILE_HOME*`\config\cells\`*cell_name*`\nodes\`*node_name*`\servers\`*server_name*`\`*server_type*`\config\system\99Local.xml`. The value of *server_type* is `process-server` or `process-center`.

11. Copy the following lines from the 80EventManager.xml file to the 100Custom.xml file:

```
<event-manager merge="mergeChildren">
   <password merge="replace">[new-password]</password>
   <password-encrypted merge="replace">true</password-encrypted>
</event-manager>
```

12. Update the RunAs roles. From the Administrative Console, click **Applications** > **Enterprise Applications** > **IBM BPM Teamworks application** > **User RunAs roles**. Change the password for the roles with which the **tw_admin** administrative user name is associated and apply the change. For example, if the **twem** and **twuser** roles are associated with the **tw_admin** user name, change the password for those roles.

Changing the tw_user password in an ND cluster environment:

You can use the WebSphere Application Server administrative console to change the default password for the **tw_user** user in an ND cluster environment.

Important: If you are using the internal security provider, follow this procedure. If you configured a different type of user registry, you must maintain user accounts in the user interface for that user registry.

For example, if you used federated repositories with the file-based repository, which is the default repository in a WebSphere Application Server Network Deployment environment, use the WebSphere Application Server administrative console to make changes to user accounts.

For example, if you use federated repositories with one or more LDAP repositories, use the LDAP user interface to make changes to user accounts. If **tw_user** is a user from **NDCluster LDAP** for example, then the password must be changed in the NDCluster LDAP.

1. Log in to the WebSphere Application Server administrative console and change the **tw_user** password.
2. Navigate to **Enterprise Applications** > **User RunAs Roles** > **IBM_BPM_PerformacneDW**.
3. Change the password for the roles with which the **tw_user** user name is associated and apply the change. For example, if the **twem** and **twuser** roles are associated with the **tw_user** user name, change the password for those roles.
4. Save the changes to the master configuration.
5. Resynchronize the nodes.
6. Restart the nodes.

Encrypting passwords

When you install IBM Business Process Manager product components, passwords in the installed files are generally encrypted by default. If you need to change these passwords, you can use the IBM BPM EncryptPassword utility to encrypt the new passwords.

To encrypt passwords, complete the following steps:

1. From a command prompt, go to the **[IBM_BPM_home]/BPM/Lombardi/lib** directory.
2. Run the **java -cp utility.jar com.lombardisoftware.utility.EncryptPassword <password>** command, where **<password>** is the password that you want to encrypt.

   For example, run the following command:

   ```
   java -cp utility.jar com.lombardisoftware.utility.EncryptPassword JohnDoe
   ```

   The result is the following code:

   ```
   taVCmTLTWWgkTvfvavu/7g==:sROM4ZbvqRDFYMobWXqvwg==
   ```

   Important: If you are running the utility from a different directory, replace **utility.jar** with the exact path to the **utility.jar** file.

3. If the utility fails with a **ClassNotFound** exception, set your Java home to the following directory before you run the utility again: **[IBM_BPM_home]/AppServer/java/bin/java**

   For example:

   Linux UNIX **java -cp /opt/[IBM_BPM_home]/BPM/Lombardi/lib/utility.jar com.lombardisoftware.utility.EncryptPassword JohnDoe**

   Windows **java -cp c:\[IBM_BPM_home]\BPM\Lombardi\lib\utility.jar com.lombardisoftware.utility.EncryptPassword JohnDoe**

4. Replace the existing encrypted password in your IBM BPM configuration files, such as *PROFILE_HOME*\config\cells*cell_name*\nodes*node_name*\servers*server_name*\process-center\config100Custom.xml.
5. If you must change encrypted passwords in IBM BPM configuration files such as **98Database.xml**, **80EventManager.xml**, and **99Local.xml**, copy the necessary sections from those files to the **100Custom.xml** file.

   Restriction: You cannot use the EncryptPassword utility to decrypt passwords that are already encrypted.

Related tasks:

"Changing passwords after installation" on page 313
You can use the Process Admin console, the WebSphere Application Server administrative console, and configuration files to change the default password for the **tw_admin** and **tw_user** users in stand-alone or ND cluster environments.

"Updating the password in the configuration file" on page 314
You need to update some configuration files in order to modify your database password.

Starting the First steps console

After you install IBM Business Process Manager Standard, you can use the First steps console to verify the installation, start the Profile Management Tool, access product documentation, or direct elements such as servers and administrative consoles related to individual profiles.

A generic version of the console and a version for each profile in your installation are available. Options on each console are displayed dynamically, depending on features you install and the availability of elements on each operating system. Options might include verifying your installation, starting or stopping the server or deployment manager, accessing the administrative console, starting the Profile Management Tool, and accessing the product documentation.

You will usually want to start the version for the profile. The following sections provide detailed information on starting a First steps console based on its version and the platform used on the system:

- "Starting the First steps console for a profile on Linux, UNIX, and Windows platforms" on page 321
- "Starting the generic version of the First steps console" on page 321

Restrictions: The First steps console might not start if you use Mozilla as your default browser and it is installed in a location containing a space in the path name. To rectify this problem, perform one of these actions:

- Install Mozilla into a location without a space in the path name.
- Alter the registry key to remove the space.
- Temporarily set Internet Explorer as the default browser and then set Mozilla as the default browser. This approach automatically removes the space from the registry key.

Starting the First steps console for a profile on Linux, UNIX, and Windows platforms

Linux UNIX Windows Start a First steps console for a profile by performing the following steps:

1. Open a command window.
2. Change to the following directory (where *install_root* represents the installation location of the IBM Business Process Manager or WebSphere Enterprise Service Bus profile (*install_root*/profiles/*profile_name*/):
   - For IBM Business Process Manager profiles:
     - Linux UNIX *profile_root*/firststeps/bpmStd
     - Windows *profile_root*\firststeps\bpmStd
   - For WebSphere Enterprise Service Bus profiles:
     - Linux UNIX *profile_root*/firststeps/esb
     - Windows *profile_root*\firststeps\esb
3. Issue the **firststeps** command to start the console:
   - Linux UNIX ./firststeps.sh
   - Windows firststeps.bat

Fast path:

You can also start a version of the First steps console associated with a profile by performing one of the following tasks:

- Check the First steps console check box on the Profile creation complete or Profile augmentation complete panel at the end of the profile creation or augmentation process.
- Windows Click **Start** > **Programs** > **IBM** > **BPM Standard 7.5** > **Profiles** > *profile_name* > **First steps**.

Starting the generic version of the First steps console

Start the generic version of the First steps console by performing the following steps.

1. Open a command window.
2. Change to the following directory:
   - Linux UNIX *install_root*/firststeps/bpmStd
   - Windows *install_root*\firststeps\bpmStd

   The variable *install_root* represents the location of the IBM Business Process Manager installation on Linux, UNIX, and Windows systems.
3. Issue one of the following commands to start the console:
   - Linux UNIX ./firststeps.sh
   - Windows firststeps.bat

Fast path:

Windows You can also start the generic version of the console on Windows platforms by clicking **Start** > **Programs** > **IBM** > **BPM Standard 7.5** > **First steps**.