WebSphere® Application Server—Express for Distributed Platforms, Version 6.1

Installing your application serving environment

Note

Before using this information, be sure to read the general information under “Notices” on page 311.

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How to send your comments

Your feedback is important in helping to provide the most accurate and highest quality information.

- To send comments on articles in the WebSphere Application Server Information Center
  1. Display the article in your Web browser and scroll to the end of the article.
  2. Click on the **Feedback** link at the bottom of the article, and a separate window containing an e-mail form appears.
  3. Fill out the e-mail form as instructed, and click on **Submit feedback** .
- To send comments on PDF books, you can e-mail your comments to: **wasdoc@us.ibm.com** or fax them to 919-254-0206.

  Be sure to include the document name and number, the WebSphere Application Server version you are using, and, if applicable, the specific page, table, or figure number on which you are commenting.

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Chapter 1. Installing your application serving environment > Distributed operating systems

You can install WebSphere Application Server products on distributed operating systems in two ways, from the discs in the product package or by downloading installation images from the Passport Advantage site, if you are licensed to do so. Distributed operating systems include AIX, HP-UX, Linux, Solaris, and Windows systems.

The installation procedure on distributed platforms uses the InstallShield MultiPlatform (ISMP) program to perform the installation. You can use the installation wizard in graphical interface mode or in silent mode. In silent mode, the installation wizard does not display a graphical interface, but instead, reads your responses from a flat file that you prepare beforehand.

WebSphere Application Server - Express overview

The Express product creates a standalone application server process during installation. You can create other standalone application servers using the Profile Management tool. Each process is created in a *profile*, which is the set of files that define the runtime environment for the process. The files include all of the application files, configuration files, data files, and log files that the Application Server can change. Each standalone application server on a machine shares the same set of core product files.

Creating multiple application servers on a single machine

You can create any number of application servers on a single machine. Although each profile is unique, with its own configuration, applications, data, logs, and administrative console, all of the servers share one set of command files and other product binary files. Changes that you make to one server profile do not affect the other servers. Configuration documents are maintained within each profile.

The **manageprofiles** command and its graphical user interface, the Profile Management tool, create multiple standalone application servers.

Installable components on other discs

Each product package includes an operating system-specific Quick Start disc, unless it is a value-add tool that does not run on the main product operating system. Some operating systems have more than one product disc, such as a disc for an operating system running on a 32-bit hardware platform versus a disc for a 64-bit platform. See “Packaging” on page 10 for a description of the discs in each product package.

The product disc only contains WebSphere Application Server. Also included in the media box is the WebSphere Application Server supplements disc. Use the supplements disc to access installation programs and documentation for the Application Client, IBM Support Assistant, Update Installer, GSKit, IBM HTTP Server, Installation Factory, and Web server plug-ins. You can also use the migration tools from this disc or copy the tools to your system.

How to buy IBM WebSphere Application Server software

See your IBM representative for licensing information, or visit the How to buy WebSphere Application Server software Web site.

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Chapter 2. Overview and new features for installing an application serving environment

Use the links provided in this topic to learn about the installation features.

"What is new for installers"

This topic provides an overview of new and changed features in installation, migration, coexistence, and interoperability support.

Chapter 4, "Planning the installation," on page 49
This topic describes common topologies that you can install with this product.

What is new for installers

Installation is an easier, more consistent, and functionally rich experience across platforms, installable components, and types of installations.

New in Version 6.1! indicates new features or changes implemented at the Version 6.1 level. Unmarked items are Version 6.0 improvements that apply also to Version 6.1, which should interest anyone migrating to Version 6.1 from Version 5.x.

Platform support is described on the Detailed system requirements page.

Improved ease of use

Simplified setup and prerequisites

Redesigned product features simplify operating system setup and reduce prerequisites.

See Chapter 5, "Preparing the operating system for product installation," on page 65.

Redesigned launchpad to plan and start installation

A redesigned launchpad on the product disc launches one of the installation programs. The launchpad also provides product solution roadmap diagrams to let you decide what to install, and where.

Now you can launch the installation of the developer toolset from the launchpad.

See "Using the launchpad to start the installation" on page 25.

Better indicators of installation status

Improved logging and status indicators let you easily determine the success or failure of an installation.

Improved installation verification tools help you verify that the installation succeeded. See "Using the installation verification tools" on page 147.

Verify installation across all installation packages

The installver tool introduced in Version 6.0.2 enables you to perform checksum calculations to verify installed file sets on all platforms.

Separate installer for the Update Installer

New in Version 6.1! A separate installer is used to install the Update Installer. At the end of the installation, launch the Update Installer to apply maintenance.

See "Installing the Update Installer for WebSphere Software" on page 180.

Improved installation documentation

New installation documentation helps you retrieve relevant information.

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Improved capabilities

Security enabled by default; installation requires a user ID

New in Version 6.1! Security now is enabled by default at installation time.

For a silent or graphical installation to succeed, you must either provide a user ID and password or disable security.

Perform non-root installations

New in Version 6.1! Non-root installations are supported by all WebSphere Application Server installation packages in both silent and interactive mode for full installation and removal, incremental feature installations, and edition updates. In particular, root access is not required to install and evaluate IBM HTTP Server. The user who owns the currently installed files is the only user who can perform subsequent installation and update operations on that installation. Many installation operations are not permitted unless the installer also owns the file sets.

Windows Non-root support includes non-administrator group installations on supported Windows operating systems.

See "Limitations of non-root installers" on page 138.

Smaller footprint

A redesigned installer simplifies the installation of the core product files. You do not have to install the core product files multiple times to create multiple stand alone application servers. Instead, use the Profile Management tool GUI or the **manageprofiles** command to create an application server run-time environment that has its own administrative interface.

See Chapter 7, "Configuring the product after installation," on page 143.

Install only what you need

New, more granular installation procedures simplify installation and improve installation reliability. Installation routines exist for the following components.

- WebSphere Application Server products
- IBM HTTP Server
- Web Server plug-ins
- Application clients
- Update Installer

Separate installation procedures let you install only what you need on a particular machine.

Installation factory enhancements

New in Version 6.1! The installation factory creates a customized, distributable installation image tailored to your specific needs. Now, while in connected mode, you can create the installation packages on one operating system and distribute them to another system.

For example, you can create a customized installation package (CIP) for Windows from your Linux system. Support is also expanded to 64-bit platforms.

Linux for zSeries continues to be supported only in command-line mode.

See "Installation Factory overview" on page 212.

Create customized installation packages (CIP)

The installation factory provides the ability to:

- Choose Eclipse-based GUI or CLI
- Create a "custom refresh," which is an ISMP-based installation package at any given level of maintenance, such as 6.0.2.1 plus interim fixes
- Prune unwanted features from the custom installation package
- Use the custom install package to do a full scratch installation as well as update an existing installation (slip install)

See Chapter 10, "Developing and installing customized installation packages," on page 211.

IPv6 support and considerations

This product version introduces selective support for Internet Protocol Version 6 (IPv6). IPv6 is the next evolution in Internet Protocol beyond the IPv4 standard currently in use in most networks today. The key IPv6 enhancement is the expansion of the IP address space from 32 bits to 128 bits, enabling virtually unlimited IP addresses. This addressing capability, along with new functions enabling end-to-end security, improved mobility support, simplified address configuration and management, make IPv6 a critical component in the evolution of e-business and the next generation internet.

IPv6 client workload can be distributed to back end WAS servers. The proxy server supports IPv6 clients and servers. The new IPv6 network support extends Load Balancer to IPv6 clients, enabling their workload to be distributed to backend WebSphere application servers for increased flexibility. And with proxy server support for IPv6 clients and upstream server connections, you get added network reach and flexibility. See the Edge Component Information Center.

Changed product installation root

The installation root varies by operating system, as before, but now includes IBM in the path.

Additional directory structure changes are introduced.

See "Directory conventions" on page 20.

Introducing "profiles"

Consider profiles during product installation

You can install one copy of the core files (binary system files and such) on a machine or partition, then use *profiles* to define multiple application server runtime environments -- each with its own administrative interfaces -- that share the core files. The use of profiles provides many enhancements for preparing, installing, maintaining, and removing installations, including a decreased footprint.

Version 6.1 installs the core product files and a stand-alone application server in a *profile* named default.

Create a profile after installation at any time using the Profile Management tool GUI or the manageprofiles command line interface.

Silent and command line installations

Simpler command line installation

New in Version 6.1! The standard ISMP option format (-W *option*=*value* and –P *option*=*value*) is being replaced with an -OPT option that takes “sub-options” whose names are simpler and more meaningful, and less subject to change from one release to another. The same options are used in the command line invocation of the wizard and in the silent installation parameters in the response files.

Silent installation requires license acceptance

You must set the License Acceptance property to ″true″ in the silent installation response file.

See “responsefile.express.txt” on page 117.

Migration, upgrade, and change management

Tivoli License Management (ITLM)

New in Version 6.1! This product is enabled for management with IBM Tivoli License Management (ITLM). Tivoli software meets today’s business requirements for software license management and asset tracking.

For more information about ITLM, see http://www.ibm.com/software/tivoli/products/license-mgr/.

Query product version information

You can query product version information.

Migration wizard

A migration wizard collects data for the migration command line tools. It also monitors and reports migration status. The installation program no longer performs the migration.

Robust product migration support

New in Version 6.1! To protect your investment defining and tuning your configuration, a number of migration paths are supported among versions and editions. The overall migration is easier and more seamless because many of the migration tools can be integrated into your installation scripts. You can choose from a variety of tools, including:

- GUI based migration on the same machine using the migration wizard
- Command based migration on the same machine using the migration scripts
- Command based migration across different machines using the migration scripts
- Command based migration for OS update using the migration scripts
- Command based application migration for client resources

Incremental cell upgrade

Simplified service

The installation program installs the system files (shared binary files), which you do not update until you install a service fix. Creation and configuration of application servers do not change the system files.

See Chapter 8, “Installing maintenance packages,” on page 173.

Easier removal and reinstallation

Removal and reinstallation of application server environments is simplified and faster. Application server environments are much easier to install and much easier to uninstall than in previous version. Uninstalling an application server profile does not change the shared system files of the product.

Now you can leave profiles installed when uninstalling the product and its core product files.

See Chapter 9, “Uninstalling the product,” on page 193.

Web serving capability

Installing IBM HTTP Server

The installation wizard for IBM HTTP Server has been redesigned. At the end of the Web server installation, launch the new plug-ins installation wizard to configure the IBM HTTP Server and the application server.

When you install IBM HTTP Server, its plug-in is installed

New in Version 6.1! The IBM HTTP Server installation now includes the Web server plug-in for IBM HTTP Server, eliminating an extra step. You can enter information in just one place when setting up the Web server environment.

Separate installer for Web server plug-ins

New in Version 6.1! The separate plug-ins installer installs the Web server plug-ins on a machine on which WebSphere Application Server is not installed, without incurring the overhead of running the WebSphere Application Server installation.

Configure the Web server more easily

New in Version 6.1! New convenience scripts have been added to the installation package, enabling you to configure another instance of the Web server post-installation. Version 6.0 required running the Plug-ins installer again in order to accomplish this.

Installable components in the integrated platform

MQ Series integrated JMS removed from product installation

WebSphere Application Server no longer uses MQ Series to support the embedded JMS function contained in the application server. The MQ Series product is not included any more.

You can use either a separate WebSphere MQ license or the new service integration bus architecture for messaging services. If you set up the integrated JMS under Version 5.0 or Version 5.1, you can continue to use any JMS servers on nodes which have not yet migrated to Version 6.1.

Installing the client

The application client installation is no longer a feature under the application server install. A separate application client installation program is delivered on its own disc.

More usability in selecting application clients to install

New in Version 6.1! J2EE clients and pluggable clients are no longer exclusive features placed on the same feature panel. They are separate setup types that have separate feature panels.

Improved update installer for Application Server Toolkit (AST)

New in Version 6.1! In Version 6, Application Server Toolkit (AST) used the Eclipse Update Manager to retrieve and apply maintenance. In Version 6.1, it uses the Rational Product Updater (RPU), which is built on top of the Update Manager. RPU is able to update the JRE that is bundled with AST, whereas Update Manager knew only how to update Eclipse plug-ins. RPU runs as a separate process from the code it updates, whereas Update Manager runs within AST itself.

IPv6 support

This product version introduces selective support for Internet Protocol Version 6 (IPv6). IPv6 is the next evolution in Internet Protocol beyond the IPv4 standard currently in use in most networks today. IPv6 client workload now can be distributed to back end application servers, and proxy server support is extended to new IPv6 clients and servers.

The key IPv6 enhancement is the expansion of the IP address space from 32 bits to 128 bits, enabling virtually unlimited IP addresses. This addressing capability, along with new functions enabling end-to-end security, improved mobility support, simplified address configuration and management, make IPv6 a critical component in the evolution of e-business and the next generation Internet.

The new IPv6 network support extends Load Balancer to IPv6 clients, enabling their workload to be distributed to back end WebSphere application servers for increased flexibility. With proxy server support for IPv6 clients and upstream server connections, you get added network reach and flexibility. For details, see the Edge Component documentation.

IPv6 addresses are supported in JMS connection factories, but require square brackets to distinguish the IPv6 address from the rest of the providerEndpoints string. This is because the colon separator (:) used by the providerEndpoints string is also used as the separator in IPv6 network addresses. The standard format for provider endpoints is host:port:chain, and an IPv6 address might appear as follows:

```
2002:914:fc12:179:9:20:141:42
```

Therefore, an IPv6 provider endpoint setting might be written as:

```
2002:914:fc12:179:9:20:141:42:7276:BootstrapBasicMessaging
```

An IPv6 address can be of variable length; therefore, it is impossible to know where the IPv6 address ends and the port begins. The solution is to surround the IPv6 address with square brackets, as described in RFC2732 on the Internet Engineering Task Force Web site (http://www.ietf.org). For example, the previous providerEndpoints string becomes:

```
[2002:914:fc12:179:9:20:141:42]:7276:BootstrapBasicMessaging
```

IPv6 is supported for Tivoli Access Manager, Version 6.0. IPv6 was not supported on Tivoli Access Manager Version 5.1 or previous versions.

Chapter 3. Task overview: Installing

Use this procedure to install and customize IBM WebSphere Application Server components on AIX, HP-UX, Linux, Solaris, and Windows operating systems.

Obtain the product code for distributed platforms in one of the following ways:

- From the product disc
- From the Passport Advantage site, where licensed customers can download installation images
- From the Trial download page on the Support site, where you can download a packed installation file
- From a customized installation package (CIP) created with the Installation Factory

See “Packaging” on page 10 for information about installable components on the product discs.

Trial downloads are available for WebSphere Application Server - Express, Rational Application Developer, Application Server Toolkit, IBM HTTP Server, Web server plug-ins for WebSphere Application Server, and WebSphere Application Client.

The Trial download for Rational Application Developer is available at http://www.ibm.com/developerworks/downloads/r/rad/.

Trial downloads are available at no cost and provide the same product code as purchased products, The only difference is that the time period for which a trial installation works is limited. To continue using a trial installation after the limit is reached, you must purchase a license and upgrade to the full product. See “Upgrading the Express trial to the Express product” on page 111.

The launchpad application is available on the product disc and on downloaded installation images, including trials. The launchpad is the recommended method of installing components that are on the product disc or on the Install and Migration Tools disc. See “Using the launchpad to start the installation” on page 25 for more information about the launchpad.

A customized installation package does not include the launchpad.

A customized installation package from the Installation Factory has just one installable component in the image:

Installable component	Directory	Program
WebSphere Application Server - Express	WAS	install

Perform the following procedure to learn about and to create a running version of the product components on your machine. Plan to read through the major topics in the Welcome, Learn about, and Product overview sections of the information center before beginning the installation.

If you are planning to migrate from an earlier version, you can install the WebSphere Application Server product before migrating.

1. Review the installation solution diagrams to help you plan a design for your application serving topology.

   Use the diagrams to identify and select your installation path. See Chapter 4, “Planning the installation,” on page 49 for more information.

   Before you start installing products with the launchpad, verify that your operating system is supported and that you have installed all of the prerequisite patches.

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As of Version 6.1, administrative security is a selectable installation option that is enabled by default. Plan to record your administrative user ID and password so that you can use the administrative console and start and stop application servers.

2. Prepare your operating platform for installation.

   Use the information in Chapter 5, “Preparing the operating system for product installation,” on page 65 to verify that your operating system is able to run the WebSphere Application Server products.

   After preparing your operating system, you are ready to install the WebSphere Application Server products.

3. Install your WebSphere Application Server product.

   See Chapter 6, “Installing the product and additional software,” on page 95 for specific installation procedures for installing a component.

   See Chapter 10, “Developing and installing customized installation packages,” on page 211 for information about using the Installation Factory to create and install customized installation packages (CIPs). The rest of the steps in this procedure do not apply to installing the product with the Installation Factory because a CIP can include maintenance and configured profiles.

   Continue to follow this procedure if you are installing one of the components from the product package so that you install the most current maintenance and configure the product.

4. Install the most current refresh pack, as described in Chapter 8, “Installing maintenance packages,” on page 173.
5. Install the most current fix pack, as described in Chapter 8, “Installing maintenance packages,” on page 173.
6. Install the recommended interim fixes. The procedure for installing an interim fix is described in Chapter 8, “Installing maintenance packages,” on page 173. The list of recommended updates is maintained on the Support site.
7. Configure the product after installation.

   See Chapter 7, “Configuring the product after installation,” on page 143.

   You can use the Profile Management tool to configure additional application server runtime environments, called *profiles*.

   The installation wizard uses the Profile Management tool in silent mode to create and configure profiles.

8. **Optional:** Consider migrating a previous installation to Version 6.x.

   You can migrate the configuration and applications from a previous installation of another version of WebSphere Application Server. Version 6.x has a utility to help you perform the migration.

You can install the WebSphere Application Server - Express product.

Packaging

WebSphere Application Server is a family of similar products designed to deliver the right combination of economy and application serving power for your business demands. The contents of the product packages are similar, but each package has unique elements. Use this topic to familiarize yourself with the various products so that you can determine the offering that best fits your needs.

The WebSphere software platform for e-business starts with a foundation that is formed from Web application serving and integration. IBM WebSphere Application Server software provides the core software to deploy, integrate, and manage your e-business applications.

WebSphere Application Server software supports custom-built applications that are either based on integrated WebSphere software platform products or on other third-party products. Such applications can range from dynamic Web presentations to sophisticated transaction processing systems.

IBM WebSphere Application Server for z/OS is a full-function version of the Network Deployment product. WebSphere Application Server for z/OS can support e-business on any scale.

The management interface for all WebSphere Application Server product offerings includes a scripting interface and the administrative console, which is a Web application.

The scripting interface and the administrative console of the deployment manager are enhanced for managing all of the Application Server nodes in a distributed network cell. From the single point of control of the deployment manager, you can define servers, Web server processes, and clusters. You can start and stop servers and cluster members and deploy applications anywhere in the cell.

Product offerings

IBM WebSphere Application Server products provide a next-generation application server on an industry-standard foundation. Each product addresses a distinct set of scenarios and needs. WebSphere Application Server includes the following product offerings:

- WebSphere Application Server - Express
- WebSphere Application Server
- WebSphere Application Server Network Deployment
- WebSphere Application Server for z/OS

WebSphere Application Server - Express

This product is an affordable solution for creating, running and managing Web sites. The Express product provides a full J2EE application server. The runtime environment addresses standards-based programming for Web and component-based programming, as well as Web services.

The administration model for this offering is a single-server environment without clustering and without centralized administration of multiple server instances.

The development environment offering is the Application Server Toolkit and a trial version of Rational Application Developer. These products have an integrated development environment (IDE) with a graphical interface for developing code artifacts, assembling the code artifacts into various archives (modules) and configuring related J2EE deployment descriptors. They are built using Eclipse Version 3.2.1 technology.

The Trial download for Rational Application Developer is available at http://www.ibm.com/developerworks/downloads/r/rad/.

See “Planning to install WebSphere Application Server - Express” on page 50 for diagrams of topologies that support the Express environment.

WebSphere Application Server

This product offering addresses the basic programming and runtime needs of desktop developers and single-server production scenarios. The runtime environment addresses standards-based programming for Web and component-based programming, as well as Web services.

The administration model is a single-server environment without clustering and without centralized administration of multiple server instances.

The development environment offering is the Application Server Toolkit and a trial version of a Rational Tool product.

WebSphere Application Server Network Deployment

This product offering addresses WebSphere Application Server processes that run in multiple-server production scenarios. Use the Network Deployment product to create:

- Cells

  The cell profile is an ease-of-use enhancement that provides a deployment manager profile that contains a federated application server on the same machine or partition.
- Deployment managers

  The deployment manager provides centralized administration of managed Application Server nodes and custom nodes as a single cell. The deployment manager provides basic clustering and caching support, including failover support and workload balancing. Use the Edge components in the Network Deployment package to further extend the environment with sophisticated caching, load balancing, and enhanced security functions.
- Application servers

  The application server profile in the Network Deployment product can run in a deployment manager cell as a managed node or on its own as a standalone application server.
- Custom

  A custom profile has an empty node that you must add to a deployment manager cell to customize and use. Use the administrative console of the deployment manager to create servers and clusters on the custom managed node. Consider the custom node as a production-ready shell, ready for customization to contain your production-level servers and applications.

WebSphere Application Server for z/OS

This product offering addresses WebSphere Application Server processes that run in multiple-server production scenarios in a UNIX space in z/OS regions. Use WebSphere Application Server for z/OS to create:

- Deployment managers

  The deployment manager provides centralized administration of federated application server nodes and managed nodes as a single cell. The deployment manager provides basic clustering and caching support, including failover support and workload balancing.
- Application servers

  The application server profile in WebSphere Application Server for z/OS can run in a deployment manager cell as a federated node or on its own as a standalone application server.
- Custom

  A custom or managed node is an empty node until you add it to the deployment manager cell for customization. Use the administrative console of the deployment manager to create servers and clusters on the managed node. Consider the managed node as a production-ready shell, ready for customization to contain your production-level servers and applications.

Installation and operating model

In Version 6.x, the core product binary data is separate from the data that you create as you define and customize your WebSphere Application Server runtime environment. You can have multiple sets of customized runtime environments. Each environment is known as a *profile*.

Application server environments that are created during product installation

Product	Default environments	Application server processes created during installation
WebSphere Application Server and WebSphere Application Server - Express	One standalone application server profile and the Profile Management tool for creating other application server profiles on the same machine.	server1
Network Deployment	One cell that contains a deployment manager profile and a federated application server profile and the Profile Management tool for creating other profiles.	• Deployment manager profile: Dmgr01 • Federated application server profile: AppSrv01 • Federated application server process: server1

Launchpad console

The launchpad is the focal point for installing from the product compact disc or DVD media, with important guidance for creating typical topology scenarios. Diagrams help you identify the types of systems that you can create. The launchpad is in the root directory of the product disc.

The launchpad works on installable components in the primary packet of discs. Select and launch any of the components on the product disc or view their HTML documentation on the disc.

Use the **launchpad** command if the program does not start automatically when you insert the product disc:

- AIX HP-UX Linux Solaris `./launchpad.sh`
- Windows `launchpad.exe`

See “Using the launchpad to start the installation” on page 25 for more information.

If you cannot start the launchpad, see the appropriate locale-specific readme file in the root directory on the disc. You can also launch the installation programs directly, using the information in the following table:

Table 1. Installable components on the product disc and the supplements disc

Launch command	Documentation	Name of installable component

`WAS/install`	`WAS/readme/readme_en.html`
	
	`WAS/docs/InstallGuide_en.html`
	
	The *Getting Started* guide contains these HTML files. The guide is also available in Adobe PDF format. Viewing the PDF format requires that you have Adobe Acrobat Reader, which is a free download from the Adobe Acrobat Web site. Download the guide from: ftp://ftp.software.ibm.com/software/webserver/appserv/library/.
		The name of the component varies per product offering:
		• WebSphere Application Server – Express
		• WebSphere Application Server
		• WebSphere Application Server Network Deployment

Table 1. Installable components on the product disc and the supplements disc (continued)

Launch command	Documentation	Name of installable component
IHS/install	IHS/readme/readme_en.html IHS/docs/InstallGuide_en.html The IBM HTTP Server tolerates a non-root installation, but you cannot install the Global Services Kit 7 (GSKit 7) that is required for HTTPS security. You can install IBM HTTP Server as a non-root user, then log on as root to install the GSKit program from the directory on the product disc.	IBM HTTP Server
plugin/install	plugin/readme/readme_en.html plugin/docs/InstallGuide_en.html	Web server plug-ins for WebSphere Application Server
AppClient/install	AppClient/readme/readme_en.html AppClient/docs/InstallGuide_en.html	Application Client for WebSphere Application Server Available on 32-bit operating system platforms only.
InstallationFactory/ compressed file Decompress the file onto your system to install the Installation Factory.	InstallationFactory/readme/readme_en.html InstallationFactory/docs/InstallGuide_en.html	IBM Installation Factory for WebSphere Application Server
UpdateInstaller/install	UpdateInstaller/readme/readme_en.html UpdateInstaller/docs/InstallGuide_en.html	IBM Update Installer for WebSphere Software
ISA/install	ISA/readme/readme_en.html ISA/docs/InstallGuide_en.html	IBM Support Assistant

Tip: For DVD media, if you do not use the launchpad, an additional directory prefix is required before the product directory that reflects the operating system and architecture of the installation. For example, the following installation path applies when you use CD-ROM media to install the Microsoft Windows version of the product on the 32-bit architecture:

install_root/WAS/install.exe

However, the following installation path applies when you use DVD media to install the Microsoft Windows version of the product on the 32-bit architecture:

install_root/win_ia32/WAS/install.exe

Other directories on the product and supplements discs contain components that are automatically installed during one or more of the installation procedures for the installable components.

Package descriptions

Each product package contains several Compact Discs, or CDs. You can also order Digital Versatile Discs, or DVDs, which can hold more information. The DVD product package contains fewer discs by placing the content of multiple CDs into subdirectories on a single DVD. The subdirectory names assigned to each platform are listed in the tables below.

The product discs are always in the primary disc packet.

Each product package and its installable components are described in detail in Packaging information for IBM WebSphere Application Server - Express.

Media (below):	IBM WebSphere Application Server - Express	IBM WebSphere Application Server	IBM WebSphere Application Server Network Deployment
Product disc	WebSphere Application Server - Express	WebSphere Application Server	WebSphere Application Server Network Deployment
Tools discs	WebSphere Application Server Toolkit (unlimited use)	WebSphere Application Server Toolkit (unlimited use) Rational Application Developer (trial)	WebSphere Application Server Toolkit (unlimited use) Rational Application Developer (trial)
Supplements disc	Application Client IBM HTTP Server Web Server Plug-ins Migration Tools	Application Client IBM HTTP Server Web Server Plug-ins Migration Tools	Application Client IBM HTTP Server Web Server Plug-ins Migration Tools
Rational Agent Controller disc	Rational Agent Controller	Rational Agent Controller	Rational Agent Controller
Business Solutions disc	Business Solutions		
DB2 discs	DB2 Express	DB2 Express	DB2 Universal Database V8.2

Figure 1. Installation images in WebSphere Application Server packages

Packaging information for IBM WebSphere Application Server - Express

The Express package is available in two media formats:

- CD or downloadable media for Express
- DVD media for Express

CD or downloadable media for Express

The Express packet contains the discs in the following table:

Disc label	Platforms supported	Comments
WebSphere Application Server - Express V6.1 **Note:** The product uses and contains WebSphere Application Server V6.1.0.3 maintenance packages.	One CD is available for each of the following 32-bit operating system platforms: • AIX 5L • HP-UX • Linux on pSeries PowerPC platforms • Linux on x86 • Solaris on SPARC • Windows	Each platform-specific image contains the WebSphere Application Server - Express component. Use the launchpad application in the root directory to install and view information about the Express and other installable components.
Application Server Toolkit V6.1.1	Two CDs are available for each of the following 32-bit operating system platforms: • Linux on x86 • Windows	The Application Server Toolkit is an Eclipse-based tool for developing, deploying and debugging applications on WebSphere Application Server - Express.
WebSphere Application Server - Express Supplements V6.1	One CD is available for each of the following 32-bit operating system platforms: • AIX 5L • HP-UX • Linux on pSeries PowerPC platforms • Linux on x86 • Solaris on SPARC • Windows	Each platform-specific image contains the following installable components: • Application Client • IBM HTTP Server • Web server plug-ins • Migration Tool • IBM Support Assistant • Installation Factory • Update Installer • Linux World Type and Devanagari fonts • Windows Data Direct Java DataBase Connectivity (JDBC) Drivers Use the migration tools from the disc image, or copy the tools to your system. The IBM Support Assistant has its own installation program. The Installation Factory is a compressed file that you expand onto your system. Install the Update Installer into the root directory of the product that you intend to update. For example, install the Update Installer into the *app_server_root* to use it to install maintenance for the WebSphere Application Server product. Use your Linux system utilities to install the World Type fonts or the Devanagari fonts. Use your operating system utilities to install the Devanagari fonts on other operating systems. The fonts support Hindi, Sanskrit and some other languages. Use the launchpad application in the root directory to install and view information about any of the installable components.

Disc label	Platforms supported	Comments
Rational Agent Controller V7.0.1	One CD that provides support for each of the following 32-bit operating system platforms: • AIX • HP-UX • Linux on pSeries • Linux on x86 • Solaris on SPARC • Windows	The Rational Agent Controller provides a technology for problem determination. The Rational Agent Controller is an enhancement to the Agent Controller from the Autonomic Computing Toolkit, which IBM donated in large part to the Hyades Project. Install the Rational Agent Controller on one of the supported machine environments. Another machine (perhaps an administrator workstation) can use the Log and Trace Analyzer to establish communication with the agent on the remote machine. The Analyzer can request a specific log file from the Rational Agent Controller. The agent uses the appropriate log file parser to normalize the native log to a Common Base Event format and transfers the log file to the Log and Trace Analyzer. Create log file parsers for the Rational Agent Controller with the Common Base Event model builder, which is included in the Autonomic Computing Toolkit.
IBM Business Solutions V5.2	One CD is available for each of the following 32-bit operating system platforms: • AIX 5L • HP-UX • Linux on pSeries PowerPC platforms • Linux on x86 • Solaris on SPARC • Windows	The IBM Business Solutions disc contains the production-ready IBM Welcome Page application and the IBM Telephone Directory application. This CD includes the IBM Tivoli Directory Server (LDAP) program V6.0 for use by the applications on the CD.
DB2 Universal Database Express Edition V8.2 fp 4 Developer use only	One CD is available for each of the following 32-bit operating system platforms: • Linux on Intel • Linux on x86 • Windows	IBM DB2 Universal Database Express Edition is the lowest priced full-function relational database. DB2 UDB Express Edition is designed to meet the needs of small and medium businesses. DB2 UDB Express Edition features self-tuning and self-configuring capabilities for ease of manageability. Available for Linux and Windows platforms, DB2 supports transparent installation with business partner applications that you might develop. See IBM DB2 Universal Database Express Edition for more information. The IBM DB2 Universal Database Express Edition included with this product has a restricted use license. You are authorized to install and use one copy of DB2 Express for use only as a data repository for data generated and managed by WebSphere Application Server - Express.

DVD media for Express

The Express DVD packet contains the DVD media in the following table:

Disc label	Platforms supported	Comments
WebSphere Application Server - Express and Supplements V6.1 **Note:** The product uses and contains WebSphere Application Server V6.1.0.3 maintenance packages.	One 32-bit DVD for each platform: • AIX 5L • HP-UX • Linux on pSeries PowerPC platforms • Linux on x86 • Solaris on SPARC • Windows	Each platform-specific image contains the following installable components: • WebSphere Application Server - Express • Application Client • IBM HTTP Server • Web server plug-ins • Migration Tool • IBM Support Assistant • Installation Factory • Update Installer • Linux World Type and Devanagari fonts • Windows Data Direct Java DataBase Connectivity (JDBC) Drivers Use the migration tools from the disc image, or copy the tools to your system. The IBM Support Assistant has its own installation program. The Installation Factory is a compressed file that you expand onto your system. Install the Update Installer into the root directory of the product that you intend to update. For example, install the Update Installer into the *app_server_root* to use it to install maintenance for the WebSphere Application Server product. Use your Linux system utilities to install the World Type fonts or the Devanagari fonts. Use your operating system utilities to install the Devanagari fonts on other operating systems. The fonts support Hindi, Sanskrit and some other languages. Use the launchpad application in the root directory to install and view information about any of the installable components.
Application Server Toolkit V6.1.1	One 32-bit DVD with platform-specific files: • Linux on x86 • Windows	The Application Server Toolkit is an Eclipse-based tool for developing, deploying and debugging applications on WebSphere Application Server - Express.

Disc label	Platforms supported	Comments
Rational Agent Controller V7.0.1	One 32-bit DVD with platform-specific files: • AIX • HP-UX • Linux on pSeries • Linux on x86 • Solaris on SPARC • Windows	The Rational Agent Controller provides a technology for problem determination. The Rational Agent Controller is an enhancement to the Agent Controller from the Autonomic Computing Toolkit, which IBM donated in large part to the Hyades Project. Install the Rational Agent Controller on one of the supported machine environments. Another machine (perhaps an administrator workstation) can use the Log and Trace Analyzer to establish communication with the agent on the remote machine. The Analyzer can request a specific log file from the Rational Agent Controller. The agent uses the appropriate log file parser to normalize the native log to a Common Base Event format and transfers the log file to the Log and Trace Analyzer. Create log file parsers for the Rational Agent Controller with the Common Base Event model builder, which is included in the Autonomic Computing Toolkit.
IBM Business Solutions V5.2	One 32-bit DVD with platform-specific directories: • AIX 5L • HP-UX • Linux on pSeries PowerPC platforms • Linux on x86 • Solaris on SPARC • Windows	The IBM Business Solutions disc contains the production-ready IBM Welcome Page application and the IBM Telephone Directory application. This DVD includes the IBM Tivoli Directory Server (LDAP) program V6.0 for use by the applications on the DVD.
DB2 Universal Database Express Edition V8.2 fp 4 Developer use only	One 32-bit DVD with platform-specific files: • Linux on Intel • Linux on x86 • Windows	IBM DB2 Universal Database Express Edition is the lowest priced full-function relational database. DB2 UDB Express Edition is designed to meet the needs of small and medium businesses. DB2 UDB Express Edition features self-tuning and self-configuring capabilities for ease of manageability. Available for Linux and Windows platforms, DB2 supports transparent installation with business partner applications that you might develop. See IBM DB2 Universal Database Express Edition for more information. The IBM DB2 Universal Database Express Edition included with this product has a restricted use license. You are authorized to install and use one copy of DB2 Express for use only as a data repository for data generated and managed by WebSphere Application Server - Express.

Directory conventions

References in product information to *app_server_root*, *profile_root*, and other directories infer specific default directory locations. This topic describes the conventions in use for WebSphere Application Server - Express.

Default product locations when the root user or an administrator user installs the product

The root user or administrator user (on a Windows system) is capable of registering shared products and installing into system-owned directories. The following default directories are system-owned directories.

These file paths are default locations. You can install the product and other components in any directory where you have write access. You can create profiles in any valid directory where you have write access. Multiple installations of WebSphere Application Server - Express products or components, of course, require multiple locations.

app_server_root - the install_root for WebSphere Application Server

The following list shows default installation root directories for WebSphere Application Server - Express:

AIX /usr/IBM/WebSphere/AppServer

HP-UX /opt/IBM/WebSphere/AppServer

Linux /opt/IBM/WebSphere/AppServer

Solaris /opt/IBM/WebSphere/AppServer

Windows C:\Program Files\IBM\WebSphere\AppServer

profile_root

The following list shows the default directory for a profile named *profile_name* on each distributed operating system:

AIX /usr/IBM/WebSphere/AppServer/profiles/*profile_name*

HP-UX /opt/IBM/WebSphere/AppServer/profiles/*profile_name*

Linux /opt/IBM/WebSphere/AppServer/profiles/*profile_name*

Solaris /opt/IBM/WebSphere/AppServer/profiles/*profile_name*

Windows C:\Program Files\IBM\WebSphere\AppServer\profiles*profile_name*

plugins_root

The following default installation root is for the Web server plug-ins for WebSphere Application Server:

AIX /usr/IBM/HTTPServer/Plugins

HP-UX /opt/IBM/HTTPServer/Plugins

Linux /opt/ibm/HTTPServer/Plugins

Solaris /opt/IBM/HTTPServer/Plugins

Windows C:\Program Files\IBM\HTTPServer\Plugins

web_server_root

The following default installation root directories are for the IBM HTTP Server:

AIX /usr/IBM/HTTPServer

HP-UX /opt/IBM/HTTPServer

Linux /opt/ibm/HTTPServer

Solaris /opt/IBM/HTTPServer

Windows C:\Program Files\IBM\HTTPServer

gskit_root

The following list shows the default installation root directories for Version 7 of the IBM Global Security Kit (GSKit):

AIX /usr/ibm/gsk7

HP-UX /opt/ibm/gsk7

Linux /opt/ibm/gsk7

Solaris /opt/ibm/gsk7

Windows C:\Program Files\IBM\GSK7

app_client_root

The following default installation root directories are for the WebSphere Application Client:

AIX /usr/IBM/WebSphere/AppClient (J2EE Application client only)

HP-UX /opt/IBM/WebSphere/AppClient (J2EE Application client only)

Linux /opt/IBM/WebSphere/AppClient (J2EE Application client only)

Solaris /opt/IBM/WebSphere/AppClient (J2EE Application client only)

Windows C:\Program Files\IBM\WebSphere\AppClient

updi_root

The following list shows the default installation root directories for the Update Installer for WebSphere Software:

AIX /usr/IBM/WebSphere/UpdateInstaller

HP-UX /opt/IBM/WebSphere/UpdateInstaller

Linux /opt/IBM/WebSphere/UpdateInstaller

Solaris /opt/IBM/WebSphere/UpdateInstaller

Windows C:\Program Files\IBM\WebSphere\UpdateInstaller

cip_app_server_root

The following list shows the default installation root directories for a customized installation package (CIP) produced by the Installation Factory.

A CIP is a WebSphere Application Server - Express product bundled with one or more maintenance packages, an optional configuration archive, one or more optional enterprise archive files, and other optional files and scripts:

AIX /usr/IBM/WebSphere/AppServer/cip/*cip_uid*

HP-UX /opt/IBM/WebSphere/AppServer/cip/*cip_uid*

Linux /opt/IBM/WebSphere/AppServer/cip/*cip_uid*

Solaris /opt/IBM/WebSphere/AppServer/cip/*cip_uid*

Windows C:\Program Files\IBM\WebSphere\AppServer\cip*cip_uid*

The *cip_uid* variable is the CIP unique ID generated during creation of the build definition file. You can override the generated value in the Build definition wizard. Use a unique value to allow multiple CIPs to install on the system.

component_root

The component installation root directory is any installation root directory described in this topic. Some programs are for use across multiple components. In particular, the Update Installer for WebSphere Software is for use with WebSphere Application Server - Express, Web server plug-ins, the Application Client, and the IBM HTTP Server. All of these components are part of the product package.

Default product locations when a non-root user or a non-administrator user installs the product

The non-root user or non-administrator user (on a Windows system) is not capable of registering shared products and installing into system-owned directories. The following default directories are user-owned directories in the home directory of the non-root installer as opposed to being globally shared resources that are available to all users.

app_server_root

The following list shows the default installation directories for non-root installation of WebSphere Application Server - Express:

AIX *user_home*/IBM/WebSphere/AppServer

HP-UX *user_home*/IBM/WebSphere/AppServer

Linux *user_home*/IBM/WebSphere/AppServer

Solaris *user_home*/IBM/WebSphere/AppServer

Windows C:\IBM\WebSphere\AppServer

profile_root

The following list shows the default directories for creating profiles:

AIX *user_home*/IBM/WebSphere/AppServer/profiles/

HP-UX *user_home*/IBM/WebSphere/AppServer/profiles/

Linux *user_home*/IBM/WebSphere/AppServer/profiles/

Solaris *user_home*/IBM/WebSphere/AppServer/profiles/

Windows C:\IBM\WebSphere\AppServer\profiles\

web_server_root

The following default installation root directories are for the IBM HTTP Server:

AIX *user_home*/IBM/HTTPServer

HP-UX *user_home*/IBM/HTTPServer

Linux *user_home*/ibm/HTTPServer

Solaris *user_home*/IBM/HTTPServer

Windows C:\IBM\HTTPServer

plugins_root

The following list shows the default installation root directories for the Web server plug-ins for WebSphere Application Server:

AIX *user_home*/IBM/HTTPServer/Plugins

HP-UX *user_home*/IBM/HTTPServer/Plugins

Linux *user_home*/ibm/HTTPServer/Plugins

Solaris *user_home*/IBM/HTTPServer/Plugins

Windows C:\IBM\HTTPServer\Plugins

app_client_root

The following list shows the default installation root directories for the WebSphere Application Client:

AIX *user_home*/IBM/WebSphere/AppServer/AppClient (J2EE Application client only)

HP-UX *user_home*/IBM/WebSphere/AppClient (J2EE Application client only)

Linux *user_home*/IBM/WebSphere/AppClient (J2EE Application client only)

Solaris *user_home*/IBM/WebSphere/AppClient (J2EE Application client only)

Windows C:\IBM\WebSphere\AppClient

updi_root

The following list shows the default installation directories for non-root installation of WebSphere Application Server - Express:

AIX *user_home*/IBM/WebSphere/UpdateInstaller

HP-UX *user_home*/IBM/WebSphere/UpdateInstaller

Linux *user_home*/IBM/WebSphere/UpdateInstaller

Solaris *user_home*/IBM/WebSphere/UpdateInstaller

Windows C:\Program Files\IBM\WebSphere\UpdateInstaller

cip_app_server_root

The following list shows the default installation root directories for a WebSphere Application Server - Express product CIP:

AIX *user_home*/IBM/WebSphere/AppServer/cip/*cip_uid*

HP-UX *user_home*/IBM/WebSphere/AppServer/cip/*cip_uid*

Linux *user_home*/IBM/WebSphere/AppServer/cip/*cip_uid*

Solaris *user_home*/IBM/WebSphere/AppServer/cip/*cip_uid*

Windows C:\IBM\WebSphere\AppServer\cip*cip_uid*

Hardware and software requirements

The official statements of support for WebSphere Application Server products are provided online at the Supported hardware and software Web page.

See Supported hardware and software Web page for the complete up-to-date listings on what is supported.

If there is a conflict between the information provided in the information center and the information on the Supported hardware and software pages, the information at the Web site takes precedence. Prerequisites information in the information center is provided as a convenience only.

Required disk space

Disk space requirements vary by operating system and hardware platform. See the following topics for information about required disk space and how to prepare your operating system for installation:

- AIX "Preparing AIX systems for installation" on page 65
- HP-UX "Preparing HP-UX systems for installation" on page 70
- Linux "Preparing Linux systems for installation" on page 74
- Solaris "Preparing Solaris systems for installation" on page 83
- Windows "Preparing Windows systems for installation" on page 87

Space is also required for the installable components in the secondary packet of the product package. Refer to the documentation for each installable component to determine exact space requirements.

Supported operating systems

As mentioned, the official statements of support for operating systems are on the Supported hardware and software site.

The installation programs for WebSphere Application Server products verify that a supported operating system is installed. The verification includes checking for required patches with the prereqChecker application.

Although the Installation wizard checks for prerequisite operating system patches, review the prerequisites on the Supported hardware and software Web site if you have not already done so.

Always consult the Supported hardware and software Web site to determine whether your operating system is supported when you receive a message from the prereqChecker program. In some cases, the Web site will be more current than the prereq checker on a product disc. For example, IBM often declares support for new versions of operating systems for a product that is already released. The prereqChecker might issue a message when, in fact, a new version of an operating system is supported.

The Web site lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system.

If you get an error from the prereqChecker program, you can continue the installation. PrereqChecker errors do not prevent you from installing. The messages are notifications of potential problems that you can ignore if the Web site lists your operating system as supported.

Refer to the product documentation for non-IBM prerequisite and corequisite products, such as browsers, to learn how to migrate to supported versions.

Supported languages

The WebSphere Application Server Version 6.x distributed product is supported on these native languages:

- Brazillian-Portuguese
- English
- French

- German
- Italian
- Japanese
- Korean
- Spanish
- Simplified Chinese
- Traditional Chinese

Using the launchpad to start the installation

The launchpad console is the starting point for installing IBM WebSphere Application Server - Express.

The launchpad is a Web application. Before using the launchpad, you must have a supported Web browser. The launchpad supports the following browsers:
- Mozilla, Version 1.4 and 1.7.5 or later
- Internet Explorer, Version 5.5 with SP 2 or later

Install a supported Web browser if one is not installed:

- AIX Install a Mozilla browser. AIX requires Mozilla 1.7.8 or later.

  Install the two prerequisite packages that Mozilla on AIX requires, and install Mozilla as described in “Preparing AIX systems for installation” on page 65.
- HP-UX Linux Solaris Install a Mozilla browser.
  1. Download Mozilla Firefox from the following location: http://www.mozilla.org/products/firefox/.
  2. Export the location of the supported browser using the following command:

     ```
     export BROWSER=/usr/bin/mozilla
     ```
- Windows Install a browser for the Windows operating system.
  - Download Internet Explorer from the following location: http://www.microsoft.com/windows/ie/default.mspx
  - Download Mozilla Firefox from the following location: http://www.mozilla.org/products/firefox/.

You cannot run the launchpad remotely to install a product. Only local use of the launchpad is supported.

WebSphere Application Server is an integrated platform that contains an Application Server, a set of Web development tools, a Web server, and additional supporting software and documentation. The launchpad is the single point of reference for installing the entire Application Server environment.

The launchpad identifies components in the WebSphere Application Server - Express CD-ROM package that you can install.

Links in the navigation frame of the launchpad enable you to:
- View the Welcome page
- View the Solution installation diagrams
- Launch the installation wizard for WebSphere Application Server - Express
- Launch the installation wizard for Application Server Toolkit on Linux (Intel) and Windows platforms
- Launch the installation wizard for IBM HTTP Server
- Launch the installation wizard for Web server plug-ins
- Launch the installation wizard for WebSphere Application Client
- Launch the installation wizard for the Update Installer
- Launch the installation wizard for IBM Support Assistant (ISA)

If you click **Launch the installation wizard for WebSphere Application Server - Express**, the Express installation wizard on the Express product disc is displayed. If you click a link that points to an installation wizard on another disc, then you are prompted to insert that disc. For example, IBM HTTP Server, Web server plug-ins, and WebSphere Application Client are on the WebSphere Supplements disc. If you click a link to launch those products, you must insert the WebSphere Supplements disc in the disc drive to install the product from the launchpad.

There is no WebSphere launchpad for the discs in the secondary packet, such as the DB2 product disc.

1. Start the launchpad.

   The launchpad program is available in the root directory of the product disc or the downloaded installation image. You can start the launchpad manually using a fully qualified command instead of changing directories to the disc and running the command locally from the root directory:

   - AIX HP-UX Linux Solaris Mount the disc drive if necessary. This procedure varies per platform. See “Mounting disc drives on operating systems such as AIX or Linux” on page 134.
   - Open a shell window and issue a fully qualified command to start the launchpad:
     - AIX HP-UX Linux Solaris `launchpad.sh`
     - Windows `launchpad.exe`
2. The launchpad opens in the language of the locale setting of the machine.

   If necessary, select the desired language from the **Language selection** list.
3. Use the launchpad to access the product overview, the readme file, and the installation guide.

   Each launchpad panel for an installable component includes a link to the component installation program and to component documentation for installation and configuration. For example, links on the WebSphere Application Server - Express panel enable you to:
   - Launch the installation wizard.
   - View the product overview.
   - View the installation guide.
   - View the readme file.
4. Click **Launch the installation wizard for ...** to launch the installation wizard for the installable component that you select.

This procedure results in using the launchpad to start the installation and to access information through a browser.

Troubleshooting

To use the Launchpad application to install products from a network share, the contents of the ″WAS CD″ and ″WebSphere Supplements CD″ must be copied into separate directories. The Launchpad application uses the ~/launchpad/diskinfo/thisDisk.properties file to identify the correct location for the install files.

If you can start the launchpad, but clicking a link does not resolve to a page in the launchpad, you might have the media for the wrong operating system in the disc drive. Check the validity of the media.

Use the following procedure to correct any error that is preventing the launchpad from displaying. Then, try to start the launchpad again:

1. If the product disc is no longer accessible, insert the disc.
2. AIX HP-UX Linux Solaris Mount the drive as necessary on platforms such as AIX or Linux.
3. Enable the JavaScript function in your browser.

   AIX HP-UX Linux Solaris Mozilla: Click **Edit** → **Preferences** → **Advanced** → **Scripts & Plugins**:
   - Enable JavaScript for: Navigator.

- Allow scripts to ... (Select all boxes.)

Linux Windows Mozilla Firefox: Click **Tools** → **Options** → **Content**:

- Select **Enable Java**.
- Select **Enable JavaScript**.
- Click **Advanced** and allow scripts to ... (Select all boxes.)

Windows Internet Explorer: Click **Tools** → **Internet Options** → **Security** → **Custom Level for Internet** → **Scripting** → **Active scripting** → **Enable**.

4. Restart the launchpad by issuing the following command:
   - AIX HP-UX Linux Solaris ./launchpad.sh
   - Windows launchpad.exe

Windows If you are attempting to use the Mozilla browser on a Windows system, Internet Explorer might open instead. The launchpad does not recognize Mozilla as the default browser if Internet Explorer is also installed on the same system. The launchpad is fully functional with Internet Explorer, so no action is required.

Issue the following case-specific command at a command prompt, to create an environment variable that forces the use of Mozilla:

```
set BROWSER=Mozilla
```

If the launchpad links still do not work after following this procedure, refer to the following locations of the component installation programs and launch the programs directly. See *Launchpad console* in Packaging.

Go to Chapter 6, “Installing the product and additional software,” on page 95 to continue installing your application serving environment.

install command

The **install** command installs the product and most of the components in the product. When you install the product, the installer program installs the core product files and creates zero, one, or two profiles, depending on the product that you are installing and your installation selections. A silent parameter runs the Installation wizard in silent mode without displaying the graphical user interface.

Purpose

This topic describes the command-line syntax for the install command. Start the install command module from the command line to install the product.

Before you begin installing the product

Prepare the operating system for installation. Follow the procedure in Chapter 3, “Task overview: Installing,” on page 9 to get started.

The command file resides in the root directory of the component on the product disk.

In an effort to simplify your task environment, WebSphere Application Server has adopted a common install engine for WebSphere software components in the Version 6.1 product package. The install command starts the installation program in almost all components in the product package:

- AIX HP-UX Linux Solaris install
- Windows install.exe

If the command or an alternative command is not applicable for a component on a particular operating system, the N/A abbreviation is displayed in the following table. A command is not applicable if the component cannot be installed on the operating system.

Table 2. . Component installation commands by operating system

Operating System	WebSphere Application Server	Application Client	IBM HTTP Server	Web Server Plug-ins	Application Server Toolkit	Update Installer (UPDI)
AIX	install	install	install	install	N/A	install
HP-UX	install	install	install	install	N/A	install
Linux	install	install	install	install	install	install
Solaris	install	install	install	install	N/A	install
Windows	install	install	install	install	install	install

Parameters and syntax

This section describes the command that starts the Installation wizard.

- Issue the install command to start the Installation wizard and display the graphical user interface:

  component_disc_directory/install
- Issue the install -silent command to start the Installation wizard in silent mode, without the graphical user interface:

  component_disc_directory/install -options "*response_file_name*" -silent

Use the following install command options to install a new installation, add a feature to an existing installation, upgrade a trial or the Express product, or configure an existing WebSphere Application Server - Express product by creating a profile.

Use the following table to determine valid values for each option.

Table 3. Install command option values table

Option Name (-OPT)	WebSphere Application Server - Express	
	Values	**Default**
allowNonRootSilentInstall	″true | false″	″false″
feature	″noFeature | samplesSelected″	″samplesSelected″
installLocation	Any valid directory path	*app_server_root* directories for root and non-root installers
installType	″installNew | addFeature | upgrade | createProfile″	″installNew″
profileType	″standAlone″ | ″none″	″none″
silentInstallLicenseAcceptance	″true | false″	″false″
traceFormat	ALL | text | XML	Commented
traceLevel	OFF | SEVERE | WARNING | INFO | CONFIG | FINE | FINER | FINEST	Commented
PROF_adminUserName	Any valid user ID.	″ADMIN_USER_NAME″
PROF_adminPassword	Any valid user password.	″ADMIN_PASSWORD″
PROF_cellName	A string with valid characters	Commented
PROF_defaultPorts	Commented | Uncommented	Commented
PROF_enableAdminSecurity	″true | false″	″true″
PROF_hostName	Any valid host name.	Commented

Table 3. Install command option values table (continued)

Option Name (-OPT)	WebSphere Application Server - Express	
	Values	**Default**
PROF_isDefault	Commented | Uncommented	Commented
PROF_nodeName	Any valid and unique node name.	Commented
PROF_omitAction	Name of a configuration action.	Commented
PROF_portsFile	Any valid file path to a valid ports file.	Commented
PROF_profileName	Any valid profile name string.	Commented
PROF_profilePath	Any valid file path. See the description of *profile_root* in "Directory conventions" on page 20 for default values.	Commented
PROF_serverName	Any application server name, such as server1.	Commented
PROF_startingPort	Any valid port number.	Commented
PROF_validatePorts	Commented | Uncommented	Commented
PROF_webServerCheck	″true | false″	Commented
PROF_webServerHostname	A valid host name of the system with the Web server.	Commented
PROF_webServerInstallPath	Any valid directory path to the Web server.	Commented
PROF_webServerName	A valid name of a valid Web server.	Commented
PROF_webServerOS	linux | windows | aix | hp | solaris | os390 | i5os	Commented
PROF_webServerPluginPath	Any valid directory path to the Web server plug-ins.	Commented
PROF_webServerPort	A valid port to access the Web server.	Commented
PROF_webServerType	IHS | IIS | SUNJAVASYSTEM | DOMINO | APACHE | HTTPSERVER_ZOS	Commented
PROF_winserviceAccountType	*specified user* | localsystem	Commented
PROF_winserviceCheck	″true | false″	Commented
PROF_winserviceStartupType	manual | automatic | disabled	Commented
PROF_winservicePassword	The password of the valid *specified user*	Commented
PROF_winserviceUserName	The name of the valid *specified user*	Commented

See the following descriptions for more information about each option.

Option descriptions

Use the following information to learn the purpose of an option and to determine which options to use for profile creation.

allowNonRootSilentInstall

Change this option to ″true″ to allow a non-root or non-administrator installer ID to install the product. A ″true″ value indicates that you accept the limitations associated with installing as a non-root user. If the value is ″false″, a non-root user cannot install the product.

See “Limitations of non-root installers” on page 138 for more information.

feature
Change the selection state of the Application Server Samples″ feature.

Valid values are:

samplesSelected
Indicates that the feature is selected for installation.

noFeature
Indicates that the feature is not selected for installation.

installLocation

Change the installation location of the product. Specify any valid directory.

Windows Enclose directory names with spaces in double-quotes.

The default values vary per operating system. Separate default locations exist for non-administrator or non-root installer IDs. See the description of *app_server_root* directories for root and non-root installers in “Directory conventions” on page 20.

installType

Change the installType option to control the type of installation. The default is to install a new copy of WebSphere Application Server. Each operation type requires a separate invocation of the install command.

Valid values include:

installNew
This default value installs a new copy of the core product files.

addFeature
Adds features to an existing installation in an *incremental* installation.

Each WebSphere Application Server Version 6.1 product has just one feature.

For components that have more than one feature, set the option for each feature. If a feature is already installed, set the feature option to false. To install a new feature, set the feature to true.

upgrade
Upgrade a trial edition to a licensed version. Or upgrade the Express product to the base WebSphere Application Server product.

createProfile
Create a profile in an existing installation.

Set the installLocation option to your existing installation root directory.

Set the appropriate profile options for the type of profile that you are creating. Profile options are described by profile type in a later section in this topic.

profileType
Indicate the type of profile to create.

Valid values include:

Application Server
Create a stand-alone application server profile.

None
Do not create a profile.

silentInstallLicenseAcceptance
By changing the silentInstallLicenseAcceptance property in a silent response file to ″true″, you agree

that you have reviewed and agree to the terms of the IBM International Program License Agreement accompanying the program, which is located in the *mount point or disc_drive*/WAS/lafiles directory.

If you do not agree to these terms, do not change the value or otherwise download, install, copy, access, or use the program and promptly return the program and proof of entitlement to the party from whom you acquired it to obtain a refund of the amount you paid.

traceFormat
Control the trace file output.

traceLevel
Control the amount of trace information collected.

PROF_adminPassword
Select the password for the administrative user ID.

Set the PROF_enableAdminSecurity option to true to use this option.

PROF_adminUserName
Select the administrative user ID.

Set the PROF_enableAdminSecurity option to true to use this option.

Important: Write down the user name and password. You cannot log onto the administrative console without it. You cannot use WebSphere Application Server at all unless you know the ID and password.

PROF_cellName
Specify a unique cell name for the profile.

The cell name must be unique within the WebSphere Application Server environment.

Even though you might plan to federate a stand-alone application server at some time, specify a unique cell name for the profile that is not the cell name of the deployment manager.

PROF_defaultPorts
Uncomment the option to use the default WebSphere Application Server port settings.

Do not use this parameter with the PROF_portsFile option or the PROF_startingPort option.

PROF_enableAdminSecurity
Choose whether to enable administrative security during the installation process.

Set the createProfile option to true.

Set the installLocation option to your existing installation root directory.

Set the profileType option.

Set other appropriate profile options (PROF_ options) for your type of profile.

If profileType=″custom″ or profileType=″none″, set this option to false.

Valid values are:

true
Administrative security is enabled. You must specify a user name and a password.

Important: Write down the user name and password. You cannot log onto the administrative console without it. You cannot use WebSphere Application Server at all unless you know the ID and password.

false
Administrative security is not enabled.

PROF_hostName
Specify the host name of the machine where the profile is to reside.

The host name is the domain name system (DNS) name (short or long) or the IP address of this computer.

PROF_isDefault
Set a default profile.

The default profile is the default target for commands issued against an anonymous profile, such as commands issued from the *app_server_root*/bin directory.

Issuing a command from the bin directory of another profile sets the command window to address the other profile, and not the default profile. Opening a new command window targets anonymous commands to the default profile again.

PROF_nodeName
Specify a unique node name for the profile.

The node name must be unique within the WebSphere Application Server environment.

PROF_omitAction
Omit the specified configuration action.

PROF_portsFile
Specify the path to a property file containing the desired port values.

Valid values are a valid file path default WebSphere Application Server port settings.

Do not use this parameter with the PROF_defaultPorts option or the PROF_startingPort option.

PROF_profileName
Set the profile name.

Specify the name of the profile. The profile name must be unique for this WebSphere Application Server installation or for the cell to which it might belong at some time.

Valid values are a string with valid characters.

PROF_profilePath
Specify the fully qualified file path to the *profile_root* directory.

Specify a valid directory to contain the files that define the run-time profile environment, such as commands, configuration files, and log files.

Windows If the directory contains spaces, enclose the path in double-quotes.

Valid values are a valid directory path.

PROF_serverName
Specify the server name for the stand-alone application server profile, for the deployment manager, or for the federated application server that is part of the cell profile.

Each stand-alone application server profile or each federated application server profile can have a server named server1, for example. Server names have to be unique within a profile, but not within a cell or within an installation.

PROF_startingPort
Specify the starting port number for generating all ports for the profile. If not specified, the profile uses default ports specified in the serverindex.xml file.

Do not use this parameter with the PROF_portsFile option.

PROF_validatePorts
Uncomment the option to validate that no conflicts exist within the selected ports.

PROF_webServerCheck
Specify whether you wish to define a Web server definition.

PROF_webServerHostname
Specify the host name of the system with the Web server.

Requires the PROF_webServerCheck option.

PROF_webServerInstallPath
Specify the local or remote installation path of the Web server.

Requires the PROF_webServerCheck option.

PROF_webServerName
Specify the name of the Web server.

Requires the PROF_webServerCheck option.

PROF_webServerOS
Specify the operating system of the system where the Web server runs.

Requires the PROF_webServerCheck option.

PROF_webServerPluginPath
Specify the path to the Web server plug-in for the Web server.

Requires the PROF_webServerCheck option.

PROF_webServerPort
Specify the access port of the Web server, such as port 80.

Requires the PROF_webServerCheck option.

PROF_webServerType
Specify the type of web server.

Requires the PROF_webServerCheck option.

PROF_winserviceAccountType
Specify the type of windows service to create.

Requires the PROF_winserviceCheck option.

PROF_winserviceCheck
Choose whether to run the server process as a Windows service.

PROF_winserviceStartupType
Specify the start up method for the windows service.

Requires the PROF_winserviceCheck option.

PROF_PROF_winservicePassword
Specify the password for the windows service.

Requires the PROF_winserviceCheck option.

PROF_PROF_winserviceUserName
Specify the user name for the windows service.

Requires the PROF_winserviceCheck option.

Examples of installing the product

Install WebSphere Application Server - Express with the Installation wizard user interface

```
install
```

See Chapter 6, “Installing the product and additional software,” on page 95 for more information about installing with the Installation wizard.

Install WebSphere Application Server - Express from the command line

```
install -options /tmp/was/my_response_file.txt -silent
```

Install WebSphere Application Server - Express from the command line without the user interface

```
install -options /tmp/was/my_response_file.txt
```

The command installs the product with these particulars:

Response file location
/tmp/was/my_response_file.txt

Root installation
-OPT allowNonRootSilentInstall="false"

Install the feature
-OPT feature="samplesSelected"

Installation root directory
-OPT installLocation="*app_server_root*"

Install a new installation of the product
-OPT installType="installNew"

Type of profile created during installation
-OPT profileType="standAlone"

Accept IBM licensing agreement
-OPT silentInstallLicenseAcceptance="true"

Specify a cell name
-OPT PROF_cellName="my_cell1"

Use the default ports for the stand-alone application server
-OPT PROF_defaultPorts=

Specify the host name (IP address in this case)
-OPT PROF_hostName="5.55.555.555"

Identify the file path for profiles
-OPT PROF_profilePath="*profile_root*"

Name the application server
-OPT PROF_serverName="my_server1"

Let the installer program assign non-conflicting ports
-OPT PROF_validatePorts=

Install a Web server definition
-OPT PROF_webServerCheck="true"

Identify the location of the Web server and the plug-ins
-OPT PROF_webServerHostname="5.55.555.555"
-OPT PROF_webServerInstallPath="*Web_server_root*"
-OPT PROF_webServerName="my_ihs_web_server1"
-OPT PROF_webServerOS="linux"
-OPT PROF_webServerPluginPath="*plugins_root*"
-OPT PROF_webServerPort="80"
-OPT PROF_webServerType="IHS"

Content of /tmp/was/my_response_file.txt

-OPT allowNonRootSilentInstall="false"
-OPT feature="samplesSelected"
-OPT installLocation="*app_server_root*"

-OPT installType="installNew"
-OPT profileType="standAlone"
-OPT silentInstallLicenseAcceptance="true"
-OPT traceFormat=ALL
-OPT traceLevel=INFO
-OPT PROF_cellName="exp_cell1"
-OPT PROF_defaultPorts=
-OPT PROF_hostName="5.55.555.555"
-OPT PROF_isDefault=
-OPT PROF_nodeName="expnode1_node"
-OPT PROF_profileName="my_default"
-OPT PROF_profilePath="*profile_root*"
-OPT PROF_serverName="my_server1"
-OPT PROF_validatePorts=
-OPT PROF_webServerCheck="true"
-OPT PROF_webServerHostname="5.55.555.555"
-OPT PROF_webServerInstallPath="*Web_server_root*"
-OPT PROF_webServerName="my_ihs_web_server1"
-OPT PROF_webServerOS="linux"
-OPT PROF_webServerPluginPath="*plugins_root*"
-OPT PROF_webServerPort="80"
-OPT PROF_webServerType="IHS"

See "Installing silently" on page 114 for more information about using the Installation wizard in silent mode, without the graphical user interface.

Logging

Examine the *app_server_root*/logs/install/log.txt file to verify that there were no file system or other unusual errors while installing. If there are problems, correct them, and reinstall the product.

WebSphere Application Server uses return codes to indicate the results of an installation operation:

0 Success

1 Failed

2 Partial success

3 Reserved

4 License not accepted

5 PrereqCheck failed

6 Upgrade not supported

Return codes are in use in the following components on the following operating systems.

Table 4. Return code applicability

Operating System	WebSphere Application Server	Application Client	IBM HTTP Server	Web Server Plug-ins	Application Server Toolkit	Update Installer (UPDI)
Operating system such as AIX or Linux	Yes	Yes	Yes	Yes	Yes	Yes

Windows ISMP does not set exit codes on Windows due to a limitation. Consult the install log to determine success or failure.

The exit codes for the Application Client are different than the Version 6.0 exit codes, which are “1=success” and “0=failure”.

Partial success means that some portion of the installation failed but the installation is still at least partially usable. The failure is recoverable. Once recovered, the installation is completely usable. Consult the log to determine the exact failure and what, if any, corrective action can be taken.

Product version information

The WebSphere Application Server product contains structural differences from previous versions.

The properties/version directory in the *app_server_root* contains important data about the product and its installed components, such as the build version and build date. This information is included in WAS.product and [component].component files.

Run the historyInfo command to create a report about installed maintenance packages. The historyInfo command creates a report on the console and also creates tracking files in the *app_server_root*/properties/version/history directory.

Time-stamped, detailed logs record each update process in the properties/version/log directory of the *app_server_root*.

This topic describes the XML data files that store product information for Version 6 WebSphere Application Server products. By default, the document type declarations (DTDs) for these files are in the properties/version/dtd folder of the *app_server_root*, or the server root directory. See the “Product version information” section for more information.

This topic includes the following sections:

- “Product information files”
- “Reports” on page 37
- “Logs and component backups” on page 38
- “Directory locations” on page 39
- “Operational description” on page 39
- “Data dictionary” on page 40

Product information files

XML files in the properties/version directory that store version information:

platform.websphere
: One file whose existence indicates that a WebSphere Application Server product is installed. An example of the file follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE websphere PUBLIC "websphereId" "websphere.dtd">
<websphere name="IBM WebSphere Application Server" version="6.1"/>
```

The following XML files in the properties/version directory represent installed items and installation events such as product edition, version, component, and build information.

WAS.product
: One file whose existence indicates the particular WebSphere Application Server product that is installed. The type of product installed is indicated by the <id> tag. Data in the file indicates the version, build date, and build level.

component-name.**component**
: Any number of component files that each indicate the presence of an installed component, which is part of the product. Data in the file indicates the component build date, build version, component

name, and product version. For example, the file might be the activity.component file, which indicates that the activity component is installed. The activity component is part of the Network Deployment product. An example of the file follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE component PUBLIC "componentId" "component.dtd">
<component build-date="05/31/06" build-version="a0522.07"
   name="activity" spec-version="6.1.0.0"/>
```

extension.id.**extension**
Any number of extension files that each indicate the presence of an extension that you install as a user extension, as part of a service engagement, or as installed by a third party product. The *<extension.id>*.extension files are not created, logged, or removed by WebSphere Application Server products.

ptf-id.**ptf**
Any number of maintenance package files that each indicate the presence of an installed refresh pack, fix pack, or interim fix.

XML files in the properties/version/history directory that store version history information files: The following XML files in the properties/version/history directory describe refresh packs, fix packs, and interim fixes that are currently installed. These XML files are related to installation items by the primary ID information, which is shown in the following examples as italicized text.

xxxmaintenance_package_identifierxxx.**ptfDriver**
A driver file has useful information about the entire contents of an interim fix or fix pack.

xxxmaintenance_package_identifierxxx.**ptfApplied**
The applied file has relevant information about the interim fixes or fix packs that are currently applied.

event.history
One file that lists update events that have occurred. An update event is an operation that installs or uninstalls an interim fix or a fix pack. The file is sorted by the date and time of the events that are listed.

Reports

WebSphere Application Server provides the ability to generate ***Version*** reports and History reports from the data in the files. The following report-generation scripts are available in the *app_server_root* bin directory.

Product version reports

The following report generation scripts extract data from XML data files in the properties/version folder:

- versionInfo script

  Lets you use parameters to create a version report on platforms such as AIX or Linux, or on Windows platforms.
- genVersionReport script

  Generates the versionReport.html report file in the bin directory on platforms such as AIX or Linux, or on Windows platforms. The report includes the list of components and installed and uninstalled maintenance packages.

Product history reports

The following report generation scripts extract data from XML data files in the properties/version/history folder:

- historyInfo script

Lets you use parameters to create a history report on platforms such as AIX or Linux, or on Windows platforms.

- genHistoryReport script

  Generates the historyReport.html report file in the bin directory on platforms such as AIX or Linux, or on Windows platforms. The report includes the list of components and a history of installed and uninstalled maintenance packages.

Logs and component backups

WebSphere Application Server products use two other directories when performing update operations, for logging and backups:

app_server_root **/logs/update**
: The logs directory for product updates.

  The location of log files that describe events that occur during the use of the update installer program.

*app_server_root***properties/version/backup**
: Product updates backup directory

  WebSphere Application Server products back up components before applying interim fixes and fix packs. If you uninstall an interim fix or fix pack, WebSphere Application Server products restore the backed-up component JAR file.

File naming convention

Time stamp
: YYYYMMDD_HHMMSS

  For example: 20050324_211832 is 24-Mar-2004, 9:18:32 pm, GMT. All time stamps are in GMT.

ID Interim fix ID or fix pack ID

  For example: apar6789c is an interim fix ID; PTF_1 is a fix pack ID.

Operation
: install | uninstall

Interim fix log file names
: *timeStamp_fixID_operation*.log

  For example, the Update installer program creates these logs: *app_server_root*/logs/update/20050324_211832_apar6789c_install.log and *app_server_root*/logs/update/20050324_211912_apar6789c_uninstall.log

Interim fix component log file names
: *timeStamp_fixId_componentName_operation*.log

  For example, the update installer program creates these logs: *app_server_root*/logs/update/20050324_211832_apar6789c_ras_install.log and *app_server_root*/logs/update/20050324_211912_apar6789c_ras_uninstall.log

Fix pack log file names
: *timeStamp_ptfId_operation*.log

  For example, the update installer program creates these logs: *app_server_root*/logs/update/20050924_211832_was60_fp1_install.log and *app_server_root*/logs/update/20050924_211912_was60_fp1_uninstall.log

Fix pack component log file names
: *timeStamp_ptfId_componentName_operation*.log

For example, prior to Fix Pack 2: properties/version/log/
20050324_211832_was50_fp1_ras_install.log and properties/version/log/
20030325_211912_was50_fp1_ras_uninstall.logThe update installer program creates these logs:
app_server_root/logs/update/20050324_211832_was60_fp1_ras_install.log and
app_server_root/logs/update/20030325_211912_was60_fp1_ras_uninstall.log

Backup JAR file names
*timeStamp_ptfId_componentName*_undo.jar or *timeStamp_fixId_componentName*_undo.jar

For example: 20020924_211832_apar6789c_ras_undo.jarDo not delete a backup JAR file. You cannot remove a component update if the corresponding backup JAR file is not present.

Update processing might also use a temporary directory if necessary. A Java property specifies this directory as described in the next section.

Directory locations

Product information files are located relative to the WebSphere Application Server product *app_server_root*, or the server root directory.

Default file paths are:

Version directory
app_server_root/properties/version

History directory
app_server_root/properties/version/history

Updates log directory
The update installer program stores log files in the *app_server_root*/logs/update directory.

Updates backup directory
app_server_root/properties/version/backup

DTD directory
app_server_root/properties/version/dtd

Temporary directory
Specified by the java.io.tmpdir Java system property

Operational description

WebSphere Application Server products update the product version history information while performing events that install or uninstall fixes or fix packs. Events that might occur include:

- A WebSphere Application Server product removes an interim fix file from the version directory when it uninstalls the corresponding fix.
- A WebSphere Application Server product adds a file with an extension of .ptf to the version directory to indicate than a refresh pack, a fix pack, or an interim fix is currently installed.
- A WebSphere Application Server product removes a file with an extension of .ptf from the version directory when it uninstalls the corresponding refresh pack, a fix pack, or an interim fix.
- A WebSphere Application Server product adds a driver file with an extension of .ptfDriver to the version/history directory when you run the historyInfo command. A fix pack driver file contains defining information for a fix pack.
- A WebSphere Application Server product adds a fix pack applied file with an extension of .ptfApplied to the version/history directory when when you run the historyInfo command. A fix pack application file contains information that identifies component updates that have been applied for a fix pack. The application file also provides links to component log and backup files.
- A WebSphere Application Server product makes entries in the history file, event.history, when it installs or uninstalls a maintenance package.

- A WebSphere Application Server product writes a line about a parent event for each refresh pack, a fix pack, or interim fix that it installs or uninstalls.
- A WebSphere Application Server product stores child component events for each component update that it installs or uninstalls, beneath the corresponding interim fix, fix pack, or refresh pack parent event.
- A WebSphere Application Server product stores one log file in the logs/update directory as it installs or uninstalls one interim fix, fix pack, or refresh pack.
- A WebSphere Application Server product stores one log file in the logs/update directory as it installs or uninstalls an interim fix, fix pack, or refresh pack in response to each component update that occurs.
- A WebSphere Application Server product stores a component backup file in the backup directory for each component update that it installs.
- A WebSphere Application Server product removes a component backup file from the backup directory for each component update that it uninstalls.

Data dictionary

Type Family: WebSphere product family

File Types:
websphere

File Type:
websphere

Elements:

```
name                string     required
version             string     required
```

Persistence:
versionDir/platform.websphere

Type Detail:

The websphere file denotes the presence of WebSphere family products.

Element Detail:

```
websphere.name          The WebSphere product family name.
websphere.version       The WebSphere product family version.


Type Family:      product

File Types:       product
                  component
                  extension

File Type:        product

Persistence:      versionDir/WAS.product

Elements:         id                  string     required
                  name                string     required
                  version             string     required
                  build-info          complex    required

Type Detail:

A product file is placed to denote the presence of a specific
WebSphere family product.
The product ID is embedded in the product file name.

Element Detail:
```

```
product.id              The id of the product.
product.name            The name of the product.
product.version         The version of the product.
product.build-info      An element containing build information for
                        the product.

Element Type:     build-info

Elements:         date                  date       required
                  level                 string     required

Type Detail:

A build-info instance details the build of a specific installed
WebSphere family product.

Element Detail:

build-info.date         The date on which the product was build.
build-info.level        The level code of the product's build.

File Type:        component

Persistence:      versionDir/name.component

Elements:         name                  string     required
                  spec-version          string     required
                  build-version         string     required
                  build-date            date       required

File Detail:

A component file denotes the presence of a specific component.
The component name is embedded in the component file name.

Element Detail:

component.name          The name of the component.
component.spec-version  The specification version of the component.
component.build-version The build level of the component.
component.build-date    The build date of the component.


Type Family:      update

File Types:       ptf
                  ptf-applied

File Type:        ptf

Persistence:      versionDir/id.ptf

Elements:         id                    string     required
                  short-description     string     required
                  build-version         string     required
                  build-date            date       required
                  component-name        complex    min=1, max=unbounded

Type Detail:

A ptf file denotes the presence of some portion of a specific refresh pack,
fix pack, or interim fix.

The id of the refresh pack, fix pack, or interim fix is embedded in the fix
pack file name.
```

A ptf file contains a listing of component updates.

When installing a refresh pack, fix pack, or interim fix, you can omit certain potential component updates, but only when the corresponding component is not installed.

Examine a separate application file to determine the components that a particular refresh pack, fix pack, or interim fix updates.

A refresh pack or fix pack can include updates for a number of interim fixes.

Element Detail:

ptf.id	The ID of the fix pack.
ptf.short-description	A short description of the fix pack.
ptf.build-version	The build version of the fix pack. This is distinct from the build version of component updates contained within the fix pack.
ptf-build-date	The build date of the fix pack. This is distinct from the build version of the component updates contained within the fix pack.
ptf.component-name	A list of components.

File Type: ptf-applied

Persistence: *versionDir*/*id*.ptfApplied

Elements:			
	ptf-id	string	required
	component-applied	complex	min=0, max=unbounded

Type Detail:

A ptf-applied collection specified what components have been updated for the refresh pack, fix pack, or interim fix as specified by the ID.

Element Detail:

ptf-applied.ptf-id	The ID of the refresh pack, fix pack, or interim fix for which applieds are recorded.
ptf-applied.component-applied	The list of recorded applications.

Element Type: component-applied

Elements:			
	component-name	string	required
	update-type	enum	required [enumUpdateType]
	log-name	anyURL	required
	backup-name	anyURL	required
	time-stamp	date	required

Type Detail:

An applied instance is present to indicate the application of an update for a particular interim fix, fix pack, or refresh pack to a particular component.

(The particular interim fix, fix pack, or refresh pack is specified by the applied parent.) An applied provides sufficient information to undo itself.

The elements of an applied are copies of values from update
events.

Element Detail:

component-applied.component-name The name of the component which was updated.

component-applied.update-type The type of the component update.

component-applied.log-name The name of the log file that was generated by
this application.

component-applied.backup-name The name of the backup file that was generated by
this application.

component-applied.time-stamp The time of this application (the ending time of
the corresponding update event).

Enum Type: enumUpdateType

Values: 0 add
1 replace
2 remove
3 patch

Type Detail:

An update type instance specifies the type of an update. An 'add' update adds
a component into an installation. A 'replace' update replaces a particular
version of a component with a different version of that component. A 'remove'
update removes a component. A 'patch' update performs a limited update to a
component, in particular, without changing the version of the component.

When adding a component, that component may not already be present.
When replacing or removing a component, that component must be present.
When patching a component, that component must be present.

When replacing or removing a component, or when patching a component, usually,
at least one version prerequisite will be specified for the component update.

Value Detail:

enumUpdateType.add Specifies that an update adds a component.

enumUpdateType.replace Specifies that an update replaces a component.

enumUpdateType.remove Specifies that an update removes a component.

enumUpdateType.patch Specifies that an update modifies a component, but
does not change its version.

Type Family: history

File Type: event-history

Persistence: *historyDir*/event.history

Elements: update-event complex min=0, max=unbounded

Type Detail:

One event history is provided for a websphere product family installation.
This event history contains history of update events, corresponding with

the actual update events for that product family.

Element Detail:

event-history.update-event	The list of update events for the websphere product family. The top level events are refresh pack, fix pack, and interim fix events, each containing one or more component events.

Element Type: update-event

Elements:			
	event-type	enum	required [enumEventType]
	parent-id	string	required
	id	string	required
	update-type	enum	required [enumUpdateType]
	primary-content	anyURI	required
	update-action	enum	required [enumEventAction]
	log-name	anyURI	required
	backup-name	anyURI	required
	start-time-stamp	dateTime	required
	result	string	required
	update-event	complex	optional

Type Detail:

An update event denotes a single update action, applying to either a fix, a fix pack, a refresh pack, or a component, according to the set event type.

Element Detail:

update-event.event-type	The type of this event, either a refresh pack, fix pack, or an interim fix type event, or a component type event.
update-event.parent-id	This element is present only for component events. The ID of the parent interim fix, fix pack, or refresh pack of this event.
update-event.id	The ID of the interim fix, fix pack, refresh pack, or component that was updated, interpreted according to the type of the event.
update-event.update-type	The type of update for an update event.
update-event.update-action	The type of action for this event.
update-event.log-name	The name of the log file that was generated for this event.
update-event.backup-name	The name of the backup file that was generated for this event.
update-event.start-time-stamp	The XML timestamp of the starting time of the event. This timestamp follows the XML timestamp format, meaning that time zone information is included.
update-event.result	The result of the update.
update-event.update-event	A collection of child events. This collection is used for interim fix and fix pack type events. This collection is empty for component type events.

Type Detail:

```
An event type instance specifies the type of an update event, which is either
a refresh pack, fix pack, or interim fix (ptf) event or a component event. The
interpretation of particular event elements depends on the set event type.

Value Detail:

EventType.ptf        Specifies that an event is for a refresh pack, fix pack,
                     or interim fix update.

EventType.component  Specifies that an event is for a component update.

Enum Type:        update-action

Values:           0 Install
                  1 Uninstall

Type Detail:

An event action instance specified the operation performed by an update, which
can be an install or uninstall operation.


Value Detail:

enumEventAction.install              Specifies that an event is an install
                                     operation.

enumEventAction.uninstall            Specifies that an event is an uninstall
                                     operation.

Enum Type:        enumUpdateType

Values:           0 Add
                  1 Replace
                  2 Remove
                  3 Patch

Type Detail:

An update type instance specifies the type of a component update.

An 'add' update adds a component into an installation.

A 'replace' update replaces a particular version of a component with
a different version of that component.

A 'remove' update removes a component.

A 'patch' update performs a limited update to a component,
in particular, without changing the version of the component.

To add a new component, the component must not exist.
To replace or remove a component, the component must exist.
To patch a component, the component must exist.

When replacing or removing a component, or when patching a component,
usually, at least one version prerequisite is specified for the
component update.

Value Detail:

enumUpdateType.add       Specifies that an update adds a component.

enumUpdateType.replace   Specifies that an update replaces a component.

enumUpdateType.remove    Specifies that an update removes a component.
```

```
enumUpdateType.patch     Specifies that an update modifies a component, but
                         does not change its version.

Enum Type:        enumEventResult

Values:           0 Succeeded
                  1 Failed
                  2 Cancelled

Type Detail:

An event result instance denotes a particular result for an update event.
The result indicates success, failure, or cancellation.

Value Detail:

enumEventResult.succeeded  Specifies that the operation was successful.

enumEventResult.failed     Specifies that the operation failed.

enumEventResult.cancelled  Specifies that the operation was cancelled.
```

Installation: Resources for learning

Use the following links to find relevant supplemental information about installation and customization. The information resides on IBM and non-IBM Internet sites, whose sponsors control the technical accuracy of the information. The information resides on IBM and non-IBM Internet sites, whose sponsors control the technical accuracy of the information.

These links are provided for convenience. Often, the information is not specific to the IBM WebSphere Application Server product, but is useful in all or in part for understanding the product. When possible, links are provided to technical papers and Redbooks that supplement the broad coverage of the release documentation with in-depth examinations of particular product areas.

One important link is:

How to buy WebSphere Application Server software

This IBM Web site describes pricing and technical details. If you have already purchased the software, view links to additional information about:

- Planning, business scenarios, and IT architecture
- Programming instructions and examples
- Programming specifications
- Administration
- Support

Planning, business scenarios, and IT architecture

- Supported hardware and software

  The official site for determining product prerequisites for hardware and software for all WebSphere Application Server products.
- IBM developerWorks WebSphere

  The home of technical information for developers working with WebSphere products. You can download WebSphere software, take a fast path to developerWorks zones, such as VisualAge Java or WebSphere Application Server, learn about WebSphere products through a newcomers page, tutorials, technology previews, training, and Redbooks, get answers to questions about WebSphere products, and join the WebSphere community, where you can keep up with the latest developments and technical papers.
- IBM WebSphere Application Server library and information centers Web site

The IBM WebSphere Application Server Library Web site contains links to all WebSphere Application Server information centers, for all versions. It also lets you access each information center in your native language.

- IBM WebSphere Application Server home page

  The IBM WebSphere Application Server home page contains useful information, including support links and downloads for maintenance packages, APARs, tools, and trials.
- IBM WebSphere software platform home page

  The IBM WebSphere software platform home page introduces WebSphere products and describes how companies can easily transform to an e-business, with software that can grow as fast as the business it supports.
- WebSphere Application Server Edge components library and information centers Web site

  The information center for WebSphere Application Server Edge components contains complete documentation for the Caching Proxy and the Load Balancer.

Programming instructions and examples

- IBM developerWorks

  IBM developerWorks contains many excellent resources for developers, including tutorials on Web development-related topics. There is an excellent tutorial on the JDBC API.
- IBM Redbooks

  The IBM Redbooks site contains many documents that are related to WebSphere Application Server.

Programming specifications

- J2EE information

  For more information about J2EE specifications, visit the Sun site.

Administration

- WebSphere technical library on developerWorks

  The WebSphere library includes a wide range of content, including technical articles, downloads, product documentation, and tutorials
- The IBM Terminology Web site

  The IBM Terminology Web site consolidates the terminology from many IBM products in one convenient location. In addition to base computer terminology, terms and definitions from IBM brands and product families are included and explained.

Support

- Steps to getting support for WebSphere Application Server

  Whether you are a new user looking for basic information, or an experienced user looking for a specific workaround, you can benefit immediately from IBM's extensive Web-based support. Download fixes, search on keywords, find how-to information, and possibly solve a problem -- all before contacting IBM Software Support directly.
- Support page for WebSphere Application Server

  Take advantage of the Web-based Support and Service resources from WebSphere Application Server to quickly find answers to your technical questions. Easily access the latest recommended product maintenance, find workarounds to technical problems, or register to receive e-mail from IBM Support.
- IBM Software Support portal

  Take advantage of the Web-based Support and Service resources from IBM to quickly find answers to your technical questions. You can easily access this extensive Web-based support through the IBM Software Support portal and search by product category, or by product name. If you are experiencing problems specific to WebSphere Application Server, for example, click **WebSphere Application Server** or **WebSphere Application Server for z/OS** in the product list. The WebSphere Application Server Support page displays.
- Adobe Acrobat Web site

  This Adobe Web site offers a free download of the Adobe Acrobat Reader product.

Chapter 4. Planning the installation

Installation scenarios describe the products to install and the basic installation steps. This topic provides common installation scenarios for a WebSphere Application Server product.

Determine what components you want to use for your Web serving environment. The installation scenarios can help you to understand the capabilities of your WebSphere Application Server product. Knowing what you can do with the product might influence how you install the product and other components.

The installation scenarios use topology diagrams and descriptions to show what components to install for a given topology. The scenarios also have installation steps that link to specific procedures for installing a component, running a command, or using a tool.

Review the scenarios to determine which topology best fits your needs. The diagrams and their accompanying procedures can serve as a roadmap for installing a similar topology.

In addition to product installation diagrams for the installable components, this topic also links to a roadmap for using the Profile Management tool. The Profile Management tool creates runtime environments for application server processes.

1. **Diagrams:** Review the installation scenarios for the WebSphere Application Server - Express product, as described in “Planning to install WebSphere Application Server - Express” on page 50.
2. **Diagrams:** Review the installation scenarios for the Web server plug-ins for WebSphere Application Server, as described in “Planning to install Web server plug-ins” on page 54.
3. **Diagram:** Review the installation scenarios for the Application Client, as described in “Planning to install WebSphere Application Client” on page 56.
4. **Diagrams:** Review the installation scenarios for profile creation, as described in “Planning to create application server environments” on page 58.
5. **Optional:** Review interoperability and coexistence diagrams to know what is possible with Version 6.x.

   WebSphere Application Server Version 6.x can interoperate with your other e-business systems, including other versions of WebSphere Application Server. *Interoperability* provides a communication mechanism for WebSphere Application Server nodes that are at different versions, running on separate machines. *Coexistence* describes multiple versions or instances running on the same machine at the same time.

   Interoperability support enhances migration scenarios with more configuration options. Interoperating is often more convenient or practical during the migration of a configuration from an earlier WebSphere Application Server version to a later one. Some machines can have the earlier product version and other machines can have the later version. An environment of machines and application components at different software version levels can involve both interoperability and coexistence.

   It is often impractical, or even physically impossible, to migrate all of the machines and applications within an enterprise at the same time. Understanding multiversion interoperability and coexistence is therefore an essential part of a migration between version levels.
6. **Optional:** Consider performance when designing your network, as described in “Queuing network” on page 59.

Following this procedure results in reviewing installation scenarios to identify specific steps to follow when installing more than one component.

After determining an appropriate installation scenario, install the necessary components and configure the products for the system that you selected.

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Planning to install WebSphere Application Server - Express

Consider common installation scenarios for IBM WebSphere Application Server - Express to determine how to install your application serving environment. This topic links to procedures for installing each scenario.

IBM WebSphere Application Server - Express is an integrated platform that contains an application server, Web development tools, a Web server, and additional supporting software and documentation.

The following information describes some common scenarios for installing the product in various topologies on one or more machines:

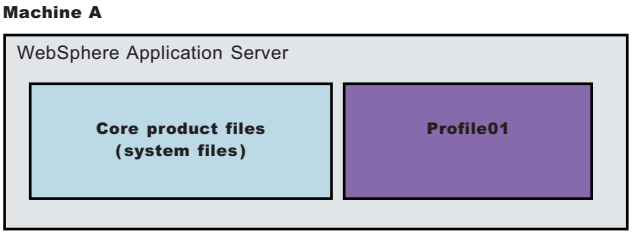
- **Scenario 1:** Single-machine installation of Express
- **Scenario 2:** Single-machine installation of Express and a Web server
- **Scenario 3:** Two-machine installation of Express and a Web server
- **Scenario 4:** Creating multiple profiles that use one installation of Express
- **Scenario 5:** Single-machine installation of Express and Application Server Toolkit

Each scenario includes a diagram and installation steps.

- **Scenario 1:** Install Express on a single machine.

  Installing Express by itself on a single machine creates a stand-alone application server, which is server1. Installing Express creates a set of system files, called the *core product files*, and a *profile* for the application server. The profile is a separate set of files that define the application server environment.

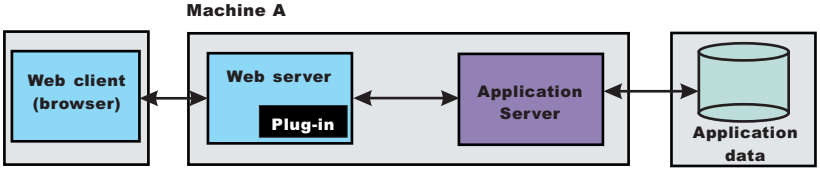
  In this scenario, the application server uses its internal HTTP transport chain for communication, which is suitable for handling an application with a relatively low request work load. For example, this type of installation can support a simple test environment or a departmental intranet environment.



Step	Task
1	Install Express.

- **Scenario 2:** Install Express and a Web server on a single machine.

  Installing a Web server, such as IBM HTTP Server, on the same machine as the application server provides more configuration options. Installing a Web server plug-in enables the Web server to communicate with the application server. This installation scenario supports rigorous testing environments or production environments that do not require a firewall. However, this scenario is not a typical production environment because everything is on one machine.

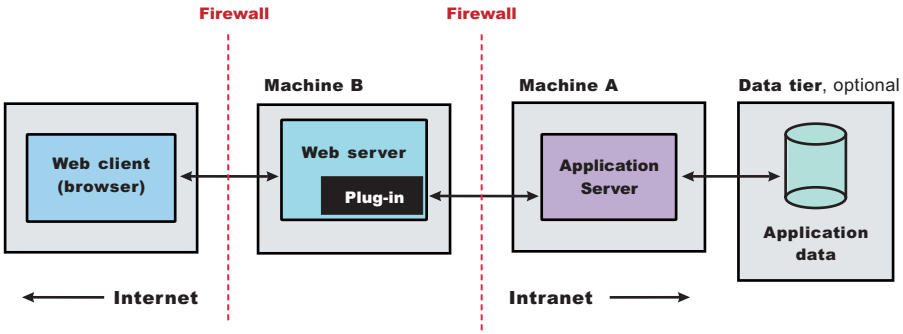


Step	Task
1	Install Express.

Step	Task
2	Install the IBM HTTP Server or another supported Web server. While installing IBM HTTP Server, use its installation wizard to install the Web server plug-ins. After installing IBM HTTP Server, proceed to step 4.
3	If you use another supported Web server or an existing installation of IBM HTTP Server, use the Plug-ins installation wizard to install the Web server plug-ins and configure the Web server. Because the Web server and the application server are on the same machine, the Plug-ins installation wizard creates a Web server definition and you can skip step 4.
4	Create a Web server definition using the administrative console. Click **Servers > Web servers > New** and complete the steps in the Create new Web server definition wizard.

- **Scenario 3:** Install Express and a Web server on separate machines.

  In the typical production environment, the application server on one machine communicates with a Web server on a separate (remote) machine through the Web server plug-in. Optional firewalls can provide additional security for the application server machine.



Step	Machine	Task
1	A	Install Express on Machine A.
2	B	Install IBM HTTP Server or another supported Web server on Machine B. While installing IBM HTTP Server, use its installation wizard to install the Web server plug-ins.
3	B	If you use another supported Web server or an existing installation of IBM HTTP Server, use the Plug-ins installation wizard to install the Web server plug-ins and configure the Web server on Machine B. The Plug-ins installation wizard creates a configure*Web_server_name* script in the *plugins_root*/bin directory on Machine B.
3	B	Copy the configure*Web_server_name* script on Machine B to the *app_server_root*/*profile_name*/bin directory on Machine A.
4	A	Run the configure*Web_server_name* script on Machine A to create a Web server definition in the administrative console. You can then use the administrative console to manage the Web server.
5	A	Propagate the plugin-cfg.xml file on Machine A from the application server to the Web server using the administrative console. 1. Click **Servers** → **Web servers**. 2. On the Web servers page, place a check mark beside the Web server for which you want to propagate a plug-in, and click **Propagate Plug-in**. Web servers other than IBM HTTP Server require manual propagation.

- **Scenario 4:** Install multiple standalone application servers on one machine and one or more Web servers on a separate machine.

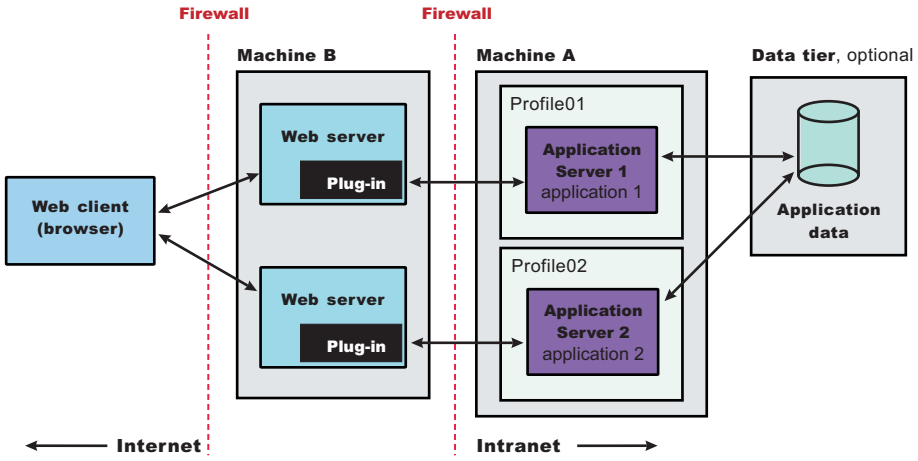
A profile is a separate data partition containing the files that define the runtime environment for an application server. A default profile is created during the installation of the Express product. Create additional profiles using the Profile Management tool. Each profile defines a separate standalone application server that has its own administrative interface.

After creating a profile and installing a dedicated Web server, use the Plug-ins installation wizard to install a Web server plug-in and to update the Web server configuration file. The Web server can then communicate with the application server.

This topology lets each profile have unique applications, configuration settings, data, and log files, while sharing the same set of core product files. Creating multiple profiles creates multiple application server environments that you can dedicate to different purposes.

For example, each application server on a Web site can serve a different application. In another example, each application server can be a separate test environment that you assign to a programmer or a development team.

Another feature of having multiple profiles is enhanced serviceability. For example, when a fix pack updates the core product files, all application servers begin using the updated core product files.



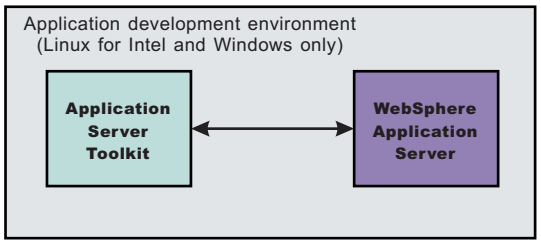
Step	Machine	Task
1	A	Install Express on Machine A.
2	B	Install IBM HTTP Server or another supported Web server on Machine B. While installing IBM HTTP Server, use its installation wizard to install the Web server plug-ins.
3	B	If you use another supported Web server or an existing installation of IBM HTTP Server, use the Plug-ins installation wizard to install the Web server plug-ins and configure the Web server on Machine B. The Plug-ins installation wizard creates a script named configure*Web_server_name* in the *plugins_root*/bin directory on Machine B.
4	B	Copy the configure*Web_server_name* script on Machine B to the *app_server_root*/*profile_name*/bin directory on Machine A.
5	A	Run the configure*Web_server_name* script on Machine A to create a Web server definition in the administrative console. You can then use the administrative console to manage the Web server.
6	A	Propagate the plugin-cfg.xml file on Machine A from the application server to the Web server using the administrative console. 1. Click **Servers** → **Web servers**. 2. On the Web servers page, place a check mark beside the Web server for which you want to propagate a plug-in, and click **Propagate Plug-in**. Web servers other than IBM HTTP Server require manual propagation.
7	A	Create subsequent Application Server profiles using the Profile Management tool on Machine A.

Step	Machine	Task
8	B	Install subsequent IBM HTTP Servers or other supported Web servers on Machine B. While installing an IBM HTTP Server, use its installation wizard to install the Web server plug-ins.
9	B	If you use another supported Web server or an existing installation of IBM HTTP Server, use the Plug-ins installation wizard to configure each additional Web server on Machine B. Installation of the Web server plug-ins creates a script named configure*Web_server_name* in the *plugins_root*/bin directory on Machine B.
10	B	Copy the configure*Web_server_name* script on Machine B to the *app_server_root*/*profile_name*/bin directory on Machine A.
11	A	Run the configure*web_server_name* script on Machine A to create a Web server definition in the administrative console. You can then use the administrative console to manage the Web server.
12	A	On Machine A, propagate the plugin-cfg.xml file from the second application server to the Web server using the administrative console. 1. Click **Servers** → **Web servers**. 2. On the Web servers page, place a check mark beside the Web server for which you want to propagate a plug-in, and click **Propagate Plug-in**. Web servers other than IBM HTTP Server require manual propagation.

- **Scenario 5:** Install Express and Application Server Toolkit on a single machine.

  Installing the Express and Application Server Toolkit products on one machine creates a simple development environment. The Application Server Toolkit is a tool built on the Eclipse foundation. You can use the Application Server Toolkit to assemble application components into an application, modify deployment descriptors, and then deploy the application onto an Express application server. The Express installation provides a test environment for the application.

  Machine A



Step	Task
1	Install Express.
2	Install Application Server Toolkit.
3	Configure Application Server Toolkit so it can rapidly deploy applications to an Express application server. 1. Start Application Server Toolkit. 2. Open the J2EE perspective. Click **Window** → **Open Perspective** → **J2EE**. 3. Display the Servers view of the J2EE perspective. Click the **Servers** tab, or click **Window** → **Show View** → **Servers**. 4. Define a new server in the Servers view of the J2EE perspective. a. Click **File** → **New** → **Other** to start the selection wizard. b. Select the Server wizard located within the Server folder. c. Continue through the Server wizard to create a connection to the previously installed copy of WebSphere Application Server - Express.

You can review common installation scenarios to find a possible match for the topology that you intend to install. Each product installation diagram provides a high-level procedure for installing the components that comprise the topology.

After determining a possible topology, you are ready to follow the detailed installation instructions for each product that you plan to install.

Planning to install Web server plug-ins

This topic describes common installation scenarios and links to component installation procedures for each scenario.

The primary production configuration is an application server on one machine and a Web server on a separate machine. This configuration is referred to as a *remote* configuration. Contrast the remote configuration to the local configuration, where the application server and the Web server are on the same machine.

The Plug-ins installation wizard has four main tasks:

- Installs the binary plug-in module on the Web server machine.
- Configures the Web server configuration file on the Web server machine to point to the binary plug-in module and to the XML configuration file for the binary module.
- Installs a temporary XML configuration file for the binary module (plugin-cfg.xml) on the Web server machine in remote scenarios.
- Creates the configuration for a Web server definition on the application server machine. The wizard processes the creation of the Web server definition differently depending on the scenario:
  - Recommended remote stand-alone Application Server installation:

    Creates a configuration script that you run on the application server machine. Install the Web server and its plug-in on a different machine than the application server. This configuration is recommended for a production environment.
  - Local stand-alone Application Server installation:

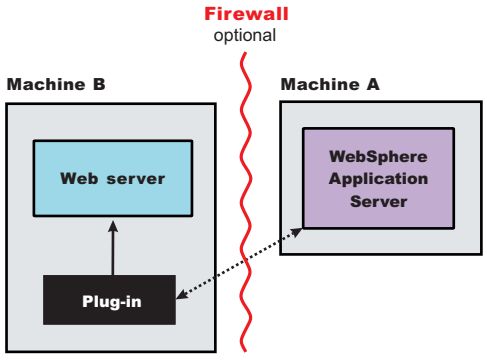
    Detects the default profile on a local application server machine and creates the Web server definition for it directly. Install the Web server and its plug-in on the same machine with the application server. When multiple profiles exist, the plug-ins installer allows the user to select the profile to configure. If there is only one profile (default), then it is used during configuration. In this case, the profile selection panel will not be displayed to the user. This configuration is for development and test environments.

Select a link to go to the appropriate steps in the following procedure.

- **Set up a remote Web server installation.**

  The remote Web server configuration is recommended for production environments.

  The remote installation installs the Web server plug-in on the Web server machine when the application server is on a separate machine, such as shown in the following graphic:



Remote installation scenario

Step	Machine	Task
1	A	Install your WebSphere Application Server product.
2	B	Install IBM HTTP Server or another supported Web server.
3	B	Install the binary plug-in module using the Plug-ins installation wizard. . The script for creating and configuring the Web server is created under the *plugins_root*/ bin directory.
4	B	Copy the configure*web_server_name* script to Machine A. If one machine is running under an operating system such as AIX or Linux and the other machine is running under Windows, copy the script from the *plugins_root*/ bin/ crossPlatformScripts directory.
5	A	Paste the configure*web_server_name* script from Machine B to the *app_server_root*/ bin directory on Machine A.
6	A	Run the script from a command line.
7	A	Verify that the application server is running. Open the administrative console and save the changed configuration.
8	B	AIX HP-UX Linux Solaris Run the *plugins_root*/setupPluginCfg.sh script for a Domino Web Server before starting a Domino Web server.Otherwise, start the Web server.
9	B	Run the Snoop servlet. To verify with your own application, regenerate and propagate the plugin-cfg.xml file after installing the application.

Regeneration of the plugin-cfg.xml file

During the installation of the plug-ins, the temporary plugin-cfg.xml file is installed on Machine B in the *plugins_root*/ config/ web_server_name directory.

The Web server plug-in configuration service regenerates the plugin-cfg.xml file automatically.

To use the real plugin-cfg.xml file from the application server, propagate the plugin-cfg.xml file as described in the next section.

Propagation of the plugin-cfg.xml file

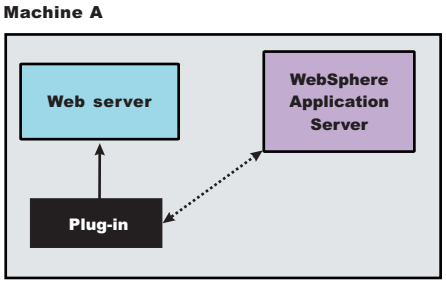
The Web server plug-in configuration service propagates the plugin-cfg.xml file automatically for IBM HTTP Server only.

For all other Web servers, propagate the plug-in configuration file manually. Copy the plugin-cfg.xml file from the *profile_root*/ config/ cells/ *cell_name*/ nodes/ *web_server_name*_node/ servers/ *web_server_name* directory on Machine A. Paste the file into the *plugins_root*/ config/ *web_server_name* directory on Machine B.

- **Set up a local Web server configuration.**

  The local Web server configuration is recommended for a development or test environment.

  A local installation includes the Web server plug-in, the Web server, and the application server on the same machine:



Local installation scenario

Step	Machine	Task
1	A	Install your WebSphere Application Server product. See Chapter 6, “Installing the product and additional software,” on page 95.
2	A	Install IBM HTTP Server or another supported Web server.
3	A	Install the binary plug-in module using the Plug-ins installation wizard. The Web server definition is automatically created and configured during the installation of the plug-ins.
4	A	Verify that the application server is running. Open the administrative console and save the changed configuration.
5	B	AIX HP-UX Linux Solaris Run the *plugins_root*/setupPluginCfg.sh script for a Domino Web Server before starting a Domino Web server.Otherwise, start the Web server.
6	B	Run the Snoop servlet. To verify with your own application, regenerate and propagate the plugin-cfg.xml file after installing the application.

Regeneration of the plugin-cfg.xml file

The Web server plug-in configuration service regenerates the plugin-cfg.xml file automatically.

The plugin-cfg.xml file is generated in the *profile_root*/config/cells/*cell_name*/nodes/*web_server_name*_node/servers/*web_server_name* directory. The generation occurs when the Web server definition is created.

Propagation of the plugin-cfg.xml file

The local file does not require propagation.

You can set up a remote or local Web server by installing Application Server, the Web server, and then the Web server plug-ins.

Planning to install WebSphere Application Client

Examine typical topologies and uses for WebSphere Application Client to determine how you might use this technology.

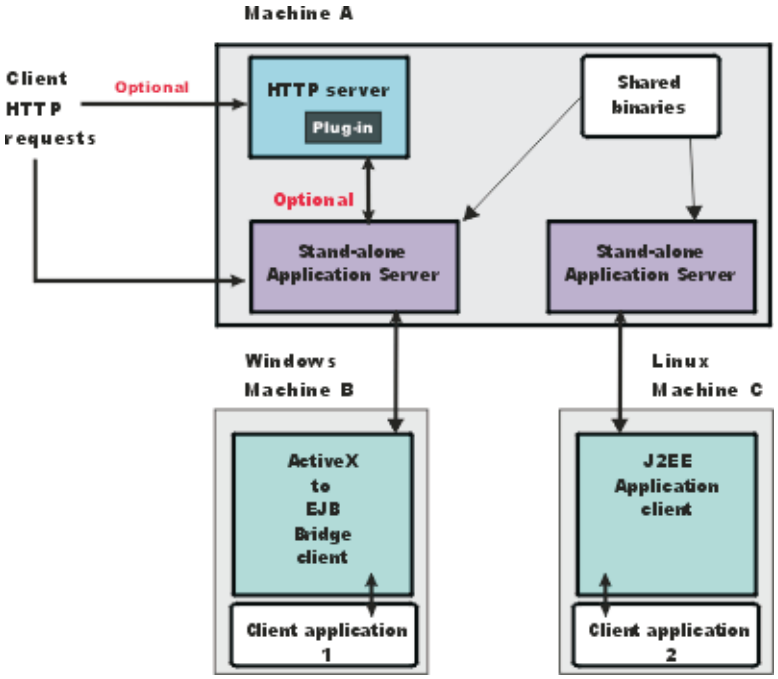
This topic is one in a series of topics described in Chapter 4, “Planning the installation,” on page 49. Consider all of the planning scenarios that are mentioned in the parent article to determine the best approach to installing your e-business network. This topic describes installing and using the WebSphere Application Server Clients.

In a traditional client server environment, the client requests a service and the server fulfills the request. Multiple clients use a single server. Clients can also access several different servers. This model persists for Java clients except that now these requests use a client run-time environment.

In this model, the client application requires a servlet to communicate with the enterprise bean, and the servlet must reside on the same machine as the WebSphere Application Server.

The Application Client for WebSphere Application Server, Version 6 consists of the following models:
- ActiveX application client
- Applet client
- J2EE application client
- Pluggable and thin application clients

The following graphic shows a topology for installing the Application Client and using client applications:



The example shows two types of application clients installed in a topology that uses client applications to access applications and data on Machine A:
- The ActiveX application client on Machine B is a Windows only client that uses the Java Native Interface (JNI) architecture to programmatically access the Java virtual machine (JVM) API. The JVM code exists in the same process space as the ActiveX application (Visual Basic, VBScript, or Active Server Pages (ASP) files) and remains attached to the process until that process terminates.
- The J2EE application client on Machine C is a Java application program that accesses enterprise beans, Java Database Connectivity (JDBC) APIs, and Java Message Service message queues. The application program must configure the execution environment of the J2EE application client and use the Java Naming and Directory Interface (JNDI) name space to access resources.

Use the following procedure as a example of installing the Application Client.
1. Install the WebSphere Application Server product from your product CD on Machine A to establish the core product files.
2. Use the Profile Management tool to create the additional stand-alone application server profile.
3. Use the administrative console of each application server to deploy any user applications.

4. Use the administrative console of each application server to create a Web server configuration for the Web server.
5. Use the administrative console of each application server to regenerate each plugin-cfg.xml file in the local Web server configuration.
6. **Optional:** Install the IBM HTTP Server from the product CD on Machine A.
7. **Optional:** Use the Plug-ins installation wizard to install the plug-in for IBM HTTP Server on Machine A.

   The wizard automatically configures the HTTP Server to communicate with the first application server.
8. Install the Application Client package from the product disc.

   The diagram shows two different types of application clients on two different operating systems. Although this example shows two application clients, you do not have to install two application clients to have a working system. Each application client is fully functional and works independently of the other.

   Optionally install the Application Client from your product CD on Machine B.

   a. Select the Custom installation type.
   b. Select the ActiveX to EJB Bridge feature.
   c. Select to add the Java run time to the system path.
   d. Select the Java run time as the default JRE, which adds the Java run time path to the beginning of the system path.

   Optionally install the Application Client from your product CD on Machine C.

   a. Select the Custom install type.
   b. Select the J2EE application client feature.

This topic can help you plan run-time environments for client applications.

Planning to create application server environments

Application server profiles are the run-time environments for application server processes. This topic describes common scenarios for creating application server profiles and provides links to profile creation procedures for each scenario.

Installing the core product files for a WebSphere Application Server product creates one or more profiles. Use the Profile Management tool to create additional application server run-time environments.

This topic describes how to create application server profiles. Each profile is a run-time environment for the application server that it defines, with data files, configuration files, applications, and an administrative console.

Create a stand-alone application server.

The installation procedure creates an application server during installation named server1.

However, you can use the Profile Management tool to create additional stand-alone application servers.

Following this procedure results in reviewing common installation scenarios to find a possible match for the topology that you intend to create. This procedure shows how to use the Profile Management tool to create additional profiles.

Use the Profile Management tool to create additional stand-alone application server profiles.

After determining a possible topology, follow the steps in the overall procedure.

One step not mentioned in any of these scenarios is to prepare the operating system for installation. Useful links to the installation procedures for each installable component are in the list of related topics.

Queuing network

WebSphere Application Server contains interrelated components that must be harmoniously tuned to support the custom needs of your end-to-end e-business application. These adjustments help the system achieve maximum throughput while maintaining the overall stability of the system.

This group of interconnected components is known as a queuing network. These queues or components include the network, Web server, Web container, EJB container, data source, and possibly a connection manager to a custom back-end system. Each of these resources represents a queue of requests waiting to use that resource.

Various queue settings include:

- IBM HTTP Server: MaxClients for operating systems such as AIX or Linux and ThreadsPerChild for Windows NT and Windows 2000 systems
- Web container: **Maximum size** , **MaxKeepAliveConnections**, and **MaxKeepAliveRequests**.
- **Tuning Object Request Brokers**.
- Data source **connection pooling** and **statement cache size** .

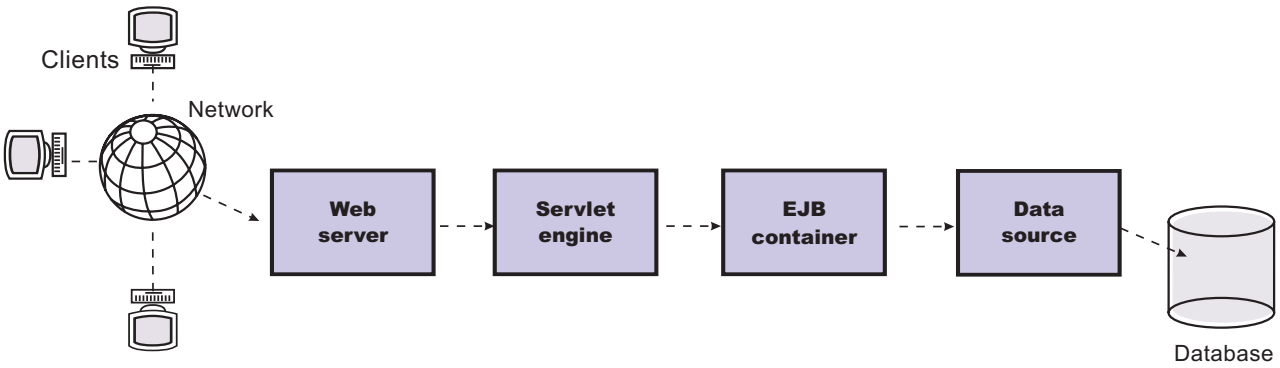


Figure Reference 1: WebSphere queuing network

Most of the queues that make up the queuing network are closed queues. A closed queue places a limit on the maximum number of requests present in the queue, while an open queue has no limit. A closed queue supports tight management of system resources. For example, the Web container thread pool setting controls the size of the Web container queue. If the average servlet running in a Web container creates 10 MB of objects during each request, a value of 100 for thread pools limits the memory consumed by the Web container to 1 GB.

In a closed queue, requests can be active or waiting. An active request is doing work or waiting for a response from a downstream queue. For example, an active request in the Web server is doing work, such as retrieving static HTML, or waiting for a request to complete in the Web container. A waiting request is waiting to become active. The request remains in the waiting state until one of the active requests leaves the queue.

All Web servers supported by WebSphere Application Server are closed queues, as are WebSphere Application Server data sources. You can configure Web containers as open or closed queues. In general, it is best to make them closed queues. EJB containers are open queues. If there are no threads available in the pool, a new one is created for the duration of the request.

If enterprise beans are called by servlets, the Web container limits the number of total concurrent requests into an EJB container, because the Web container also has a limit. The Web container limits the number of total concurrent requests only if enterprise beans are called from the servlet thread of execution. Nothing prevents you from creating threads and bombarding the EJB container with requests. Therefore, servlets should not create their own work threads.

Queuing and clustering considerations

Cloning application servers to create a cluster can be a valuable asset in configuring highly scalable production environments, especially when the application is experiencing bottlenecks that are preventing full CPU utilization of symmetric multiprocessing (SMP) servers.

When adjusting the WebSphere Application Server system queues in clustered configurations, remember that when a server is added to a cluster, the server downstream receives twice the load.

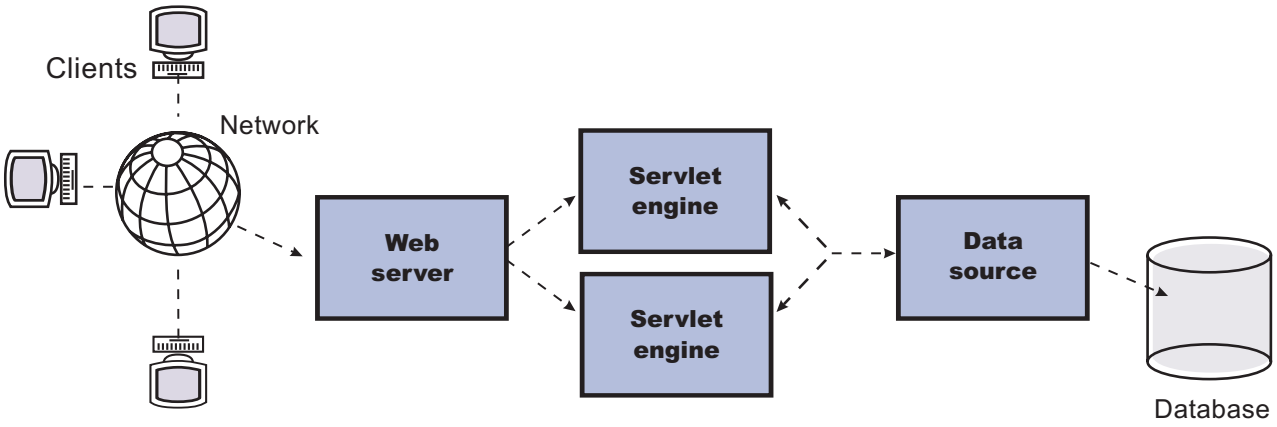


Figure Reference 1: Clustering and queuing

Two servlet engines are located between a Web server and a data source. It is assumed that the Web server, servlet engines and data source, but not the database, are all running on a single SMP server. Given these constraints, the following queue considerations must be made:

- Double the Web server queue settings to ensure ample work is distributed to each Web container.
- Reduce the Web container thread pools to avoid saturating a system resource like CPU or another resource that the servlets are using.
- Reduce the data source to avoid saturating the database server.
- Reduce Java heap parameters for each instance of the application server. For versions of the Java virtual machine (JVM) shipped with WebSphere Application Server, it is crucial that the heap from all JVMs remain in physical memory. For example, if a cluster of four JVMs is running on a system, enough physical memory must be available for all four heaps.

Queue configuration best practices

A methodology exists for configuring the WebSphere Application Server queues. Moving the database server onto another machine or providing more powerful resources, for example a faster set of CPUs with more memory, can dramatically change the dynamics of your system.

There are four tips for queuing:

- **Minimize the number of requests in WebSphere Application Server queues**.

  In general, requests wait in the network in front of the Web server, rather than waiting in WebSphere Application Server. This configuration only supports those requests that are ready for processing to

enter the queuing network. Specify that the queues furthest upstream or closest to the client are slightly larger, and queues further downstream or furthest from the client are progressively smaller.

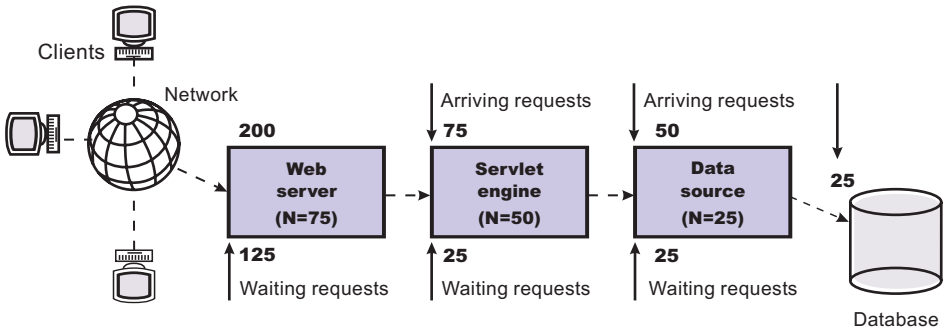
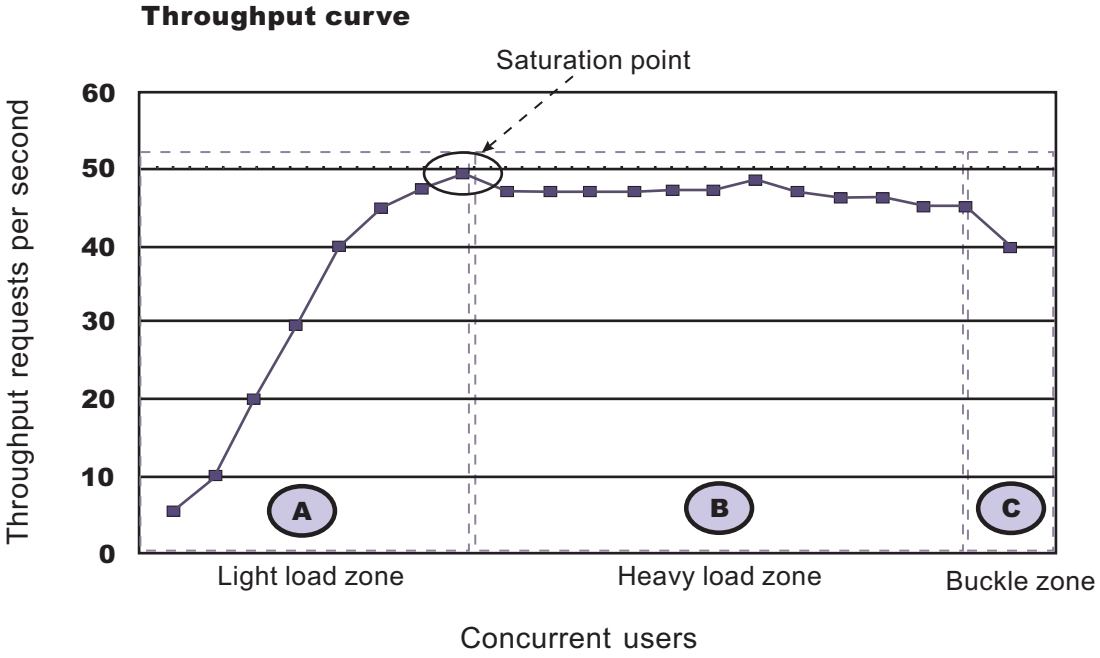


Figure Reference 1: Upstream queuing network

Queues in the queuing network become progressively smaller as work flows downstream. When 200 client requests arrive at the Web server, 125 requests remain queued in the network because the Web server is set to handle 75 concurrent clients. As the 75 requests pass from the Web server to the Web container, 25 requests remain queued in the Web server and the remaining 50 are handled by the Web container. This process progresses through the data source until 25 user requests arrive at the final destination, the database server. Because there is work waiting to enter a component at each point upstream, no component in this system must wait for work to arrive. The bulk of the requests wait in the network, outside of WebSphere Application Server. This type of configuration adds stability, because no component is overloaded.

- **Draw throughput curves to determine when the system capabilities are maximized**.

  You can use a test case that represents the full spirit of the production application by either exercising all meaningful code paths or using the production application. Run a set of experiments to determine when the system capabilities are fully stressed or when it has reached the saturation point. Conduct these tests after most of the bottlenecks are removed from the application. The goal of these tests is to drive CPUs to near 100% utilization. For maximum concurrency through the system, start the initial baseline experiment with large queues. For example, start the first experiment with a queue size of 100 at each of the servers in the queuing network: Web server, Web container and data source. Begin a series of experiments to plot a throughput curve, increasing the concurrent user load after each experiment. For example, perform experiments with one user, two users, five, 10, 25, 50, 100, 150 and 200 users. After each run, record the throughput requests per second, and response times in seconds per request. The curve resulting from the baseline experiments resembles the following typical throughput curve shown as follows:



The WebSphere Application Server throughput is a function of the number of concurrent requests present in the total system. Section A, the light load zone, shows that the number of concurrent user requests increases, the throughput increases almost linearly with the number of requests. At light loads, concurrent requests face very little congestion within the WebSphere Application Server system queues. At some point, congestion starts to develop and throughput increases at a much lower rate until it reaches a saturation point that represents the maximum throughput value, as determined by some bottleneck in the WebSphere Application Server system. The most manageable type of bottleneck occurs when the WebSphere Application Server machine CPUs become fully utilized because adding CPUs or more powerful CPUs fixes the bottleneck.

In the heavy load zone or Section B, as the concurrent client load increases, throughput remains relatively constant. However, the response time increases proportionally to the user load. That is, if the user load is doubled in the heavy load zone, the response time doubles. At some point, represented by Section C, the buckle zone, one of the system components becomes exhausted. At this point, throughput starts to degrade. For example, the system might enter the buckle zone when the network connections at the Web server exhaust the limits of the network adapter or if the requests exceed operating system limits for file handles.

If the saturation point is reached by driving CPU utilization close to 100%, you can move on to the next step. If the saturation CPU occurs before system utilization reaches 100%, it is likely that another bottleneck is being aggravated by the application. For example, the application might be creating Java objects causing excessive garbage collection bottlenecks in the Java code.

There are two ways to manage application bottlenecks: remove the bottleneck or clone the bottleneck. The best way to manage a bottleneck is to remove it. You can use a Java-based application profiler, such as Rational Application Developer, Performance Trace Data Visualizer (PTDV), Borland's Optimizeit, JProbe or Jinsight to examine overall object utilization.

- **Decrease queue sizes while moving downstream from the client**.

  The number of concurrent users at the throughput saturation point represents the maximum concurrency of the application. For example, if the application saturates WebSphere Application Server at 50 users, using 48 users might produce the best combination of throughput and response time. This value is called the Max Application Concurrency value. Max Application Concurrency becomes the preferred value for adjusting the WebSphere Application Server system queues. Remember, it is desirable for most users to wait in the network; therefore, queue sizes should decrease when moving downstream farther from the client. For example, given a Max Application Concurrency value of 48, start

with system queues at the following values: Web server 75, Web container 50, data source 45. Perform a set of additional experiments adjusting these values slightly higher and lower to find the best settings.

To help determine the number of concurrent users, view the Servlet Engine Thread Pool and Concurrently Active Threads metric in the Tivoli Performance Viewer.

- **Adjust queue settings to correspond to access patterns**.

  In many cases, only a fraction of the requests passing through one queue enters the next queue downstream. In a site with many static pages, a number of requests are fulfilled at the Web server and are not passed to the Web container. In this circumstance, the Web server queue can be significantly larger than the Web container queue. In the previous example, the Web server queue was set to 75, rather than closer to the value of Max Application Concurrency. You can make similar adjustments when different components have different execution times.

  For example, in an application that spends 90% of its time in a complex servlet and only 10% of its time making a short JDBC query, on average 10% of the servlets are using database connections at any time, so the database connection queue can be significantly smaller than the Web container queue. Conversely, if the majority of servlet execution time is spent making a complex query to a database, consider increasing the queue values at both the Web container and the data source. Always monitor the CPU and memory utilization for both the WebSphere Application Server and the database servers to verify that the CPU or memory are not saturating.

Chapter 5. Preparing the operating system for product installation

You must prepare your operating platform before installing a WebSphere Application Server product. Links in this topic go to information on configuring supported operating systems. Select your operating system to view the corresponding procedure.

Before preparing the installation environment, read “Planning to install WebSphere Application Server - Express” on page 50.

Before installing the product, you must install the necessary prerequisites for your operating system. This will prepare your system for the install. Use the links below to go to the procedure for your operating platform.

1. Prepare your operating system for installation.
   Select the appropriate procedure:
   - AIX “Preparing AIX systems for installation”
   - HP-UX “Preparing HP-UX systems for installation” on page 70
   - Linux “Preparing Linux systems for installation” on page 74
   - Solaris “Preparing Solaris systems for installation” on page 83
   - Windows “Preparing Windows systems for installation” on page 87
2. Prepare to install the Express product on your operating system platform. Use one of the following procedures to prepare for installing the Express product on your operating platform:
   - AIX “Preparing to install the Express product on an AIX system” on page 89
   - HP-UX “Preparing to install the Express product on an HP-UX system” on page 90
   - Linux “Preparing to install the Express product on a Linux system” on page 91
   - Solaris “Preparing to install the Express product on a Solaris system” on page 91
   - Windows “Preparing to install the Express product on a Windows system” on page 92

Your operating system is configured for installation.

Install the product as described in Chapter 6, “Installing the product and additional software,” on page 95.

Preparing AIX systems for installation

This topic describes how to prepare an AIX system for the installation of IBM WebSphere Application Server products.

The installation uses an InstallShield MultiPlatform (ISMP) wizard. You can use the graphical interface of the wizard. You can also use the wizard in silent mode.

Silent mode is a command line invocation with a parameter that identifies an options response file. Edit the options response file before installing.

If you encounter a problem such as needing more temporary space or missing prerequisite packages on your operating system, cancel the installation, make the required changes, and restart the installation.

Note: WebSphere Application Server prevents users from installing to a non-empty directory. If WebSphere Application Server is installed to a directory with a *lost+found* sub-directory, you will be

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prompted to use an empty directory. If you still want to install to this directory, then you can delete the *lost+found* directory. However, the next time *fsck* is executed, the *lost+found* directory will be created. This should not have any effect on an existing install, however during uninstall this directory will not be removed.

Restriction: There are known issues with using Cygwin/X to run Eclipse-based applications on remote AIX machines. This affects your use of the Profile Management tool and the Installation Factory. With Cygwin/X on remote AIX, for example, a splash screen for the Profile Management tool appears but the Profile Management tool never actually comes up. For details of existing Bugzilla reports on these issues, see the information at https://bugs.eclipse.org/bugs/show_bug.cgi?id=36806. If a different X server (such as Hummingbird Exceed®) is used, these problems do not occur.

Preparing the operating system involves such changes as allocating disk space and installing patches to the operating system. IBM tests WebSphere Application Server products on each operating system platform. Such tests verify whether an operating system change is required for WebSphere Application Server products to run correctly. Without the required changes, WebSphere Application Server products do not run correctly.

1. Log on to the operating system.

   You can log on as root or as a non-root installer.

   Select a umask that allows the owner to read/write to the files, and allows others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 can be used, depending on whether the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

2. Stop all WebSphere Application Server-related Java processes on the machine where you are installing the product.
3. Stop any Web server process such as the IBM HTTP Server.
4. Use the System Management Interface Tool (SMIT) to display packages that are installed to determine whether you must update packages that are described in the following steps.
5. Download the most current version of the INFOZIP product to avoid problems with zipped files. Although zipped files are primarily used in the service stream, prepare your AIX operating system by downloading a current version of the INFOZIP package from the http://www.info-zip.org Web site.
6. Install the prerequisite xlC.rte 6.0 run-time code on AIX 5.2 maintenance level 07.

   You must install the xlC.rte 6.0 run-time code before you install the Global Security Kit (GSKit). The GSKit is installed as part of the installation of the IBM HTTP Server or as part of the installation of Web server plug-ins for WebSphere Application Server.

   Download the xlC.rte run-time code as a fix from the AIX Support site.

   If you have AIX 5.2, you can install the xlC.rte 6.0 run-time code from the AIX 5.2 CD.

7. Provide adequate disk space.

   With the JFS file system on AIX, you can allocate expansion space for directories. If the Installation wizard does not have enough space, ISMP issues a system call for more space that increases the space allocation dynamically. The message you might see when this occurs for the /usr directory is similar to the following example:

   ```
   NOTE: The following file systems will be expanded during the installation:
     /usr
   ```

   Attention:

   The Express product requires the following disc space:

   930 MB for the /usr/IBM/WebSphere/AppServer directory

The installation root directory includes the core product files. This size includes the Sample applications. This size includes space for the default application server profile for the server1 process. The requirement does not include space for applications that you might install.

Each application server profile requires approximately 200 MB plus 40 MB of temp space, and space for any applications that you develop and deploy.

100 MB for the /tmp directory

The temporary directory is the working directory for the installation program.

1030 MB total requirement

This amount is the total space requirement when installing the product from the disc.

The total amount of disc space required is approximately 1 GB. The prerequisite checker of the installation program calculates the amount of disc space required.

Manually verify that the required space for creating a profile is available on AIX. A known problem in the underlying InstallShield MultiPlatform (ISMP) code prevents proper space checking on AIX systems at the time that the product disc was created.

The following space is required for the IBM HTTP Server product:

110 MB for the /usr/IBM/HTTPServer/Plugins directory

The IBM HTTP Server product requires this space.

35 MB for the /usr/ibm/gsk7 directory

The IBM Global Security Kit (GSKit) requires this space.

The runtime module is gskkm.rte.

The following space is the maximum amount that is required for the Web server plug-ins for WebSphere Application Server:

200 MB for the /usr/IBM/WebSphere/plugins directory

The Web server plug-ins require this space.

25 MB for the /usr/ibm/gsk7 directory

The IBM Global Security Kit (GSKit) requires this space.

The following space is required for the WebSphere Application Server Clients:

150 MB for the /usr/IBM/WebSphere/AppClient directory

The amount of space required to install the application clients is actually less than 150 MB. The amount of space depends on the clients that you install as features.

The following space is required for the Update Installer:

200 MB for the /usr/IBM/WebSphere/UpdateInstaller directory

The installation wizard for each component displays required space on the confirmation panel before you install the product files and selected features. The installation wizard also warns you if you do not have enough space to install the product.

If you plan to migrate applications and the configuration from a previous version, verify that the application objects have enough disc space. As a rough guideline, plan for space equal to 110 percent of the size of the application objects:

- **For Version 4.0.x:** The size of enterprise archive (EAR) files
- **For Version 5.0.x:** The size of EAR files

8. Unmount file systems with broken links to avoid java.lang.NullPointerException errors.

   Unmount file systems with broken links before installing.

   Installation can fail with the following error when broken links exist to file systems:

```
An error occurred during wizard bean change notification:
java.lang.NullPointerException
  at com.ibm.wizard.platform.aix.AixFileUtils.
     getFileSystemData(AixFileUtils.java:388)
  at com.ibm.wizard.platform.aix.AixFileUtils.
     getPartitionDataWithExecs(AixFileUtils.java:172)
  at com.ibm.wizard.platform.aix.AixFileUtils.
     getPartitionData(AixFileUtils.java:104)
  at com.ibm.wizard.platform.aix.AixFileServiceImpl.
     getPartitionNames(AixFileServiceImpl.java:397)
...
```

Use the df -k command to check for broken links to file systems. Look for file systems that list blank values in the *1024-blocks size* column. Columns with a value of ″-″ (dash) are not a problem. The following example shows a problem with the /dev/lv00 file system:

```
>  df -k
Filesystem    1024-blocks      Free %Used    Iused %Iused Mounted on
/dev/hd4          1048576    447924   58%     2497     1% /
/dev/hd3          4259840   2835816   34%      484     1% /tmp
/proc                   -         -    -         -     -  /proc
/dev/lv01         2097152    229276   90%     3982     1% /storage
/dev/lv00
/dev/hd2          2097152    458632   79%    42910     9% /usr
iw031864:/cdrom/db2_v72_eee_aix32_sbcs
```

The /proc file system is not a problem. The iw031864:/cdrom/db2_v72_eee_aix32_sbcs file system is a definite problem. The /dev/lv00 file system is also a likely problem. Use one of the following commands to solve this problem:

```
>  umount /cdrom/db2_v72_eee_aix32_sbcs
>  umount /cdrom
```

Start the installation again. If the problem continues, unmount any file systems that have blank values, such as the /dev/lv00 file system in the example. If you cannot solve the problem by unmounting file systems with broken links, reboot the machine and start the installation again.

9. Verify that prerequisites and corequisites are at the required release levels.

   Although the Installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site if you have not already done so.

   Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

10. Verify the system cp command when using emacs or other freeware.

    If you have emacs or other freeware installed on your operating system, verify that the system cp command is used.

    a. Type which cp at the command prompt before running the installation program for the WebSphere Application Server product.
    b. Remove the freeware directory from your PATH if the resulting directory output includes freeware. For example, assume that the output is similar to the following message: .../freeware/bin/cp. If so, remove the directory from the PATH.
    c. Install the WebSphere Application Server product.
    d. Add the freeware directory back to the PATH.

    If you install with a cp command that is part of a freeware package, the installation might appear to complete successfully, but the Java 2 SDK that the product installs might have missing files in the *app_server_root*/java directory.

    Missing files can destroy required symbolic links. If you remove the freeware cp command from the PATH, you can install the Application Server product successfully.

11. Verify that the Java 2 SDK on the installation image disc is functioning correctly, if you created your own disc.

For example, you might have downloaded an installation image from Passport Advantage, or you might have copied an installation image onto a backup disc. In either case, perform the following steps to verify that the disc contains a valid Java 2 software development kit (SDK).

a. Change directories to the /mnt/JDK/repository/prereq.jdk/java/bin directory on the product CD-ROM or DVD. For example:

```
cd /mnt/JDK/repository/prereq.jdk/java/bin
```

b. Verify the Java 2 SDK version. Type the following command:

```
./java -version
```

The command completes successfully with no errors when the Java 2 SDK is intact.

12. **Optional:** Install the Mozilla browser if it is not already installed. The Mozilla browser supports the launchpad console.

a. Use smit to see if the Mozilla 1.4 or 1.7.8 or later package is already installed.

b. Download two prerequisites from the AIX Toolbox for Linux Applications (glib & gtk+). Download the packages from the following locations:

- ftp://ftp.software.ibm.com/aix/freeSoftware/aixtoolbox/RPMS/ppc/glib/glib-1.2.10-2.aix4.3.ppc.rpm
- ftp://ftp.software.ibm.com/aix/freeSoftware/aixtoolbox/RPMS/ppc/gtkplus/gtkplus-1.2.10-4.aix5.1.ppc.rpm

c. Install the packages after downloading them: Use the following command:

```
rpm -Uvh glib-1.2.10-2.aix4.3.ppc.rpm gtkplus-1.2.10-4.aix5.1.ppc.rpm
```

d. Download the latest supported version of Mozilla (1.7.8 or later) for AIX. Download Mozilla for AIX from the following location:

http://www.ibm.com/servers/aix/browsers/

Download the installp image and install it from smit.

The Mozilla images distributed on the http://www.mozilla.org Web site are not provided by IBM. IBM has not tested and does not support the download from the non-IBM Web site. Download the Mozilla images from the IBM Web site to verify that the version that you download is tested and supported.

Using Mozilla 1.7.5 or earlier can result in ISMP failing to initialize during installation. The launchpad link might seem to fail, for example. See V6.0.2: The WebSphere Application Server launchpad fails with Mozilla 1.7.5 (and earlier) on 64-bit AIX 5.2 or 5.3 for more information.

13. **Optional:** Export the location of the supported browser.

Export the location of the supported browser using a command that identifies the actual location of the browser.

For example, if the Mozilla package is in the bin /mozilla directory, use the following command:

```
EXPORT BROWSER=/usr/bin/mozilla
```

14. **Silent installation only:** Make an allowance for a known ISMP problem that causes a call to the Xwindows service during a silent installation.

The DISPLAY environment variable on your AIX machine might point to an X server that is not logged in. Two common scenarios can cause this to occur:

- Your AIX machine has an X server running, but the X server is stuck at the graphical login screen because you have not yet logged in.
- Your AIX machine is configured to display X Windows applications on a remote X server that is not logged in.

A silent installation can hang in either case as ISMP calls Xwindows services.

Two solutions exist:

- Login to the local X server through the graphical user interface before beginning the silent installation.
- Export the DISPLAY environment variable to point to null or blank.

```
EXPORT DISPLAY=null
```

This procedure results in preparing the operating system for installing the product.

After preparing the operating system for installation, you can install the WebSphere Application Server product.

See “Preparing to install the Express product on an AIX system” on page 89 for the next step in the overall procedure, which is selecting the type of installation to perform.

Preparing HP-UX systems for installation

This topic describes how to prepare an HP-UX system for the installation of IBM WebSphere Application Server, Version 6 products.

The installation uses an InstallShield MultiPlatform (ISMP) wizard. You can use the graphical interface of the wizard. You can also use the wizard in silent mode.

Silent mode is a command line invocation with a parameter that identifies an options response file. Edit the options response file before installing.

If you encounter a problem such as needing more temporary space or missing prerequisite packages on your operating system, cancel the installation, make the required changes, and restart the installation.

Restriction: There are known issues with using Cygwin/X to run Eclipse-based applications on remote HP-UX machines. This affects your use of the Profile Management tool and the Installation Factory. With Cygwin/X on remote HP-UX, for example, the Profile Management tool’s welcome panel appears but no keyboard or mouse input is accepted. For details of existing Bugzilla reports on these issues, see the information at https://bugs.eclipse.org/bugs/show_bug.cgi?id=97808. If a different X server (such as Hummingbird Exceed®) is used, these problems do not occur.

Preparing the operating system involves such changes as allocating disk space and installing patches to the operating system. IBM tests WebSphere Application Server products on each operating system platform. Such tests verify whether an operating system change is required for WebSphere Application Server products to run correctly. Without the required changes, WebSphere Application Server products do not run correctly.

1. Log on to the operating system.

   You can log on as root or as a non-root installer.

   Select a umask that allows the owner to read/write to the files, and allows others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 can be used, depending on whether the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

2. **Optional:** Download and install the Mozilla Web browser so that you can use the launchpad application on the product disc.

   If you do not have the Mozilla Web browser, download and install the browser from http://www.mozilla.org.

3. **Optional:** Export the location of the supported browser.

   Export the location of the supported browser using a command that identifies the actual location of the browser.

For example, if the Mozilla package is in the /opt/bin/mozilla directory, use the following command:

```
export BROWSER=/opt/bin/mozilla
```

4. Stop all WebSphere Application Server-related Java processes on the machine where you are installing the product.
5. Stop any Web server process such as the IBM HTTP Server.
6. Provide adequate disk space.

   Attention:

   The Express product requires the following disc space:

   980 MB for the /opt/IBM/WebSphere/AppServer directory

   The installation root directory includes the core product files. This size includes the Sample applications. This size includes space for the default application server profile for the server1 process. The requirement does not include space for applications that you might install.

   Each application server profile requires approximately 200 MB plus 40 MB of temp space, and space for any applications that you develop and deploy.

   100 MB for the /tmp directory

   The temporary directory is the working directory for the installation program.

   1080 MB total requirement

   This amount is the total space requirement when installing the product from the disc.

   The following space is required for the IBM HTTP Server product:

   110 MB for the /opt/IBM/HTTPServer directory

   The IBM HTTP Server product requires this space.

   25 MB for the /opt/ibm/gsk7 directory

   The IBM Global Security Kit (GSKit) requires this space.

   The runtime module is gsk7bas for HP-UX platforms.

   The following space is the maximum amount that is required for the Web server plug-ins for WebSphere Application Server:

   280 MB for the /opt/IBM/WebSphere/plugins directory

   The Web server plug-ins require this space.

   25 MB for the /opt/ibm/gsk7 directory

   The IBM Global Security Kit (GSKit) requires this space.

   On SPARC platforms, the following space is required for the IBM WebSphere Application Server Clients:

   150 MB for the *app_client_root* directory

   The amount of space required to install the application clients is actually less than 150 MB. The amount of space depends on the clients that you install as features.

   The following space is required for the Update Installer:

   200 MB for the /opt/IBM/WebSphere/UpdateInstaller directory

   The installation wizard for each component displays required space on the confirmation panel before you install the product files and selected features. The installation wizard also warns you if you do not have enough space to install the product.

   If you plan to migrate applications and the configuration from a previous version, verify that the application objects have enough disc space. As a rough guideline, plan for space equal to 110 percent of the size of the application objects:

- **For Version 4.0.x:** The size of enterprise archive (EAR) files
- **For Version 5.0.x:** The size of EAR files

7. Set kernel values to support Application Server. Several HP-UX kernel values are typically too small for the product.

   To set kernel parameters, perform the following steps:
   a. Log into the host machine as root.
   b. Determine the physical memory, which you must know to avoid setting certain kernel parameters above the physical capacity:
      1) Start the HP-UX System Administration Manager (SAM) utility with the /usr/sbin/sam command.
      2) Select **Performance Monitors > System Properties > Memory**.
      3) Note the value for Physical Memory and click **OK**.
      4) Exit from the SAM utility.
   c. Set the maxfiles and maxfiles_lim parameters to at least 4096. The following table recommends 8000 and 8196, respectively. You must first edit the /usr/conf/master.d/core-hpux file, so the SAM utility can set values greater than 2048:
      1) Open the /usr/conf/master.d/core-hpux file in a text editor.
      2) Change the line," *range maxfiles<=2048″ to ″*range maxfiles<=60000″
      3) Change the line, ″*range maxfiles_lim<=2048″ to ″*range maxfiles_lim<=60000″
      4) Save and close the file. Old values might be stored in the /var/sam/boot.config file. Force the SAM utility to create a new boot.config file:
         a) Move the existing version of the /var/sam/boot.config file to another location, such as the /tmp directory.
         b) Start the SAM utility.
         c) Select **Kernel Configuration > Configurable Parameters**. When the Kernel Configuration window opens, a new boot.config file exists.

            Alternatively, rebuild the boot.config file with the following command:

            ```
            # /usr/sam/lbin/getkinfo -b
            ```
   d. Set new kernel parameter values:
      1) Start the SAM utility.
      2) Click **Kernel Configuration > Configurable Parameters**.
      3) For each of the parameters in the following table, perform this procedure:
         a) Highlight the parameter to change.
         b) Click **Actions > Modify Configurable Parameter**.
         c) Type the new value in the **Formula/Value** field.
         d) Click **OK**.

      Change typical kernel settings for running WebSphere Application Server in the order shown in the following table:

Parameter	Value
STRMSGSZ	65535
dbc_max_pct	25
maxdsiz	805306358 (0x30000000)
maxdsiz	2048000000 (when running multiple profiles on the same system)
maxfiles_lim	8196 (Change this one before maxfiles.)
maxfiles	8000
maxssiz	8388608
maxswapchunks	8192
maxusers	512
nkthread	7219
max_thread_proc	3000

Parameter	Value
nproc	4116 (Change this one before maxuprc)
maxuprc	512
msgtql	2046
msgmap	2048
msgssz	32 (Change this one before msgmax)
msgseg	32767 (Change this one before msgmax)
msgmnb	65535 (0x10000) (Change this one before msgmax)
msgmnb	131070 (when running multiple profiles on the same system)
msgmax	65535 (0x10000)
msgmax	131070 (when running multiple profiles on the same system)
msgmni	50
nfile	58145
nflocks	3000
ninode	60000
npty	2024
nstrpty	1024
nstrtel	60
sema	1
semaem	16384 (0x4000)
semmns	16384 (0x4000) (Change this one before semmap)
semmni	2048 (Change this one before semmap)
semmap	514
semmnu	1024
semume	200
semvmx	32767
shmem	1
shmmax	2147483647 (0x7FFFFFFF)
shmmni	1024
shmseg	1024

When WebSphere Application Server and IBM DB2 are on the same machine, some kernel values are higher than those shown in the preceding table.

See the Recommended HP-UX kernel configuration parameters for DB2 V8 Web page for more information.

e. Click **Actions > Process New Kernel**.

f. Click **Yes** on the information window to confirm your decision to restart the machine.

Follow the on-screen instructions to restart your machine and to enable the new settings.

g. If you plan to redirect displays to non-HP machines, do the following before running the WebSphere Application Server installation wizard:

1) Issue the following command to obtain information on all the public locales that are accessible to your application:

```
# locale -a
```

2) Choose a value for your system from the output that is displayed and set the LANG environment variable to this value. Here is an example command that sets the value of LANG to en_US.iso88591

```
# export LANG=en_US.iso8859
```

8. Verify that prerequisites and corequisites are at the required release levels.

   Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site 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.

9. Verify the system cp command when using emacs or other freeware.

   If you have emacs or other freeware installed on your operating system, verify that the system cp command is used.

   a. Type which cp at the command prompt before running the installation program for the WebSphere Application Server product.
   b. Remove the freeware directory from your PATH if the resulting directory output includes freeware. For example, assume that the output is similar to the following message: .../freeware/bin/cp. If so, remove the directory from the PATH.
   c. Install the WebSphere Application Server product.
   d. Add the freeware directory back to the PATH.

   If you install with a cp command that is part of a freeware package, the installation might appear to complete successfully, but the Java 2 SDK that the product installs might have missing files in the *app_server_root*/java directory.

   Missing files can destroy required symbolic links. If you remove the freeware cp command from the PATH, you can install the Application Server product successfully.

10. Verify that the Java 2 SDK on the installation image disc is functioning correctly, if you created your own disc.

    For example, you might have downloaded an installation image from Passport Advantage, or you might have copied an installation image onto a backup disc. In either case, perform the following steps to verify that the disc contains a valid Java 2 software development kit (SDK).

    a. Change directories to the /mnt/JDK/repository/prereq.jdk/java/bin directory on the product CD-ROM or DVD. For example:

       ```
       cd /mnt/JDK/repository/prereq.jdk/java/bin
       ```

    b. Verify the Java 2 SDK version. Type the following command:

       ```
       ./java -version
       ```

       The command completes successfully with no errors when the Java 2 SDK is intact.

This procedure results in preparing the operating system for installing the product.

After preparing the operating system for installation, you can install the WebSphere Application Server product.

See “Preparing to install the Express product on an HP-UX system” on page 90 for the next step in the overall procedure, which is selecting the type of installation to perform.

Preparing Linux systems for installation

This topic describes how to prepare a Linux system for installing WebSphere Application Server.

The installation uses an InstallShield MultiPlatform (ISMP) wizard. You can use the graphical interface of the wizard. You can also use the wizard in silent mode.

Silent mode is a command line invocation with a parameter that identifies an options response file. Edit the options response file before installing.

Non-root installation support is introduced in Version 6.1, for both the Installation wizard and for silent installations.

If you encounter a problem such as needing more temporary space or missing prerequisite packages on your operating system, cancel the installation, make the required changes, and restart the installation.

Preparing the operating system involves such changes as allocating disk space and installing patches to the operating system. IBM tests WebSphere Application Server products on each operating system platform. Such tests verify whether an operating system change is required for WebSphere Application Server products to run correctly. Without the required changes, WebSphere Application Server products do not run correctly.

While this topic lists many steps that are common to all Linux distributions, specific Linux distributions might require additional steps. Complete all common steps, as well as any additional steps that are required for your distribution. If your distribution is not listed in this topic, but is supported by WebSphere Application Server, check for any post-release technical notes that are available for your operating system at the product support site at http://www.ibm.com/software/webservers/appserv/was/support/. If a technical note is not available for your distribution, additional steps might not be required.

When additional steps are required, it is typically because a default installation of the distribution does not provide required libraries or operating system features. If you install WebSphere Application Server on a customized Linux installation that has installed packages which differ significantly from the packages provided by a default installation of the distribution, ensure that your customized installation has the packages required for WebSphere Application Server to run. WebSphere Application Server does not maintain lists of the packages required for each Linux distribution or for updates to each distribution.

For WebSphere Application Server to run adequately, your Linux installation must have the following items:

- Kernel and C runtime library
- Current and all compatibility versions of the C++ runtime library
- X Windows libraries and runtime
- GTK runtime libraries

1. Log on to the operating system.

   You can log on as root or as a non-root installer.

   Select a umask that allows the owner to read/write to the files, and allows others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 can be used, depending on whether the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

2. Download and install the Mozilla Firefox Web browser so that you can use the launchpad application on the product disc and the Gnome and KDE shortcut menu entries for WebSphere Application Server - Express.

   If you do not have the Firefox browser, download and install the browser from http://www.mozilla.org/products/firefox/.

   Note: It might be necessary to run `>firefox &url` from directories other than the one where Firefox is installed, so ensure that Firefox is in the path. You can add a symbolic link to the /opt/bin directory by entering:

   ```
   >ln -s /locationToFirefox/firefox firefox
   ```

3. **Optional:** Export the location of the supported browser.

   Export the location of the supported browser using a command that identifies the actual location of the browser.

   For example, if the Mozilla package is in the /opt/bin/mozilla directory, use the following command:

   ```
   export BROWSER=/opt/bin/mozilla
   ```

4. Stop all WebSphere Application Server-related Java processes on the machine where you are installing the product.
5. Stop any Web server process such as the IBM HTTP Server.
6. Provide adequate disk space.

   Attention:

   The Express product requires the following disc space:

   930 MB for the /opt/IBM/WebSphere/AppServer directory

   The installation root directory includes the core product files. This size includes the Sample applications. This size includes space for the default application server profile for the server1 process. The requirement does not include space for applications that you might install.

   Each application server profile requires approximately 200 MB plus 40 MB of temp space, and space for any applications that you develop and deploy.

   100 MB for the /tmp directory

   The temporary directory is the working directory for the installation program.

   1030 MB total requirement

   This amount is the total space requirement when installing the product from the disc.

   The IBM HTTP Server product requires the following space:

   110 MB for the /opt/IBM/HTTPServer directory

   The IBM HTTP Server product requires this space.

   25 MB for the /opt/ibm/gsk7 directory

   The IBM Global Security Kit (GSKit) requires this space.

   The runtime module is gsk7bas.i386.rpm for Linux distributed platforms and gsk7bas.s390.rpm for Linux for S/390 platforms.

   The Web server plug-ins for WebSphere Application Server require the following maximum amount if space:

   200 MB for the /opt/IBM/WebSphere/plugins directory

   The Web server plug-ins require this space.

   25 MB for the /opt/ibm/gsk7 directory

   The IBM Global Security Kit (GSKit) requires this space.

   The runtime module is gskkm.rte.

   The IBM WebSphere Application Server Clients product requires the following space:

   150 MB for the *app_client_root* directory

   The amount of space required to install the application clients is actually less than 150 MB. The amount of space depends on the clients that you install as features.

   The Update Installer requires the following space:

   200 MB for the /opt/IBM/WebSphere/UpdateInstaller directory

   The Application Server Toolkit requires the following space:

1 GB maximum for the /opt/IBM/WebSphere/AST directory

The Application Server Toolkit does not include an integrated test environment.

Install the WebSphere Application Server product to create a test environment.

The installation wizard for each component displays required space on the confirmation panel before you install the product files and selected features. The installation wizard also warns you if you do not have enough space to install the product.

If you plan to migrate applications and the configuration from a previous version, verify that the application objects have enough disc space. As a rough guideline, plan for space equal to 110 percent of the size of the application objects:

- **For Version 4.0.x:** The size of enterprise archive (EAR) files
- **For Version 5.0.x:** The size of EAR files

7. Verify that prerequisites and corequisites are at the required release levels.

   Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site 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.

8. Increase the ulimit setting in the bash command shell profile to prevent addNode and importWasprofile problems.

   The addNode command script can fail when adding a node, or the importWasprofile command can fail when importing a configuration archive. The importWasprofile command might fail during the installation of a customized installation package (CIP) when the CIP includes a customized profile.

   Set a higher ulimit setting for the kernel in the bash shell profile script, which is loaded at login time for the session.

   Set the ulimit on your Linux command shells by adding the command to your shell profile script. The shell profile script is usually found under your home directory:

   a. `cd ~`
   b. `vi .bashrc`
   c. `ulimit -n 8192`

   See http://www.ibm.com/support/docview.wss?uid=swg21223909 for more information.

9. Restore the original copy of the etc/issue file if the file is modified.

   The prereqChecker program in the installation wizard uses the file to verify the version of the operating system. If you cannot restore the original version, ignore the Operating System Level Check message about the operating system being unsupported. The installation can continue successfully despite the warning.

10. Verify the system cp command when using emacs or other freeware.

    If you have emacs or other freeware installed on your operating system, verify that the system cp command is used.

    a. Type which cp at the command prompt before running the installation program for the WebSphere Application Server product.
    b. Remove the freeware directory from your PATH if the resulting directory output includes freeware. For example, assume that the output is similar to the following message: .../freeware/bin/cp. If so, remove the directory from the PATH.
    c. Install the WebSphere Application Server product.
    d. Add the freeware directory back to the PATH.

    If you install with a cp command that is part of a freeware package, the installation might appear to complete successfully, but the Java 2 SDK that the product installs might have missing files in the *app_server_root*/java directory.

Missing files can destroy required symbolic links. If you remove the freeware cp command from the PATH, you can install the Application Server product successfully.

11. Complete any distribution-specific set up.

    Complete the steps for your distribution:
    - Red Hat Enterprise Linux 4
    - Red Hat Enterprise Linux 3
    - SuSE Linux Enterprise Server 9
    - SuSE Linux Enterprise Server 8

    If you are using a supported distribution other than those listed above, examine the WebSphere Application Server support site for any technical notes that are published for your distribution. If technical notes have been published, apply the fixes.

12. Verify that the Java 2 SDK on the installation image disc is functioning correctly, if you created your own disc.

    For example, you might have downloaded an installation image from Passport Advantage, or you might have copied an installation image onto a backup disc. In either case, perform the following steps to verify that the disc contains a valid Java 2 software development kit (SDK).

    a. Change directories to the /mnt/JDK/repository/prereq.jdk/java/bin directory on the product CD-ROM or DVD. For example:

       ```
       cd /mnt/JDK/repository/prereq.jdk/java/bin
       ```

    b. Verify the Java 2 SDK version. Type the following command:

       ```
       ./java -version
       ```

       The command completes successfully with no errors when the Java 2 SDK is intact.

13. Grant a non-root installer ID the correct file permissions to create menu entries in Gnome and KDE.

    Before the installation, the root user can grant write permission to the non-root installer for the /etc/xdg/menus/applications-merged directory. Then the Installation wizard creates the menu entries during the non-root installation.

    Otherwise, you must run scripts to create and remove the menu entries while WebSphere Application Server - Express is installed. See “Limitations of non-root installers” on page 138 for more information.

This procedure results in preparing the operating system for installing the product.

After preparing the operating system for installation, you can install the WebSphere Application Server product.

See “Preparing to install the Express product on a Linux system” on page 91 for the next step in the overall procedure, which is selecting the type of installation to perform.

Installing and verifying Linux packages

This topic describes how to query a Linux system to verify that a package is installed. The topic also describes how to install a missing package from an operating system CD.

Install the Linux operating system before using this procedure.

Use the following procedure to install and verify prerequisite libraries (packages) that WebSphere Application Server products require on Linux systems.

Assume that your Linux operating system requires the compat-libstdc++-33-3.2.3-47.3 package and that there are two versions of the package. One version is for 32-bit platforms and the other is for 64-bit platforms. This procedure shows how to query the operating system to see if the packages are installed, find the missing packages on the operating system disc, and install the packages.

This example uses Red Hat Enterprise Linux (RHEL) on a PowerPC 64-bit hardware platform. The example assumes that RHEL requires both the 32-bit version and the 64-bit version of the compat-libstdc++-33-3.2.3-47.3 package.

1. Query the operating system to determine if the packages are already installed.

   ```
   rpm -qa | grep compat-libstdc++-33-3.2.3-
   ```

   In this example, the operating system did not find any matching packages so a blank line is displayed.

   You can also search without the grep argument to see an explicit message about the file:

   ```
   rpm -q compat-libstdc++-33-3.2.3-
   ```

   The operating system returns the following message:

   ```
   package compat-libstdc++-33-3.2.3- is not installed
   ```

2. Find all related packages on the operating system media to get the fully qualified locations.

   This example assumes that the operating system media is a compact disc mounted at /media/cdrom. Your CD-ROM device might be at a different location, such as /media/cdrecorder, for example.

   ```
   find /media/cdrom -name compat-libstdc++-33-3.2.3-*
   ```

   In this example, the operating system finds two matching package names. One package is the 32-bit version and the other is the 64-bit version.

   ```
   /media/cdrom/RedHat/RPMS/compat-libstdc++-33-3.2.3-47.3.ppc.rpm
   /media/cdrom/RedHat/RPMS/compat-libstdc++-33-3.2.3-47.3.ppc64.rpm
   ```

3. Install the first missing package:

   ```
   rpm -ivh /media/cdrom/RedHat/RPMS/compat-libstdc++-33-3.2.3-47.3.ppc.rpm
   ```

4. Install the second missing package:

   ```
   rpm -ivh /media/cdrom/RedHat/RPMS/compat-libstdc++-33-3.2.3-47.3.ppc64.rpm
   ```

5. **Optional: Alternative method to find and install packages in one command:** Use the following command to find packages and to install all packages that are found.

   Find the packages as described in the earlier step to verify that the following command installs only the packages that you intend to install.

   ```
   find /media/cdrom -name compat-libstdc++-33-3.2.3-* | xargs rpm -ivh
   ```

   This single command installs both packages.

6. **Optional: Alternative command to update existing packages:** Use the following command to find and install missing packages or to find and update existing packages:

   ```
   find /media/cdrom -name compat-libstdc++-33-3.2.3-* | xargs rpm -Uvh
   ```

   This single command installs a package when the package is not installed. This command updates a package to a newer version when the package is installed.

Required packages very per operating system. See “Preparing Linux systems for installation” on page 74 for a list of required packages for each Linux operating system.

Preparing Red Hat Enterprise Linux 4 for installation

You must complete additional steps to prepare a Red Hat Enterprise Linux Version 4 system for a WebSphere Application Server installation.

Complete steps 1-10 in “Preparing Linux systems for installation” on page 74. Those steps are common to any Linux system.

In addition to the common steps required for installing any Linux system, a few system specific steps are required for Red Hat Enterprise Linux Version 4.

Verify that the prerequisite packages are installed. A Linux package registration limitation prevents the prerequisites checker program from examining prerequisite packages on Linux systems. See “Installing and verifying Linux packages” on page 78 for more information.

1. Install packages for all hardware platforms.

   Install the following packages on any hardware platform:

   compat-libstdc++-33-3.2.3-47.3
   Required for C++ runtime compatibility. Used by such components as GSKit, the Java 2 Software Development Kit (SDK), and the Web server plug-ins.

   compat-db-4.1.25-9
   Required by IBM HTTP Server. Some of the modules use the libraries contained within this package.

   xorg-x11-deprecated-libs-6.8.1 or xorg-x11-deprecated-libs-6.8.2
   Required by the Java 2 SDK to provide printing functions for graphical user interfaces. Without this package, Swing-based applications and AWT-based applications, such as InstallShield for Multiplatforms (ISMP), cannot instantiate.

   rpm-build-4.3.3-7_nonptl
   Required by ISMP to properly register products within the RPM database.

   These packages are part of the Red Hat Enterprise Linux 4 operating system, but are not installed by default. You can also install a later release of any of these packages if Red Hat provides new packages as errata.
2. Select packages for hardware platforms that are capable of running both 32-bit and 64-bit applications.

   Hardware platforms capable of running both 32-bit and 64-bit applications include Opteron, EM64T, iSeries, pSeries (PowerPC), and zSeries (S/390 64-bit) machines.

   By default, RHEL 4 only installs 64-bit runtime support on these platforms. However, various applications included with WebSphere Application Server Version 6.x products and packages also require the 32-bit runtime support. Therefore, you must install the 32-bit runtime support.

   Install the following required 32-bit packages by selecting to customize the packages during the RHEL 4 installation. Or, customize packages on an existing RHEL 4 system by issuing the system-config-packages command from a graphical terminal.

   Install the Compatibility Architecture Support under the System category. Optionally install the Compatibility Architecture Development Support under the Development category if you intend to build C or C++ libraries for use with both 32-bit and 64-bit applications.

   Platforms that support both 32-bit and 64-bit applications require both the 32-bit and 64-bit versions of the following packages:
   - **compat-libstdc++-33-3.2.3-47.3**
   - **compat-db-4.1.25-9**
   - **xorg-x11-deprecated-libs-6.8.1** or **xorg-x11-deprecated-libs-6.8.2**

   Run the rpm -qa | grep *package_name* command to verify that you have both versions of each package. Substitute the name of each package for the *package_name* variable.

   Installed packages are displayed in the reply to the command. If you do not get two replies for each package, you have only one version of the package installed. You must then install the missing package.
3. Install additional packages for specific platforms.

   In addition to the packages that are common to all platforms, install the following packages on hardware platforms capable of running both 32-bit and 64-bit applications before installing WebSphere Application Server products and packages.

   x86 platforms and Opteron or EM64T platforms: compat-libstdc++-296-2.96-132.7.2
   The compat-libstdc++-296-2.96-132.7.2 package is required for C++ runtime compatibility. The package is used by such components as GSKit, the Java 2 SDK, and the Web server plug-ins.

   z/Series (S/390) platforms: compat-libstdc++-295-2.95.3-81
   The compat-libstdc++-295-2.95.3-81 package is required for C++ runtime compatibility. The package is used by such components as GsKit, the Java 2 SDK, and the Web server plug-ins.

Install both the 32-bit version and the 64-bit version of the package on 64-bit z/Series hardware platforms.

If you do not install all of the required packages, the Installation wizard cannot start. Error messages indicate missing libraries, the inability to load graphical interfaces, or other errors that occur during the installation.

See Preparing RHEL 4 for the installation of WebSphere Application Server Version 6.0.x and Version 6.1.x products for more information.

After you complete the steps in this topic, proceed to the final step in “Preparing Linux systems for installation” on page 74.

Preparing Red Hat Enterprise Linux 3 for installation

You must complete additional steps to prepare a Red Hat Enterprise Linux Version 3 system for a WebSphere Application Server installation.

Complete steps 1-10 in “Preparing Linux systems for installation” on page 74. Those steps are common to any Linux system.

In addition to the common steps required for installing any Linux system, a few system specific steps are required for Red Hat Enterprise Linux Version 3.

Ensure that your installation of Red Hat Enterprise Linux 3 has been upgraded to service level 2 (update 2) or later. If you have not upgraded the service level, certain national language issues in the released version of GLIBC included in Red Hat Enterprise Linux 3 might cause Java virtual machine (JVM) failures that manifest as segmentation faults. These failures can occur during installation when the locale is set to anything other than an English locale.

Verify that the prerequisite packages are installed. A Linux package registration limitation prevents the prerequisites checker program from examining prerequisite packages on Linux systems. See “Installing and verifying Linux packages” on page 78 for more information.

1. If you have a Red Hat Enterprise Linux 3 for xSeries platform, install the following packages.

   compat-libstdc++-7.3-2.96.122
   Required for C++ runtime compatibility. Used by such components as GSKit, the Java 2 Software Development Kit (SDK), and Web server plug-ins for WebSphere Application Server.

   compat-db-4.0.14-5
   Required by some IBM HTTP Server modules. The modules use the libraries contained within this RPM package.

   rpm-build-4.2.1-4.2
   InstallShield for Multiplatforms (ISMP) requires the package to properly register products with the Red Hat Package Manager (RPM) database.

2. If you intend to compile Java Native Interface (JNI) libraries on the system, install RPM packages that are recommended for developing and building JNI libraries for use by your Java 2 Enterprise Edition (J2EE) applications.

   The needed packages are:
   - compat-gcc-7.3-2.96.122
   - compat-libstdc++-devel-7.3-2.96.122
   - compat-glibc-7.x-2.2.4.32.5
   - compat-gcc-c++-7.3-2.96.122

   If you do not intend to compile JNI libraries on the system, you do not have to install these packages.

3. If you have an iSeries platform or pSeries platform, install the rpm-build-4.2.1-4.2 package.

InstallShield for Multiplatforms (ISMP) requires the package to properly register products with the Red Hat Package Manager (RPM) database.

4. If you have Red Hat Enterprise Linux 3 for S/390 (z/VM or VM/ESA) platform, install the following packages.
   - compat-db-4.0.14-5

     Required by some IBM HTTP Server modules. The modules use the libraries contained within this RPM package.
   - compat-pwdb-0.62-3
   - compat-libstdc++-7.2-2.95.3.77

     Required for C++ runtime compatibility. Used by such components as GSKit, the Java 2 Software Development Kit (SDK), and Web server plug-ins for WebSphere Application Server.
   - rpm-build-4.2.1-4.2

     Required by InstallShield for Multiplatforms (ISMP) to properly register products with the Red Hat Package Manager (RPM) database.

   You can install a later release of any of these packages.

If you do not install all of the required packages, the product will not perform as intended.

After you complete the steps in this topic, proceed to the final step in “Preparing Linux systems for installation” on page 74.

Preparing SuSE Linux Enterprise Server 9 for installation

You must complete additional steps to prepare a SuSE Linux Enterprise Server Version 9 system for a WebSphere Application Server installation.

Complete steps 1-10 in “Preparing Linux systems for installation” on page 74. Those steps are common to any Linux system.

In addition to the common steps required for installing any Linux system, an additional step is required for SuSE Linux Enterprise Server Version 9.

SLES 9 SP1 is the officially supported platform for PowerPC 64-bit machines.

A known problem in the SLES 9 GA kernel (LTC 9288) is documented in the SDK guide for the 142SR1a release. The problem results in a 64-bit WebSphere Application Server hang indicated by the following error messages:

```
00000014 RecoveryManag A WTRN0028I: Transaction service recovering 0 transactions.
0000000a ResourceMgrIm I WSVR0049I: Binding DefaultTimerManager as tm/default
0000000a WorkAreaServi A ACWA0002I: WorkArea service not enabled on dmgr.
0000000a AppProfileCom I ACIN0007I: The application profiling service started successfully.
0000000a CacheServiceI I DYNA0048I: WebSphere Dynamic Cache initialized successfully.
00000015 LogAdapter E DCSV9416E: An internal error occurred.
         Exception is Clock not changed in 10002 rounds.
00000015 LogAdapter E DCSV9416E: An internal error occurred.
         Exception is Clock not changed in 10002 rounds.
```

Apply SLES 9 SP1 on PowerPC 64-bit platforms to avoid this problem.

On SLES9/AMD64 systems, install the following 32-bit libraries are required by the SDK.

- XFree86-libs-32bit-9
- glibc-32bit-9
- glib-32bit-9
- gtk-32bit-9

If you do not install all of the required packages, the known problem might occur.

After you complete the step in this topic, proceed to the final step in “Preparing Linux systems for installation” on page 74.

Preparing SuSE Linux Enterprise Server 8 for installation

You must complete additional steps to prepare a SuSE Linux Enterprise Server Version 8 system for a WebSphere Application Server installation.

Complete steps 1-10 in “Preparing Linux systems for installation” on page 74. Those steps are common to any Linux system.

In addition to the common steps required for installing any Linux system, some additional steps are required for SuSE Linux Enterprise Server Version 8.

Prepare the SuSE Linux Enterprise Server 8.0 - Powered by UnitedLinux 1.0 operating platform for WebSphere Application Server installation.

1. Install SP3 for the United Linux 1.0 operating platform to enable you use the Launchpad.

   It is your responsibility to install this service pack. The prereqChecker function of the installer cannot detect service pack versions definitively on United Linux. Kernel unames and versions between 8.0 and 8.0.3 are identical. No signature RPM denotes a service pack install.
2. Use the IBM Software Developer Kit (SDK) that WebSphere Application Server provides to support the Java 2 SDK on the SuSE Linux Enterprise System 8.0 (SLES 8) operating system to avoid potential problems when uninstalling an interim fix or a fix pack.

   To use the IBM Developer Kit, remove the java2-jre-1.3.1-524 and java2-1.3.1-524 RPMs from the machine before installing WebSphere Application Server.
3. Correct font problems on SuSE Linux Enterprise Server 8.0 in Simplified Chinese and Traditional Chinese locales.

   On the Linux for Power platform that SuSE Linux Enterprise Server 8.0 provides, a missing package causes a font problem. The ttf-hanyi package is not installed during the normal product installation of the SuSE 8.0 operating system. The missing package causes the Installation wizard for WebSphere Application Server products to display garbled characters in the Simplified Chinese locale and in the Traditional Chinese locale.

   Copy the ttf-hanyi-2021016-0.noarch.rpm package on the SuSE 8.0 for i386 CD to the Power PC system. Install the package on the Power PC machine and reboot the machine to solve the problem.

If you do not complete these fixes, you might encounter problems when installing or using the product.

After you complete the step in this topic, proceed to the final step in “Preparing Linux systems for installation” on page 74.

Preparing Solaris systems for installation

This topic describes how to prepare Solaris systems for the installation of IBM WebSphere Application Server, Version 6 products.

The installation uses an InstallShield MultiPlatform (ISMP) wizard. You can use the graphical interface of the wizard. You can also use the wizard in silent mode.

Silent mode is a command line invocation with a parameter that identifies an options response file. Edit the options response file before installing.

If you encounter a problem such as needing more temporary space or missing prerequisite packages on your operating system, cancel the installation, make the required changes, and restart the installation.

Restriction: There are known issues with using Cygwin/X to run Eclipse-based applications on remote Solaris machines. This affects your use of the Profile Management tool and the Installation Factory. With Cygwin/X on remote Solaris, for example, the Profile Management tool's welcome panel appears but no keyboard or mouse input is accepted. For details of existing Bugzilla reports on these issues, see the information at https://bugs.eclipse.org/bugs/show_bug.cgi?id=97808. If a different X server (such as Hummingbird Exceed®) is used, these problems do not occur.

Preparing the operating system involves such changes as allocating disk space and installing patches to the operating system. IBM tests WebSphere Application Server products on each operating system platform. Such tests verify whether an operating system change is required for WebSphere Application Server products to run correctly. Without the required changes, WebSphere Application Server products do not run correctly.

1. Log on to the operating system.

   You can log on as root or as a non-root installer.

   Select a umask that allows the owner to read/write to the files, and allows others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 can be used, depending on whether the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

2. Select the **Entire Group** option on the Select Solaris Software Group panel.
3. **Optional:** Download and install the Mozilla Web browser so that you can use the launchpad application on the product disc.

   If you do not have the Mozilla Web browser, download and install the browser from http://www.mozilla.org.
4. **Optional:** Export the location of the supported browser.

   Export the location of the supported browser using a command that identifies the actual location of the browser.

   For example, if the Mozilla package is in the /opt/bin/mozilla directory, use the following command:

   ```
   export BROWSER=/opt/bin/mozilla
   ```

5. **Optional:** Configure Hummingbird Exceed to disable Automatic Font Substitution.

   Font changes occur when using the Hummingbird Exceed package and invoke the Profile Management tool. When you use the Hummingbird Exceed package to connect to a machine running the Solaris operating system, and then invoke the Profile Management tool, some font sizes and styles display differently than when doing the same operation from the native Solaris display.

   The font sizes and style changes are based on the font selections in the bundled Java Runtime Environment (JRE).

   To prevent the various font changes, configure Hummingbird Exceed to disable Automatic Font Substitution:

   a. From the Hummingbird Exceed user interface, click **Xconfig** > **Font** > **Font Database** > **Disable (Automatic Font Substitution)**.
   b. Click **OK**.
   c. Restart the Hummingbird Exceed package.
6. Stop all WebSphere Application Server-related Java processes on the machine where you are installing the product.
7. Stop any Web server process such as the IBM HTTP Server.
8. Provide adequate disk space.

   Attention:

The Express product requires the following disc space:

930 MB for the *app_server_root* directory
The installation root directory includes the core product files. This size includes the Sample applications. This size includes space for the default application server profile for the server1 process. The requirement does not include space for applications that you might install.

Each application server profile requires approximately 200 MB plus 40 MB of temp space, and space for any applications that you develop and deploy.

100 MB for the /tmp directory
The temporary directory is the working directory for the installation program.

1030 MB total requirement
This amount is the total space requirement when installing the product from a CD-ROM or DVD.

The following space is required for the IBM HTTP Server product:

300 MB for the *web_server_root* directory on both SPARC and Solaris x64 processor-based systems

The IBM HTTP Server product requires this space.

15 MB for the *gskit_root* directory on SPARC platforms; 30 MB for the *gskit_root* directory on Solaris x64 processor-based systems

The IBM Global Security Kit (GSKit) requires this space.

The following space is the maximum amount that is required for the Web server plug-ins for WebSphere Application Server:

280 MB for the /opt/IBM/WebSphere/plugins directory on both SPARC and Solaris x64 processor-based systems

The Web server plug-ins require this space.

15 MB for the *gskit_root* directory on SPARC platforms; 30 MB for the *gskit_root* directory on Solaris x64 processor-based systems

The IBM Global Security Kit (GSKit) requires this space.

On SPARC platforms, the following space is required for the IBM WebSphere Application Server Clients:

150 MB for the *app_client_root* directory

The amount of space required to install the application clients is actually less than 150 MB. The amount of space depends on the clients that you install as features.

The following space is required for the Update Installer:

200 MB for the /opt/IBM/WebSphere/UpdateInstaller directory

The installation wizard for each component displays required space on the confirmation panel before you install the product files and selected features. The installation wizard also warns you if you do not have enough space to install the product.

If you plan to migrate applications and the configuration from a previous version, verify that the application objects have enough disc space. As a rough guideline, plan for space equal to 110 percent of the size of the application objects:

- **For Version 4.0.x:** The size of enterprise archive (EAR) files
- **For Version 5.0.x:** The size of EAR files

9. Set kernel values to support Application Server. Several Solaris kernel values are typically too small.

   The instructions in this step apply to the Solaris SPARC operating system only. For Solaris x64 processor-based systems, see How to Get Started with IBM WebSphere Application Server on Solaris 10 and Zones.

Before installing, review the machine configuration:

```
sysdef -i
```

The kernel values are set in the /etc/system file, as shown in the following example.

```
set shmsys:shminfo_shmmax = 4294967295
set shmsys:shminfo_shmseg = 1024
set shmsys:shminfo_shmmni = 1024
set semsys:seminfo_semaem = 16384
set semsys:seminfo_semmni = 1024
set semsys:seminfo_semmap = 1026
set semsys:seminfo_semmns = 16384
set semsys:seminfo_semmsl = 100
set semsys:seminfo_semopm = 100
set semsys:seminfo_semmnu = 2048
set semsys:seminfo_semume = 256
set msgsys:msginfo_msgmap = 1026
set msgsys:msginfo_msgmax = 65535
set rlim_fd_cur=1024
```

You can change kernel values by editing the /etc/system file then rebooting the operating system. For more information about setting up the Solaris system, see the Solaris System Administration documentation. For example, the *Solaris Tunable Parameters Reference Manual*.

10. Verify that prerequisites and corequisites are at the required release levels.

    Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site 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.

11. Verify the system cp command when using emacs or other freeware.

    If you have emacs or other freeware installed on your operating system, verify that the system cp command is used.

    a. Type which cp at the command prompt before running the installation program for the WebSphere Application Server product.
    b. Remove the freeware directory from your PATH if the resulting directory output includes freeware. For example, assume that the output is similar to the following message: .../freeware/bin/cp. If so, remove the directory from the PATH.
    c. Install the WebSphere Application Server product.
    d. Add the freeware directory back to the PATH.

    If you install with a cp command that is part of a freeware package, the installation might appear to complete successfully, but the Java 2 SDK that the product installs might have missing files in the *app_server_root*/java directory.

    Missing files can destroy required symbolic links. If you remove the freeware cp command from the PATH, you can install the Application Server product successfully.

12. Verify that the Java 2 SDK on the installation image disc is functioning correctly, if you created your own disc.

    For example, you might have downloaded an installation image from Passport Advantage, or you might have copied an installation image onto a backup disc. In either case, perform the following steps to verify that the disc contains a valid Java 2 software development kit (SDK).

    a. Change directories to the /mnt/JDK/repository/prereq.jdk/java/bin directory on the product CD-ROM or DVD. For example:

       ```
       cd /mnt/JDK/repository/prereq.jdk/java/bin
       ```

    b. Verify the Java 2 SDK version. Type the following command:

       ```
       ./java -version
       ```

       The command completes successfully with no errors when the Java 2 SDK is intact.

This procedure results in preparing the operating system for installing the product.

After preparing the operating system for installation, you can install the WebSphere Application Server product.

See “Preparing to install the Express product on a Solaris system” on page 91 for the next step in the overall procedure, which is selecting the type of installation to perform.

Preparing Windows systems for installation

This topic describes how to prepare your Windows systems for the installation of IBM WebSphere Application Server Version 6.x products.

The installation uses an InstallShield MultiPlatform (ISMP) wizard. You can use the graphical interface of the wizard. You can also use the wizard in silent mode.

Silent mode is a command line invocation with a parameter that identifies an options response file. Edit the options response file before installing.

If you encounter a problem such as needing more temporary space or missing prerequisite packages on your operating system, cancel the installation, make the required changes, and restart the installation.

Preparing the operating system involves such changes as allocating disk space and installing patches to the operating system. IBM tests WebSphere Application Server products on each operating system platform. Such tests verify whether an operating system change is required for WebSphere Application Server products to run correctly. Without the required changes, WebSphere Application Server products do not run correctly.

1. Log on to a user ID that belongs to the administrator group.

   Log on as a member of the administrator group to successfully install the product. You cannot create Windows services from a user ID that does not belong to the administrator group. The creation of Windows services requires the user to have the advanced user rights *Act as part of the operating system* and *Log on as a service*.

   Tip: Windows service creation can be disabled by launching the graphical interface from the command line with the following additional option:

   ```
   install.exe -OPT PROF_winserviceCheck="false"
   ```

2. **Optional:** Download and install the latest supported version of Internet Explorer so that you can use the launchpad on the product disc. Download Internet Explorer 6 from the following location:

   http://www.microsoft.com/windows/ie/default.mspx

3. **Optional:** Download and install Mozilla 1.7.5 or later.

   If you plan to use the Mozilla browser, install the 1.7.5 version to avoid a known problem that causes two browser windows to open when using the launchpad.bat script. This problem is caused by a known bug with the Mozilla -CreateProfile feature. See bugzilla bug 249585 for more information.

4. Stop all WebSphere Application Server-related Java processes on the machine where you are installing the product.
5. Stop any Web server process such as the IBM HTTP Server.
6. Stop all instances of the process_spawner.exe program.
7. Provide adequate disk space.

   Attention:

   The Express product requires the following disc space:

   930 MB for the C:\Program Files\IBM\WebSphere\AppServer directory

The installation root directory includes the core product files. This size includes the Sample applications. This size includes space for the default application server profile for the server1 process. The requirement does not include space for applications that you might install.

Each application server profile requires approximately 200 MB plus 40 MB of temp space, and space for any applications that you develop and deploy.

100 MB for the C:\temp directory

The temporary directory is the working directory for the installation program.

1030 MB total requirement

This amount is the total space requirement when installing the product from the disc.

The following space is required for the IBM HTTP Server product:

110 MB for the C:\Program Files\IBM HTTP Server directory

The IBM HTTP Server product requires this space.

25 MB for the C:\Program Files\ibm\gsk7 directory

The IBM Global Security Kit (GSKit) requires this space.

The following space is the maximum amount that is required for the Web server plug-ins for WebSphere Application Server:

200 MB for the C:\Program Files\IBM\WebSphere\Plugins directory

The Web server plug-ins require this space.

25 MB for the C:\Program Files\ibm\gsk7 directory

The IBM Global Security Kit (GSKit) requires this space.

The following space is required for the Application Client for WebSphere Application Server:

150 MB for the C:\Program Files\IBM\WebSphere\AppClient directory

The amount of space required to install the application clients is actually less than 150 MB. The amount of space depends on the clients that you install as features.

The following space is required for the Update Installer:

200 MB for the C:\Program Files\IBM\WebSphere\UpdateInstaller directory

The following space is required for the Application Server Toolkit:

1 GB maximum for the C:\Program Files\IBM\WebSphere\AST directory

The Application Server Toolkit does not include an integrated test environment.

Install the WebSphere Application Server product to create a test environment.

The installation wizard for each component displays required space on the confirmation panel before you install the product files and selected features. The installation wizard also warns you if you do not have enough space to install the product.

If you plan to migrate applications and the configuration from a previous version, verify that the application objects have enough disc space. As a rough guideline, plan for space equal to 110 percent of the size of the application objects:

- **For Version 4.0.x:** The size of enterprise archive (EAR) files
- **For Version 5.0.x:** The size of EAR files

8. Verify that prerequisites and corequisites are at the required release levels.

   Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site 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.

9. Download Windows Script 5.6 to create Start menu items correctly on Windows 2000 and Windows XP.

   Download Windows Script 5.6 from the following Microsoft Web page: http://www.microsoft.com/downloads/ details.aspx? FamilyId= C717D943-7E4B-4622-86EB-95A22B832CAA.

10. Verify that the Java 2 SDK on your copy of the product disc is functioning correctly.

    If you created your own product disc from an ISO image or by copying the actual disc, perform the following steps to verify that the Java 2 SDK on the product CD-ROM or DVD is working correctly.

    a. Change directories to the \win\WAS\jdk\java\bin directory on the product disc. Type the following command:

       ```
       cd disc_drive_D:\WAS\jdk\java\bin
       ```

    b. Verify the version of the Java 2 SDK. Type the following command:

       ```
       .\java -version
       ```

       The command completes successfully with no errors when the Java 2 SDK is intact.

This procedure results in preparing the operating system for installing the product.

After preparing the operating system for installation, you can install the WebSphere Application Server product.

Go to “Preparing to install the Express product on a Windows system” on page 92 for the next step in the overall procedure, which is selecting the type of installation to perform.

Preparing to install the Express product on an AIX system

This topic describes how to get started installing the IBM WebSphere Application Server - Express, Version 6 product on an AIX system.

Before using this topic to prepare for installing the Express product, decide the sort of topology you want to install and prepare your operating system. See the following topics for more information:

- “Planning to install WebSphere Application Server - Express” on page 50
- “Preparing AIX systems for installation” on page 65

After verifying prerequisites, verifying the product disc, and setting your installation goals, you can start installing. Use one of the following links to open the installation procedure that you require. Then install the WebSphere Application Server - Express product on your operating system.

- Perform an installation using the graphical user interface.

  See “Installing Express” on page 100. To install Express quickly, see “Example: Installing Express using the launchpad” on page 105.

- Perform a silent installation.

  A silent installation requires you to edit the example response file to contain all of your installation choices. After creating a valid response file, issue the install command with the silent parameter from a command window.

  See “Installing silently” on page 114.

- Install additional features to an existing product.

  After using a custom installation to omit one or both of the optional features, you can install the product again to add the features. Select a missing feature to install it.

  See “Installing additional features on an existing Express product” on page 107.

- Upgrade a trial to the Express product.

After installing a trial, you can install the actual product to upgrade the trial to the real product.See "Upgrading the Express trial to the Express product" on page 111.

This procedure results in the installation wizard installing WebSphere Application Server - Express into the installation root directory. The installation wizard creates a profile named default that provides the runtime environment for the server1 application server.

Further configuration is not necessary at this time. However, you can create additional stand-alone application servers with the Profile Management tool. Each profile is created in the *profile_root* directory by default.

Manually verify that the required space for creating a profile is available on AIX. A known problem in the underlying InstallShield MultiPlatform (ISMP) code prevents proper space checking on AIX systems at the time that the product disc was created.

Deploy an application to get started!

Preparing to install the Express product on an HP-UX system

This topic describes how to get started installing the IBM WebSphere Application Server - Express, Version 6 product on an HP-UX operating system.

Before using this topic to prepare for installing the Express product, decide the sort of topology you want to install and prepare your operating system. See the following topics for more information:

- "Planning to install WebSphere Application Server - Express" on page 50
- "Preparing HP-UX systems for installation" on page 70

After verifying prerequisites, verifying the product disc, and setting your installation goals, you can start installing. Use one of the following links to open the installation procedure that you require. Then install the WebSphere Application Server - Express product on your operating system.

- Perform an installation using the graphical user interface.

  See "Installing Express" on page 100. To install Express quickly, see "Example: Installing Express using the launchpad" on page 105.
- Perform a silent installation.

  A silent installation requires you to edit the example response file to contain all of your installation choices. After creating a valid response file, issue the install command with the silent parameter from a command window.

  See "Installing silently" on page 114.
- Install additional features to an existing product.

  After using a custom installation to omit one or both of the optional features, you can install the product again to add the features. Select a missing feature to install it.

  See "Installing additional features on an existing Express product" on page 107.
- Upgrade a trial to the Express product.

  After installing a trial, you can install the actual product to upgrade the trial to the real product.See "Upgrading the Express trial to the Express product" on page 111.

This procedure results in the installation wizard installing WebSphere Application Server - Express into the installation root directory. The installation wizard creates a profile named default that provides the runtime environment for the server1 application server.

Further configuration is not necessary at this time. However, you can create additional stand-alone application servers with the Profile Management tool. Each profile is created in the *profile_root* directory by default.

Deploy an application to get started!

Preparing to install the Express product on a Linux system

This topic describes how to get started installing the IBM WebSphere Application Server - Express product on a Linux operating system.

Before using this topic to prepare for installing the Express product, decide the sort of topology you want to install and prepare your operating system. See the following topics for more information:

- “Planning to install WebSphere Application Server - Express” on page 50
- “Preparing Linux systems for installation” on page 74

After verifying prerequisites, verifying the product disc, and setting your installation goals, you can start installing. Use one of the following links to open the installation procedure that you require. Then install the WebSphere Application Server - Express product on your operating system.

Korean locale only: A known problem in the SDK prevents the installation wizard from displaying the graphical user interface properly. Use the silent installation method instead.

- Perform an installation using the graphical user interface.

  See “Installing Express” on page 100. To install Express quickly, see “Example: Installing Express using the launchpad” on page 105.
- Perform a silent installation.

  A silent installation requires you to edit the example response file to contain all of your installation choices. After creating a valid response file, issue the install command with the silent parameter from a command window.

  See “Installing silently” on page 114.
- Install additional features to an existing product.

  After using a custom installation to omit one or both of the optional features, you can install the product again to add the features. Select a missing feature to install it.

  See “Installing additional features on an existing Express product” on page 107.
- Upgrade a trial to the Express product.

  After installing a trial, you can install the actual product to upgrade the trial to the real product.See “Upgrading the Express trial to the Express product” on page 111.

This procedure results in the installation wizard installing WebSphere Application Server - Express into the installation root directory. The installation wizard creates a profile named default that provides the runtime environment for the server1 application server.

Further configuration is not necessary at this time. However, you can create additional stand-alone application servers with the Profile Management tool. Each profile is created in the *profile_root* directory by default.

Deploy an application to get started!

Preparing to install the Express product on a Solaris system

This topic describes how to get started installing the IBM WebSphere Application Server - Express, Version 6 product on a Solaris operating system.

Before using this topic to prepare for installing the Express product, decide the sort of topology you want to install and prepare your operating system. See the following topics for more information:

- “Planning to install WebSphere Application Server - Express” on page 50

- “Preparing Solaris systems for installation” on page 83

After verifying prerequisites, verifying the product disc, and setting your installation goals, you can start installing. Use one of the following links to open the installation procedure that you require. Then install the WebSphere Application Server - Express product on your operating system.

- Perform an installation using the graphical user interface.

  See “Installing Express” on page 100. To install Express quickly, see “Example: Installing Express using the launchpad” on page 105.
- Perform a silent installation.

  A silent installation requires you to edit the example response file to contain all of your installation choices. After creating a valid response file, issue the install command with the silent parameter from a command window.

  See “Installing silently” on page 114.
- Install additional features to an existing product.

  After using a custom installation to omit one or both of the optional features, you can install the product again to add the features. Select a missing feature to install it.

  See “Installing additional features on an existing Express product” on page 107.
- Upgrade a trial to the Express product.

  After installing a trial, you can install the actual product to upgrade the trial to the real product.See “Upgrading the Express trial to the Express product” on page 111.

This procedure results in the installation wizard installing WebSphere Application Server - Express into the installation root directory. The installation wizard creates a profile named default that provides the runtime environment for the server1 application server.

Further configuration is not necessary at this time. However, you can create additional stand-alone application servers with the Profile Management tool. Each profile is created in the *profile_root* directory by default.

Deploy an application to get started!

Preparing to install the Express product on a Windows system

This topic describes how to install IBM WebSphere Application Server - Express, Version 6 on a Windows operating system.

Before using this topic to prepare for installing the Express product, decide the sort of topology you want to install and prepare your operating system. See the following topics for more information:

- “Planning to install WebSphere Application Server - Express” on page 50
- “Preparing Windows systems for installation” on page 87

Log on as a member of the administrator group to successfully install the product. Creating a Windows service for the server1 process requires you to have the following advanced user right: *Act as part of the operating system*.

During the procedure, you can assign another ID or the one you are using to install, as the user who will log on the Windows service. That user requires the advanced user right: *Log on as a service*.

However, if you do not have this advanced user right or if the user ID that is to log on the Windows service does not have the advanced user right, the Installation wizard assigns the advanced right to the user.

After verifying prerequisites, verifying the product disc, and setting your installation goals, you can start installing. Use one of the following links to open the installation procedure that you require. Then install the WebSphere Application Server - Express product on your operating system.

- Perform an installation using the graphical user interface.

  See “Installing Express” on page 100. To install Express quickly, see “Example: Installing Express using the launchpad” on page 105.
- Perform a silent installation.

  A silent installation requires you to edit the example response file to contain all of your installation choices. After creating a valid response file, issue the install command with the silent parameter from a command window.

  See “Installing silently” on page 114.
- Install additional features to an existing product.

  After using a custom installation to omit one or both of the optional features, you can install the product again to add the features. Select a missing feature to install it.

  See “Installing additional features on an existing Express product” on page 107.
- Upgrade a trial to the Express product.

  After installing a trial, you can install the actual product to upgrade the trial to the real product.See “Upgrading the Express trial to the Express product” on page 111.

This procedure results in the installation wizard installing WebSphere Application Server - Express into the installation root directory. The installation wizard creates a profile named default that provides the runtime environment for the server1 application server.

Further configuration is not necessary at this time. However, you can create additional stand-alone application servers with the Profile Management tool. Each profile is created in the *profile_root* directory by default.

See information on creating profiles in the Administering applications and their environment PDF.

Deploy an application to get started!

Chapter 6. Installing the product and additional software

Install WebSphere Application Server - Express on AIX, HP-UX, Linux, Linux on PowerPC, Solaris, or Windows operating systems.

Before you use the installation tools, read this topic to prepare for installation and to learn about installation options. Also read the hardware and software requirements on the Supported hardware and software Web site.

The launchpad is the preferred method of starting the installation. Use the launchpad console to access the product overview, the installation guide, and the readme file. Use the launchpad to launch each installation procedure.

See “Using the launchpad to start the installation” on page 25 for more information.

Windows The installation procedure requires the installer ID to have the following advanced user rights, *Act as part of the operating system* and *Log on as a service* to install Windows services.

AIX HP-UX Linux Solaris The installer ID can be a non-root user ID. However, some installation procedures might require the installer ID to be the root user. One such example is the GSKit, which is required for using SSL with the IBM HTTP Server. After installing the IBM HTTP Server or the Web server plug-ins as a non-root user, log on as the root user and install GSKit. For detailed information on non-root limitations see, “Limitations of non-root installers” on page 138.

Use the information in this topic to learn about the types of installation available. This topic has links to more detailed installation topics.

You can install a product using the installation wizard GUI or silent mode. The installation wizard performs the following actions:

- Automatically checks prerequisites
- Looks for a previous WebSphere Application Server Version 6.1 installation to determine whether to let you add features to the product binaries or to install a new set of product binaries
- Looks for a previous Version 6.1 installation to determine whether to let you upgrade from a trial installation to the real product
- Installs the necessary product binaries
- Creates a standalone application server node

1. Plan your installation as described in Chapter 4, “Planning the installation,” on page 49.
2. Prepare your operating platform for installation as described in Chapter 5, “Preparing the operating system for product installation,” on page 65.
3. Review the roadmap for installing the Express product as described in “Roadmap: Installing the Express product” on page 96.
4. Install the Express product.

   If you cannot use a graphical user interface on your operating system for some reason, use the wizard in silent mode.

   Choose an installation scenario:

   - **Graphical user interface:** Install with the wizard as described in “Installing Express” on page 100.

     The recommended method to install Express is to use the launchpad to start the wizard. See “Example: Installing Express using the launchpad” on page 105.
   - **Graphical user interface:** Install additional features to an existing installation as described in “Installing additional features on an existing Express product” on page 107.

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After installing Express, you can install it again to update the system files by installing previously uninstalled features.

- **Graphical user interface:** Upgrade a trial version to a product version as described in “Upgrading the Express trial to the Express product” on page 111.
- **Command-line interface:** Perform a silent installation as described in “Installing silently” on page 114.

  A silent installation requires you to edit the response file that contains all of your installation choices. After creating a valid response file, issue the install command with the -silent parameter and the -options parameter from a command window.

The installer program does not support the ISMP-console installation method at this time.

If you encounter a problem such as needing more disk space or temporary space or missing prerequisite packages on your system, cancel the installation, make the required changes, and restart the installation.

5. **Optional:** Install IBM HTTP Server.

   After installing a WebSphere Application Server product, you can use the application server to serve applications over the Internet. It is not necessary to install the IBM HTTP Server or another Web server.

   The installation solution diagrams in Chapter 4, “Planning the installation,” on page 49 show the components that are present in different types of environments.

6. **Optional:** Install Web server plug-ins for IBM HTTP Server or another supported Web server.

   If you install the IBM HTTP Server or another Web server, you must then install a binary module for the Web server to enable it to communicate with WebSphere Application Server products.

   After installing a Web server plug-in, the Plug-ins installation wizard configures a new element in the application server configuration called a *Web server definition*. You can then manage applications for the Web server using the administrative console.

7. **Optional:** Install the application clients.

   You do not need to install the Application Client unless an application that you are deploying was designed to run as a client application.

8. **Optional:** Install Application Server Toolkit.

   You do not have to install the Application Server Toolkit development environment. It enables you to develop, assemble and deploy J2EE applications to a WebSphere Application Server application server.

   See “Roadmap: Installing Application Server Toolkit” on page 98 for more information.

9. **Optional:** Install the Update Installer for WebSphere Software.

   Use the Update Installer to install maintenance packages for any of the installable WebSphere software components in the product package. See “Installing the Update Installer for WebSphere Software” on page 180 for more information.

10. **Optional:** Use the Install and Migration Tools disk to access the Update Installer, migration tools, the IBM Support Assistant, and World Type fonts.

    See “WebSphere Application Server supplements disc” on page 137 for more information.

You can install IBM WebSphere Application Server - Express Version 6.x by following this procedure.

You can also install IBM HTTP Server, the Web server plug-ins for WebSphere Application Server, and the application clients for WebSphere Application Server.

Roadmap: Installing the Express product

Use the launchpad to install IBM WebSphere Application Server - Express from the product disc or from an installation image that you can download from the Passport Advantage site.

This topic assumes that you have read Chapter 6, “Installing the product and additional software,” on page 95 and have decided to install Express using the installation wizard graphical user interface. This topic also assumes that you have prepared your operating system for installation.

This topic provides an overview of installing the WebSphere Application Server - Express product.

The installation program uses the InstallShield MultiPlatform (ISMP) product to perform the installation. You can use the installation wizard either from a graphical interface or from the command line. If you use the -silent parameter on the command line option, the installation wizard does not display the graphical user interface.

Install the Express product to create a single standalone application server named *server1*. After installing Express and creating a single standalone application server, you can use the Profile Management tool to create more standalone application servers on the machine.

1. Use the launchpad to get started, if possible.

   Use the launchpad to launch the installation program for each of the installable components in the primary disk packet. See “Using the launchpad to start the installation” on page 25.

   The launchpad is in the root directory of the product disc. Start the launchpad with the launchpad command.

   - AIX HP-UX Linux Solaris ./launchpad.sh
   - Windows launchpad.exe

   After starting the launchpad, you can use the launchpad to access the documentation for each of the installable components on the product disc.

2. Install a standalone application server.

   See “Installing Express” on page 100. To install Express quickly, see “Example: Installing Express using the launchpad” on page 105.

   The installation of the product creates a standalone application server. You simply have to start the application server named *server1* to begin using the server.

   The steps for installing a standalone application server are:

   a. Install the Express product.
   b. Check for and install any recommended maintenance packages.
   c. Open the First steps console and start the application server.

      Or start the application server from the command line:

      1) Change directories to the *profile_root*/bin directory:

         ```
         cd profile_root/bin
         ```

      2) Start the application server named server1 with the startServer command.

         - AIX HP-UX Linux Solaris ./startServer.sh server1
         - Windows startServer.bat server1

3. **Optional:** Create multiple application servers on a single machine.

   Installing the Express product creates one standalone application server profile. Use the Profile Management tool to create additional standalone application server profiles. Each profile contains one *server1* application server.

   Each application server profile is a unique runtime environment, with its own configuration, applications, data, logs, and administrative interface. All of the application server instances on a machine share the same set of core product files.

   The following procedure shows the basic steps for creating two profiles on one machine:

   a. Install the Express product.
   b. Check for and install any recommended maintenance packages.
   c. Change directories to the *profile_root*/firststeps directory.

d. Start the First steps console with the firststeps command.
   - AIX HP-UX Linux Solaris ./firststeps.sh
   - Windows firststeps.bat

e. Select the Profile Management tool option and create a new application server profile.
   Give the new profile a unique name, such as `Profile02`.

f. Start each application server.

4. Troubleshoot any problems.
   If you encounter a problem such as needing more space or missing the right prerequisite updates on your system, cancel the installation, make the required changes, and restart the installation. The installation procedure has a description of more comprehensive troubleshooting procedures.

The Express product is installed on a single machine and you can start its application server.

If the server process cannot start, follow the procedure in Chapter 11, “Troubleshooting installation,” on page 283.

After installing the product from the installation image, the next step is to check for available updates. See Chapter 8, “Installing maintenance packages,” on page 173 for more information.

After installing and updating the Express server, you can start the application server and use the administrative console to deploy an existing application.

Getting the latest information: This topic is available on the product disc and online in an information center. The information center always has the most current information. The information center displays in the language of your machine locale if possible.

Access the information center for a WebSphere Application Server product from the WebSphere Application Server library page.

The *Getting Started* PDF is updated occasionally. Download a new *Getting Started* guide by clicking the ″Installing your application serving environment (PDF)″ link on the WebSphere Application Server library page. The name of the file is different than the one on your product disc to keep from overlaying other PDF files you might download. (All of the PDF files on the product disc have the same file name.)

The HTML version of the *Getting Started* guide is not available for downloading because you can download and install the entire information center.

Roadmap: Installing Application Server Toolkit

Application Server Toolkit provides a graphical interface for developing code artifacts, assembling the code artifacts into various archives (modules) and configuring related Java 2 Platform, Enterprise Edition (J2EE) deployment descriptors. Application Server Toolkit is part of the integrated suite of Rational Developer tools, powered by Eclipse technology. You can use the launchpad to install Application Server Toolkit.

You must install Application Server Toolkit on a Linux (Intel) or Windows operating system.

Application Server Toolkit Version 6.1.1 is available on CD-ROM in the WebSphere Application Server - Express Version 6.1 CD-ROM package. You can also download installable Application Server Toolkit electronic images from the Passport Advantage site or obtain Application Server Toolkit on a separate DVD. Application Server Toolkit Version 6.1.1 is built using Eclipse Version 3.2.1 technology.

Read the list of supported hardware and software for Application Server Toolkit in the readme_install_ast.html file on the Application Server Toolkit CD-ROM. You need 1 GB maximum of free space on your operating system to install the entire product. If you use downloaded images, you need an

additional 1.5 GB for the downloaded and extracted files. For the complete list of hardware and software requirements for the WebSphere Application Server. see http://www.ibm.com/software/webservers/appserv/doc/latest/prereq.html.

The recommended method of installing Application Server Toolkit is to use the launchpad. To use the launchpad, you must have a supported browser:
- Internet Explorer, Version 5.5 with SP 2 or later
- Mozilla browser, Version 1.4 or later

This topic provides an overview of the steps for installing and configuring Application Server Toolkit.

1. Start the WebSphere Application Server - Express launchpad.

   Run the launchpad program in the root directory of the installation image:

   - Linux ./launchpad.sh
   - Windows launchpad.exe

   Use the Express launchpad to launch the installation wizard for Application Server Toolkit.

   The launchpad has links to the installation guide (readme_install_ast.html) and to the readme (readme_ast.html). These files reside in the readme directory of the WebSphere Application Server Toolkit product disc.

2. Install Application Server Toolkit.

   a. On the first launchpad panel, click **Launch the installation wizard for the Application Server Toolkit** to start the installation wizard.

      You can also start the installation wizard with the following commands:

      - Linux ./install
      - Windows install.exe

      Alternatively, you can run the installation wizard in silent mode. A silent installation reads values for installation fields from a response file and does not provide prompts in a graphical interface. For information on preparing a response file and completing a silent installation, see the installation guide.

   b. Complete the steps in the installation wizard to install Application Server Toolkit.

      For detailed information on installing the product, see the Application Server Toolkit installation guide (readme_install_ast.html) in the readme directory. You can access this installation guide from the launchpad.

3. Troubleshoot any installation problems.

   If you encounter a problem such as not having enough space or not having the right prerequisite updates on your system, cancel the installation, make the required changes, and restart the installation. See the installation guide for more information.

4. Start Application Server Toolkit after the installation is complete.

   Select a menu choice:

   - Linux If you are using the GNOME desktop environment, open the main menu and click **Programming** → **Application Server Toolkit V6.1.1**. If you are using the K Desktop Environment, open the main menu and click **IBM WebSphere** → **Application Server Toolkit V6.1.1** → **Application Server Toolkit**.
   - Windows Click **Start** → **Programs** → **IBM WebSphere** → **Application Server Toolkit 6.1.1** → **Application Server Toolkit**.

5. **Optional:** Change the workspace location.

   The first time that you start Application Server Toolkit, a dialog box opens with the default workspace directory. To save your work elsewhere, change the name of the workspace.

Application Server Toolkit is installed to the designated directory.

Read the Application Server Toolkit online documentation to configure the product for work on J2EE modules and to learn how to use the product to develop, test, and deploy applications.

- Click **Help** → **Help Contents**. The displayed documentation provides the product help information, such as instructions on how to use the tools in the product to develop and assemble J2EE modules.
- Press **F1** to access dynamic help information specific to a product view, widget, or window.
- Click **Help** → **Samples Gallery**. The Samples Gallery provides practical code samples for application developers.
- Click **Help** → **Tutorials Gallery**. The Tutorials Gallery contains educational materials to help you learn the technologies and concepts behind software development tools.
- Visit the **Application Server Toolkit** information center that accompanies the WebSphere Application Server information center at http://www.ibm.com/software/webservers/appserv/was/library/.

Installing Express

Install IBM WebSphere Application Server - Express using the Installation wizard on distributed operating system platforms. You can install from the installation image on the product disc, or the downloaded Passport Advantage image.

This topic assumes that you do not have an existing Express installation and that you want to install Express using the Installation wizard graphical user interface.

If this topic does not describe the procedure that you meant to select, click the link to the description of the appropriate installation procedure before you issue the **install** command.

- “Installing additional features on an existing Express product” on page 107
- “Upgrading the Express trial to the Express product” on page 111
- “Installing silently” on page 114

Before starting this installation, see the following topics:

- “Planning to install WebSphere Application Server - Express” on page 50. The diagrams show typical topologies for the product. The solutions are also in the *Installation solution diagrams* in the launchpad. See “Using the launchpad to start the installation” on page 25.
- Chapter 5, “Preparing the operating system for product installation,” on page 65

Perform the following procedure to install the WebSphere Application Server - Express product.

For a condensed version of this procedure that includes steps for testing an installation and running applications, see “Example: Installing Express using the launchpad” on page 105.

1. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

   Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:
   - Act as part of the operating system
   - Log on as a service

For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.

2. Insert the disc labeled **WebSphere Application Server - Express** into the disc drive.

   Mount the drive if necessary as described in "Mounting disc drives on operating systems such as AIX or Linux" on page 134.

3. Start the installation.

   Start the installation of a product image with the launchpad script:

   - AIX HP-UX Linux Solaris launchpad.sh
   - Windows launchpad.exe

   Or you can start the installation directly with the **install** command.

   - AIX HP-UX Linux Solaris /WAS/install
   - Windows \WAS\install

   If a problem occurs with the Java Runtime Environment (JRE), use the WebSphere Application Server JRE in the /java/jre/bin directory of an installation image to start the installation.

   If you have a problem starting the launchpad, use the troubleshooting information in "Using the launchpad to start the installation" on page 25 to correct the problem.

   When using the launchpad, launch the installation wizard for WebSphere Application Server - Express.

   After launching the Installation wizard from the launchpad or from the command line, the installer wizard initializes and then displays the Welcome panel.

4. Click **Next** to continue.

   The license agreement displays.

5. Click the radio button beside the **I accept the terms in the license agreement** message to agree to the license agreement and click **Next** to continue.

   After you accept the licensing terms, the installation wizard checks for a supported operating system and prerequisite patches.

   If you encounter a problem such as not having the right prerequisite updates on your system, cancel the installation, make the required changes, and restart the installation.

   Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site if you have not already done so.

   The Web site lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system.

   Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

6. After confirming that your operating system is supported and that you have installed all necessary patches, click **Next** to continue.

   The Installation wizard checks for a previous installation at the same product level.

   Specifically, the wizard looks for an existing Version 6.1 installation.

   If the wizard detects a previous installation, it displays the Existing installation panel, where you can:

   - Add features to the existing installation.

     See "Installing additional features on an existing Express product" on page 107 for the installation scenario that adds features to an existing product.

- Perform a new installation to another directory
- Perform an upgrade of a trial installation to the full product.

  See “Upgrading the Express trial to the Express product” on page 111 for the installation scenario that upgrades a trial to the full Express product.

This procedure assumes that you do not have an existing installation that you intend to update.

7. Select features to install and click **Next**.

   In Version 6.1, just one feature is available, which installs sample applications.

Table 5. Features for WebSphere Application Server - Express

Feature	Description
Application Server Samples	Installs the Samples Gallery and Plants By WebSphere applications.

   For better performance in either a development or production environment, do not install the Samples. By omitting the Samples, you can improve application server startup time by 60 percent and save 15 percent of disk space. You can save up to 30 percent of process footprint (based on a maximum heap size of 256 MB).

   The Installation wizard displays a confirmation panel.

8. Specify the destination of the installation root directory and click **Next**.

   Specify the location of the installation root directory for the product binaries, which are also known as the core product files or system files.

   The core product files do not change unless you:

   - Add a feature
   - Install service, such as refresh packs, fix packs, or interim fixes
   - Install another product that extends the Express product.

   The system-owned default *app_server_root* directories for installing as a root user or an administrator user are different than the user-owned default *app_server_root* directories when installing as a non-root installer.

   Restriction:

   - Deleting the default target location and leaving an installation directory field empty prevents you from continuing.
   - AIX HP-UX Linux Solaris

     Do not use symbolic links as the destination directory. Symbolic links are not supported.

     Spaces are not supported in the name of the installation directory on systems such as AIX or Linux.

   - Windows

     Specify an installation directory path that is no longer than 60 characters.

     Do not use a semicolon in the directory name on Windows systems. WebSphere Application Server cannot install properly on a Windows platform if the target directory includes a semicolon. A semicolon is the character used to construct the class path on Windows systems.

   The installer program checks for required space before calling the Installation wizard. If you do not have enough space, stop the installation program, free space by deleting unused files and emptying the recycle bin, and restart the installation.

9. Enable administrative security.

   The default setting is to enable administrative security. Clear the check box to disable security or supply an administrative ID and password.

Tip:

- In environments where you plan to have multiple standalone application servers, the security policy of each application server profile is independent of the others. Changes to the security policies in one application server profile are not synchronized with the other profiles.
- Write down the user name and password. You cannot log onto the administrative console without it. You cannot use WebSphere Application Server at all unless you know the ID and password.

10. Windows Choose whether to run the application server as a Windows service on a Windows platform, then click **Next**.

    Version 6 attempts to start Windows services for application server processes started by a startServer command. For example, if you configure an application server as a Windows service and issue the startServer command, the wasservice command attempts to start the defined service.

    If you chose to install a local system service, you do not have to specify your user ID or password. If you create a specified user type of service, you must specify the user ID and the password for the user who is to run the service. The user must have *Log on as a service* authority for the service to run properly.

    To perform this installation task, the user ID must not have spaces in its name. The ID must also belong to the administrator group and must have the advanced user rights *Act as part of the operating system* and *Log on as a service*. The installation wizard grants the user ID the advanced user rights if it does not already have them, if the user ID belongs to the administrator group.

    You can also create other Windows services after the installation is complete, to start other server processes.

    The installation wizard shows which components are selected for installation in a pre-installation summary panel.

11. Review the summary information, then click **Next** to install the product code or **Back** to change your specifications.

    The installation wizard creates the uninstaller program and then displays a progress panel that shows which components are being installed. At the end of the installation, the wizard displays the Installation completion panel.

12. Verify the success of the installer program by examining the completion panel and the log.txt file for installation status.

    Examine the *app_server_root*/logs/install/log.txt file to verify that there were no file system or other unusual errors while installing. If there are problems, correct them, and reinstall the product.

    If problems occur, consult the following applicable logs:

    Log files for WebSphere Application Server - Express: The following table shows the installation logs, content, and indicators of success and failure for WebSphere Application Server - Express for Version 6.1:

Table 6. Installation and profile creation logs for WebSphere Application Server - Express

Log	Content	Indicators
app_server_root/logs/install/log.txt	Logs all installation events	**Return code** **Meaning** **0** Success **1** Failure **2** Partial Success

Table 6. Installation and profile creation logs for WebSphere Application Server - Express (continued)

Log	Content	Indicators
app_server_root/logs/ manageprofiles/ *profile_name*_create.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.
app_server_root/logs/ manageprofiles/ *profile_name*_delete.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile deletion failure. **INSTCONFSUCCESS** Successful profile deletion. **INSTCONFPARTIALSUCCESS** Profile deletion errors occurred but the profile is still deleted. Additional information identifies the errors.
app_server_root/logs/install/ installconfig.log.gz	• Logs the activities of ANT configuration scripts that run at the end of the installation procedure • Gzip file	**Configuration action failed:** Unsuccessful ANT script configuration. **Configuration action succeeded:** Successful ANT script configuration.

If the installation of the core product files fails, fix the error and reinstall.

If the creation of a profile fails, fix the error and run the Profile Management tool to recreate the profile.

Troubleshoot the installation if the *app_server_root*/logs/install/log.txt file or the *app_server_root*/logs/ manageprofiles/*profile_name*_create.log file does not contain a record of any problems, but problems exist.

See Chapter 11, “Troubleshooting installation,” on page 283 and “Installation component troubleshooting tips” on page 301 for more information.

Windows Examine the Start menu entry. The menu is an indication of a successful installation:

- **[All] Programs > IBM WebSphere > Application Server, Express v6.1**

If problems exist that cause you to reinstall the product, correct the errors, uninstall the product as described in Chapter 9, “Uninstalling the product,” on page 193, reboot a Windows machine or log off and back on as root on a machine with an operating system such as AIX or Linux, and reinstall.

13. Select the check box to open the First Steps console, then click **Finish**.

This procedure results in the Installation wizard installing Express into the installation root directory. The Installation wizard creates a profile named, by default, *AppSrv01*, that provides the runtime environment for the *server1* application server.

After you install Express, do the following:

1. Start the application server. On the First steps console, click **Start the server**.

   See “Roadmap: Installing the Express product” on page 96 for more information on starting a server.
2. Open the administrative console. On the First steps console, click **Administrative console** and log in.

   See “Example: Installing Express using the launchpad” on page 105 for information on opening the administrative console.

3. Deploy an application.

Further configuration is not necessary at this time. However, you can create additional standalone application servers with the Profile Management tool. Each profile is created in the *profile_root* directory by default.

Example: Installing Express using the launchpad

Install IBM WebSphere Application Server - Express using the launchpad and the installation wizard on distributed operating systems.

This example describes how to install Express quickly. Supported operating systems include:
- AIX
- HP-UX
- Linux
- Solaris
- Windows

Procedure

To install Express, do the following:

1. Run the WebSphere Application Server - Express launchpad.

   If you have a product CD or DVD, insert the Express disc in the disc drive. The launchpad program runs automatically.

   AIX HP-UX Linux Solaris See “Mounting disc drives on operating systems such as AIX or Linux” on page 134.

   If you are installing downloaded product files, extract the files and run the program manually. To run the launchpad program manually, run the following file in the root directory of the Express installation image:

   - AIX HP-UX Linux Solaris launchpad.sh
   - Windows launchpad.exe

2. Start the Express installation wizard.

   On the launchpad Welcome panel, click **Launch the installation wizard for WebSphere Application Server - Express**.

   Or, run the install executable file in the WAS directory of the Express installation image:

   - AIX HP-UX Linux Solaris /WAS/install
   - Windows \WAS\install

3. In the Express installation wizard:
   a. On the Welcome panel, click **Next**.
   b. On the Software License Agreement panel, select **I accept both the IBM and the non-IBM terms** and click **Next**.
   c. On the System prerequisites check panel:
      - If the operating system prerequisite check shows **Passed**, click **Next**.
      - If the check shows **Failed**, click **Cancel**. Install operating system service packs and patches needed for the Express product, and then try installing Express again.
   d. On the Install Sample Applications panel:
      1) If you want source code and enterprise applications installed with the Express product, select **Install the sample applications**. By default, the Sample Applications feature is not installed. You can install the feature later. If you are new to WebSphere Application Server, consider installing the feature now. After you become familiar with the product, you can uninstall the sample applications from an administrative console Enterprise Applications page.

2) Click **Next**

e. On the Installation directory panel, specify the directory to which to install Express and click **Next**.

f. On the Enable Administrative Security panel, specify whether to enable administrative security.

If administrative security is enabled, after installation, Express users will need to enter a user ID and password to use the administrative console. Users who enter an unsupported user ID or password will be locked out of the console. If administrative security is disabled, a user will be able to enter any user ID to use the console.

1) If you want to enable administrative security, specify a user ID, password, and confirming password. By default, administrative security is enabled.

2) If you want to disable administrative security, deselect **Enable administrative security**.

3) Click **Next**.

g. On the Installation Summary panel, click **Next**.

The installation wizard copies Express program files to your machine and creates the *server1* application server.

h. On the Installation Results panel, click **Finish**.

Keep the **Launch the First steps console** default selection.

Examine messages that the installation wizard displays. If the product does not install successfully, read the messages to identify why the installation failed. Correct the problems identified and try installing the product again.

After installation

If the product installs successfully, do the following to run the server and test deployed applications:

1. Go to the First steps console.

   If you did not select **Launch the First steps console** on the Installation Results panel, start the First steps console:

   AIX HP-UX Linux Solaris Run the firststeps command:

   `profile_root/firststeps/firststeps.sh`

   Windows Click **Start** → **Programs** → **IBM WebSphere** → **Application Server - Express v6.1** → **Profiles** → **AppSrv01** → **First steps**

2. Start the application server.

   In the First steps console, click **Start the server**. After the server starts, the menu item toggles to **Stop the server**.

   After the message `ADMU3000: Server server1 open for e-business` displays, you can close the Start the server window.

3. Open the administrative console in a Web browser.

   In the First steps console, click **Administrative console**. A Web browser opens on the URL `http://host_name:administrative_port/ibm/console`. If you have no other WebSphere Application Server installation on your machine, the URL is `http://localhost:9060/ibm/console`.

   Instead of using the First steps console, you can point a Web browser at `http://localhost:9060/ibm/console`. If the `localhost` address does not load, substitute the host name (IP address) for the machine for `localhost`; for example, `http://9.22.333.444:9060/ibm/console`.

   If you have other WebSphere Application Server installations on your machine, the installation wizard assigned a unique administrative port number; for example, `9069`.

4. Log in to the administrative console.

   The administrative console prompts for a login name. If you disabled administrative security, enter any value; for example, `myname`. This value is not for security. The value identifies who makes changes to the server configuration.

If you enabled administrative security, enter the user ID and password that you designated during installation. Without the user ID and password, you cannot use the administrative console or scripting.

5. Test the Hit Count and Snoop Servlet samples in the DefaultApplication.
   a. In the administrative console, click **Applications** → **Enterprise Applications**.
   b. On the Enterprise Applications page, ensure that DefaultApplication is running; the application status should show a green arrow indicating a `Started` status. If the application is not running, select it and click **Start**.
   c. To view the Hit Count servlet, point a Web browser at `http://localhost:9080/hitcount`. As in step 3, replace `localhost` with the IP address of the machine if `localhost` does not load.

      If you have an existing WebSphere Application Server installation on your machine, the server port number is likely not `9080`. From the First steps console, verify the installation to get the correct server port number.
   d. To view the Snoop servlet, point your Web browser at `http://localhost:9080/snoop`.

   If you cannot determine the correct server port number, see the Ports table in the administrative console. Click **Servers** → **Application servers** → ***server1*** → **Ports**. The Ports table lists the important ports:

Port name	Description
`WC_adminhost`	Port used to open an unsecure administrative console in the URL `http://`*`host_name`*`:`*`administrative_port`*`/ibm/console`
`WC_adminhost_secure`	Port used to open a secure administrative console in the URL `http://`*`host_name`*`:`*`administrative_port`*`/ibm/console`
`WC_defaulthost`	Port used to test running applications in the URL `http://`*`host_name`*`:`*`server_port`*`/`*`servlet_name`*
`WC_defaulthost_secure`	Port used to securely test running applications in the URL `http://`*`host_name`*`:`*`server_port`*`/`*`servlet_name`*

   For more information on ports, see *Configure WebSphere Application Server V6.1 to coexist with previous versions* at http://www.ibm.com/developerworks/websphere/library/techarticles/0609_hanczaryk/0609_hanczaryk.html.

6. If you installed the Sample Applications feature, test the samples.
   a. In the administrative console, click **Applications** → **Enterprise Applications**.
   b. On the Enterprise Applications page, ensure that the SamplesGallery and PlantsByWebSphere applications are running.
   c. To view the Samples Gallery, point your Web browser at `http://localhost:9080/WSsamples/en/index.html`.
   d. To view the Plants by WebSphere samples, point your Web browser at `http://localhost:9080/PlantsByWebSphere/`.

Installing additional features on an existing Express product

You can install additional features on an existing IBM WebSphere Application Server - Express, Version 6.*x* installation. You can install from the installation image on the product disc, or the downloaded Passport Advantage image.

This topic assumes that you have an existing Express installation and that you want to install a feature using the Installation wizard graphical user interface.

If this topic does not describe the procedure that you meant to select, click the link to the description of the appropriate installation procedure before you issue the **install** command.

- "Installing Express" on page 100
- "Upgrading the Express trial to the Express product" on page 111

- “Installing silently” on page 114

Before starting this installation, see the following topics:

- Chapter 5, “Preparing the operating system for product installation,” on page 65
- “Using the launchpad to start the installation” on page 25.

Perform the following installation to add a feature to an existing WebSphere Application Server - Express installation.

1. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

   Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:

   - Act as part of the operating system
   - Log on as a service

   For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

   Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.

2. Stop each running Application Server with the stopServer command.

   Stop all server processes in all profiles on the machine. For example, issue the following command from the *profile_root*/bin directory to stop the server1 process in the application server profile:

   ```
   ./stopServer.sh server1
   ```

   If servers are running and security is enabled, use the following commands:

   ```
   ./stopServer.sh server1 -user user_ID -password password
   ```

3. Uninstall all maintenance packages.

   You are using the product installation image to install additional features. The features have not had any maintenance applied to them. If you remove all maintenance packages, your entire product will be at the same release level. You can then reapply the maintenance packages as described in a later step.

   Start the Update Installer program with the *updi_root*/update command to search for and uninstall all maintenance packages.

4. Insert the disc labeled **WebSphere Application Server - Express** into the disc drive.

   Mount the drive if necessary as described in “Mounting disc drives on operating systems such as AIX or Linux” on page 134.

5. Start the installation.

   Start the installation of a product image with the launchpad script:

   - AIX HP-UX Linux Solaris launchpad.sh
   - Windows launchpad.exe

Or you can start the installation directly with the **install** command.

- AIX HP-UX Linux Solaris /WAS/install
- Windows \WAS\install

If a problem occurs with the Java Runtime Environment (JRE), use the WebSphere Application Server JRE in the /java/jre/bin directory of an installation image to start the installation.

If you have a problem starting the launchpad, use the troubleshooting information in “Using the launchpad to start the installation” on page 25 to correct the problem.

When using the launchpad, launch the Installation wizard for WebSphere Application Server - Express.

After launching the Installation wizard from the launchpad or from the command line, the installer wizard initializes and then displays the Welcome panel.

6. Click **Next** to continue.

   The license agreement displays.

7. Click the radio button beside the **I accept the terms in the license agreement** message to agree to the license agreement and click **Next** to continue.

   After you accept the licensing terms, the installation wizard checks for a supported operating system and prerequisite patches.

   If you encounter a problem such as not having the right prerequisite updates on your system, cancel the installation, make the required changes, and restart the installation.

   Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site if you have not already done so.

   The Web site lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system.

   Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

8. After confirming that your operating system is supported and that you have installed all necessary patches, click **Next** to continue.

   The Installation wizard checks for a previous installation at the same product level. This task describes the scenario where a previous installation exists and you are adding features with an incremental installation.

   When the wizard detects a previous installation, it displays the Existing installation panel. The panel lets you add features to the existing installation, or perform a new installation to another directory.

9. Choose to install additional features. Click **Next** to continue to the Features selection panel.

   Do not change the installation directory unless another existing installation is in another directory. An incremental installation adds features to the shared binaries identified in the location field.

   You can add features to the binaries at any time, by running the Installation wizard again. Installing additional features does not affect profiles that you might have already created. (Profiles are runtime environments that are described in a later step.)

   When adding features during an incremental installation, the wizard displays the Features selection panel.

10. Select features to install and click **Next**.

    In Version 6.1, just one feature is available, which installs the Samples Gallery.

Table 7. Features for WebSphere Application Server - Express

Feature	Description
Application Server Samples	Installs the Samples Gallery and Plants By WebSphere applications.

For better performance in either a development or production environment, do not install the Samples. By omitting the Samples, you can improve application server startup time by 60 percent and save 15 percent of disk space. You can save up to 30 percent of process footprint (based on a maximum heap size of 256 MB).

The Installation wizard displays a confirmation panel.

11. Review the summary information and click **Next** to install the product code or **Back** to change your specifications.

    The disc space shown on the pre-installation summary panel includes space for the Java Virtual Machine (JVM). Subtract the size of the JVM for your operating system to determine the installed size on disc for the features that you selected.

Table 8. JVM sizes

AIX	HP-UX	Linux	Solaris	Windows
59 MB	pa-risc: 109 MB 64 bit: 137 MB	ia32: 83 MB 64 bit: 133 MB	81 MB	ia32: 75 MB 64 bit: 71 MB

Verify that you have the total amount of free space shown before installing. Space is required for a working copy of the JVM during the installation.

The installation wizard creates the uninstaller program and then displays a progress panel that shows which components are being installed. At the end of the installation, the wizard displays the Installation completion panel.

At the end of the installation, the wizard displays the Installation completion panel.

12. Verify the success of the installer program by examining the completion panel and the log.txt file for installation status.

    Examine the *app_server_root*/logs/install/log.txt file to verify that there were no file system or other unusual errors while installing. If there are problems, correct them, and reinstall the product.

    If problems occur, consult the following applicable logs:

    Log files for WebSphere Application Server - Express: The following table shows the installation logs, content, and indicators of success and failure for WebSphere Application Server - Express for Version 6.1:

Table 9. Installation and profile creation logs for WebSphere Application Server - Express

Log	Content	Indicators
app_server_root/logs/install/log.txt	Logs all installation events	**Return code** **Meaning** **0** Success **1** Failure **2** Partial Success
app_server_root/logs/manageprofiles/*profile_name*_create.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.

Table 9. Installation and profile creation logs for WebSphere Application Server - Express (continued)

Log	Content	Indicators
app_server_root/logs/manageprofiles/*profile_name*_delete.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile deletion failure. **INSTCONFSUCCESS** Successful profile deletion. **INSTCONFPARTIALSUCCESS** Profile deletion errors occurred but the profile is still deleted. Additional information identifies the errors.
app_server_root/logs/install/installconfig.log.gz	• Logs the activities of ANT configuration scripts that run at the end of the installation procedure • Gzip file	**Configuration action failed:** Unsuccessful ANT script configuration. **Configuration action succeeded:** Successful ANT script configuration.

If the installation of the core product files fails, fix the error and reinstall.

If the creation of a profile fails, fix the error and run the Profile Management tool to recreate the profile.

Troubleshoot the installation if the *app_server_root*/logs/install/log.txt file or the *app_server_root*/logs/manageprofiles/*profile_name*_create.log file does not contain a record of any problems, but problems exist.

See Chapter 11, “Troubleshooting installation,” on page 283 and “Installation component troubleshooting tips” on page 301 for more information.

Windows Examine the Start menu entry. The menu is an indication of a successful installation:

- **[All] Programs > IBM WebSphere > Application Server, Express v6.1**

If problems exist that cause you to reinstall the product, correct the errors, uninstall the product as described in Chapter 9, “Uninstalling the product,” on page 193, reboot a Windows machine or log off and back on as root on a machine with an operating system such as AIX or Linux, and reinstall.

13. Select the check box to open the First Steps console, then click **Finish**.

The Installation wizard installs the new features in the existing installation root directory. The Installation wizard configures the WebSphere Application Server - Express product for the new features.

After you install Express, do the following:

1. Install any maintenance packages needed by your installation.
2. Start the application server. On the First steps console, click **Start the server**.

   See “Roadmap: Installing the Express product” on page 96 for more information on starting a server.
3. Open the administrative console. On the First steps console, click **Administrative console** and log in.

   See “Example: Installing Express using the launchpad” on page 105 for information on opening the administrative console and testing the sample applications.
4. Deploy an application.

Upgrading the Express trial to the Express product

This topic describes how to upgrade a trial installation of the Express product to the full Express product.

If you are upgrading a trial version that was installed as part of a customized installation package (CIP), create a CIP for the full Express product. Then use the CIP for the full Express product to upgrade the trial. See Chapter 10, “Developing and installing customized installation packages,” on page 211 for more information about creating a CIP.

Before starting this installation, see “Planning to install WebSphere Application Server - Express” on page 50. The diagrams show typical topologies for the product. The solutions are also in the *Installation solution diagrams* in the launchpad. See “Using the launchpad to start the installation” on page 25.

Perform the following installation to upgrade a trial installation to the actual WebSphere Application Server - Express product.

1. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

   Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:
   - Act as part of the operating system
   - Log on as a service

   For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

   Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.

2. Insert the disc labeled **WebSphere Application Server - Express** into the disc drive.

   If you are installing a customized installation package (CIP), insert the CD-ROM or DVD with the CIP. Or access the directory where the CIP is located.

   Mount the drive if necessary as described in “Mounting disc drives on operating systems such as AIX or Linux” on page 134.

3. Start the installation.

   Start the installation of a product image with the launchpad script.

   - AIX HP-UX Linux Solaris `launchpad.sh`
   - Windows `launchpad.exe`

   Or you can start the installation directly with the **install** command.

   Always use the **install** command to start the installation of a CIP.

   - AIX HP-UX Linux Solaris /WAS/install
   - Windows \WAS\install

   If a problem occurs with the Java Runtime Environment (JRE), use the WebSphere Application Server JRE in the /java/jre/bin directory of an installation image to start the installation.

   If you have a problem starting the launchpad, use the troubleshooting information in “Using the launchpad to start the installation” on page 25 to correct the problem.

When using the launchpad, launch the installation wizard for WebSphere Application Server - Express.

After launching the installation wizard from the launchpad or from the command line, the installer wizard initializes and then displays the Welcome panel.

4. Click **Next** to continue.

   The license agreement displays.

5. Click the radio button beside the **I accept the terms in the license agreement** message to agree to the license agreement and click **Next** to continue.

   After you accept the licensing terms, the installation wizard checks for a supported operating system and prerequisite patches.

   If you encounter a problem such as not having the right prerequisite updates on your system, cancel the installation, make the required changes, and restart the installation.

   Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site if you have not already done so.

   The Web site lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system.

   Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

6. After confirming that your operating system is supported and that you have installed all necessary patches, click **Next** to continue.

   The Installation wizard checks for a previous installation at the same major product level.

   If the wizard detects a previous installation, it displays the Existing installation panel, where you can:

   - Add features to the existing installation.
   - Perform a new installation to another directory.
   - Perform an upgrade of a trial installation to the full product.

   This task describes the scenario where a previous installation of the Express Trial exists and you are installing the actual Express product to upgrade the trial.

   Select the Upgrade option and click **Next**. The installer program installs the new license files and updates the system properties to indicate that the actual product is installed.

The wizard completes the upgrade and exits at then end of the upgrade without presenting another panel.

This procedure results in upgrading a trial installation to the actual WebSphere Application Server - Express product.

You can install the Express product again to add features. Or you can use the Profile Management tool to create more stand-alone application servers.

Further configuration is not necessary at this time. However, you can create additional stand-alone application servers with the Profile Management tool. Each profile is created in the *profile_root* directory by default.

See information on creating profiles in the Administering applications and their environment PDF.

If you have already created the topology that you require, try deploying an application in your environment.

Installing silently

Installing WebSphere Application Server - Express using silent installation refers to using a file to supply installation options without user interaction. To configure the installation, change the options in the response file before you issue the installation command.

This topic describes installing silently on any supported operating system.

Before starting this installation, see the following topics:

- "Planning to install WebSphere Application Server - Express" on page 50
  The "Planning to install" diagrams show typical topologies for the product.
- Chapter 5, "Preparing the operating system for product installation," on page 65
  Ensure that the operating system for the machine has prerequisite software installed.

A silent installation uses the installation wizard to install the product in silent mode, without the graphical user interface. Instead of displaying a wizard interface, the silent installation causes the installation program to read all of your responses from a file that you provide. To specify non-default options during a silent installation, you must use the response file. To install silently, you must accept the license agreement in the agreement option.

1. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

   Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:
   - Act as part of the operating system
   - Log on as a service

   For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

   Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.
2. Copy the response file as myoptionsfile to your disk drive and customize it.

   See "Customizing the response file" on page 116.

   The name of the original file is "responsefile.express.txt" on page 117.
3. Issue the proper command to use your custom response file. For example, issue one of the following commands:
   - AIX HP-UX Linux Solaris *mnt_cdrom*/WAS/install -options /tmp/WAS/myoptionsfile.txt -silent
   - Windows "*disc_drive_D:*\WAS\install" -options "C:\temp\WAS\myoptionsfile.txt" -silent

The installation wizard and the Profile Management tool record installation events in the following log files:

Table 10. Installation and profile creation logs for WebSphere Application Server - Express

Log	Content	Indicators
app_server_root /logs/install/log.txt	Logs all installation events	**Return code** **Meaning** **0** Success **1** Failure **2** Partial Success
app_server_root/logs/ manageprofiles/ *profile_name*_create.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.
app_server_root/logs/ manageprofiles/ *profile_name*_delete.log	• Traces all events that occur during the deletion of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile deletion failure. **INSTCONFSUCCESS** Successful profile deletion. **INSTCONFPARTIALSUCCESS** Profile deletion errors occurred but the profile is still deleted. Additional information identifies the errors.
app_server_root/logs/install/ installconfig.log.gz	• Logs the activities of ANT configuration scripts that run at the end of the installation procedure • Gzip file	**Configuration action failed:** Unsuccessful ANT script configuration. **Configuration action succeeded:** Successful ANT script configuration.

Log more information when InstallShield MultiPlatform (ISMP) cannot start the installation wizard.

If the *profile_root* directory does not exist, the pmt.log file is in the USER_HOME directory. Issue the env command to display the USER_HOME directory on operating systems such as AIX or Linux. See the environment variable settings on Windows system to display the value of the variable.

Certain events can prevent ISMP from starting the Installation wizard. Such an event is not enough disk space to launch the Installation wizard for example. If your installation fails and there is no information in the installation logs, use the -is:javaconsole parameter to record entries for events that cause the ISMP program to fail to start the Installation wizard. The syntax of the **install** command for observing such events is:

AIX HP-UX Linux Solaris

```
./install -is:javaconsole
```

Windows

```
install.exe -is:javaconsole
```

Ensure that you have at least 250 MB free in your temporary directory before attempting to install WebSphere Application Server.

Go to Chapter 6, “Installing the product and additional software,” on page 95 to continue the installation and configuration of your system.

Customizing the response file

Customize the response file before installing the WebSphere Application Server - Express product from a command line without using the graphical user interface of the Installation wizard.

Customize the response file to add your selections before attempting to install silently.

Use the response file to supply values to the installation wizard as the wizard runs in silent mode. The wizard does not display interactive panels when it runs in silent mode, but reads values from the response file instead.

Be precise when supplying values in the file: Customize the options response file precisely to let the installation program read the option values that the file contains. Incorrect specifications affect the silent interface of the installation wizard. For example, always enclose values in double quotation marks.

If you customize the response file incorrectly, the installation wizard cannot install the product with the -options or -silent parameters. If the error is an invalid option value, the installer displays a warning message that you must confirm and stops the installation.

Compare your options response file to the responsefile.express.txt file that is shipped with the product to make the necessary corrections. After correcting the file, reinstall.

Perform the following procedure to edit the response file.

1. Locate the sample options response file. The file is named responsefile.express.txt in the WAS directory on the product CD-ROM or DVD.
2. Copy the file to preserve it in its original form. For example, copy it as *myoptions* on your disc drive.
3. Edit the copy in your flat file editor of choice, on the target operating system. Read the directions within the response file to choose appropriate values.

   Important: AIX To prepare the file for a silent installation on AIX, use line-end characters (0x0D0A) to terminate each line of the options response file. The safest method of preparing the file is to edit the file on the target operating system.
4. Include custom option responses that reflect parameters for your system.

   See “responsefile.express.txt” on page 117 for an example response file and a description of each option.
5. Save the file.
6. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

   Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:
   - Act as part of the operating system
   - Log on as a service

For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.

7. Issue the proper command to use your custom response file. For example, issue one of the following commands:
   - AIX HP-UX Linux Solaris *mnt_cdrom*/WAS/install -options /tmp/WAS/myoptionsfile.txt -silent
   - Windows "*disc_drive_D*:\WAS\install" -options "C:\temp\WAS\myoptionsfile.txt" -silent

This procedure results in creating a customized response file and using the file to start a silent installation. The silent installation takes some time to complete.

Edit the version of the file that ships with the WebSphere Application Server - Express product. The example in "responsefile.express.txt" is not guaranteed to be an accurate representation of what ships with the product.

After installing the product from the installation image, the next step is to check for available updates. See Chapter 8, "Installing maintenance packages," on page 173 for more information.

After updating the Express product, verify the installation and start the application server.

If you install Rational Application Developer, you can use the tutorials on the product Welcome page to begin learning how to develop and deploy applications.

Use the First steps console to verify the installation, start the Profile Management tool, start the application server, or open the administrative console, where you can deploy sample applications.

Windows On Windows systems, use the Start menu to locate IBM WebSphere and select appropriate menu options to display the **First steps** option for the profile that you intend to verify.

AIX HP-UX Linux Solaris The First steps console, firststeps.sh, is available in the *profile_root*/firststeps directory. A separate First steps console exists for each profile, except custom profiles. Use the First Steps console of each profile to verify the profile.

Use the installver program to compare the checksum of all installed files against the bill of materials that ships with the product, if you want to perform more installation verification. See "Verifying checksums of installed files" on page 149.

After verifying the product installation and starting the stand-alone application server, use the administrative console to deploy an existing application.

responsefile.express.txt

Installing WebSphere Application Server - Express using silent installation refers to using a file to supply installation options without user interaction. To configure the installation, change the options in the response file before you issue the installation command. Silent installation mode does not accept interactive installation options. To specify non-default options during a silent installation, you must use the response file. To install silently, you must accept the license agreement in the agreement option.

Verify that the required disk space is available.

See Chapter 5, “Preparing the operating system for product installation,” on page 65 for more information.

Do not use the default response file that is shipped on the product disk to install the product because the value of the silentInstallLicenseAcceptance option is false. Copy the file to change the value to true.

Location of the response file: The sample options response file is named `responsefile.express.txt`.

Creating an operational environment: Installing a new installation of WebSphere Application Server - Express with the response file creates an operational environment by default. The installer program:

1. Installs the new product code.
2. Creates the default profile.

   You can create additional profiles using any of these available methods:

   - Use the Profile Management tool.
   - Use the **manageprofiles** command.
   - Install with the response file with the createProfile=″true″ option and create a stand-alone application server profile with the -OPT profileType=″standAlone″ option.

Installing with a response file:

1. Copy the `responsefile.express.txt` file from the `WAS` directory on the product disk to a place that you can easily identify on your system.
2. Edit the file to customize the values for your installation.
3. Save the file as `myresponsefile.txt`, for example.
4. Start the installation. For example:

   AIX HP-UX Linux Solaris

   ```
   install -options /tmp/WAS/myresponsefile.txt -silent
   ```

   Windows

   ```
   install -options C:\temp\WAS\myresponsefile.txt -silent
   ```

5. After the installation, examine the logs for success.

Logging:

The installation wizard and the Profile Management tool record installation events in the following log files.

Table 11. Installation and profile creation logs for WebSphere Application Server - Express

Log	Content	Indicators
app_server_root /logs/install/log.txt	Logs all installation events	**Return code** **Meaning** **0** Success **1** Failure **2** Partial Success
app_server_root/logs/ manageprofiles/ *profile_name*_create.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.

Table 11. Installation and profile creation logs for WebSphere Application Server - Express (continued)

Log	Content	Indicators
app_server_root/logs/ manageprofiles/ *profile_name*_delete.log	• Traces all events that occur during the deletion of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile deletion failure. **INSTCONFSUCCESS** Successful profile deletion. **INSTCONFPARTIALSUCCESS** Profile deletion errors occurred but the profile is still deleted. Additional information identifies the errors.
app_server_root/logs/install/ installconfig.log.gz	• Logs the activities of ANT configuration scripts that run at the end of the installation procedure • Gzip file	**Configuration action failed:** Unsuccessful ANT script configuration. **Configuration action succeeded:** Successful ANT script configuration.

Information that ISMP can log when it cannot start the Installation wizard

Verify or troubleshoot the installation if the *app_server_root*/logs/install/log.txt file or the *profile_root*/logs/manageprofiles/pmt.log file does not contain a record of a problem, but problems exist. If the *profile_root* directory exists, the pmt.log file is in the logs/manageprofiles directory. If the error happens early in the installation, look for the logs in the system temporary area. The installation program copies the logs from the system temporary area to the logs directory at the end of the installation.

If the *profile_root* directory does not exist, the pmt.log file is in the USER_HOME directory. Issue the env command to display the USER_HOME directory on operating systems such as AIX or Linux. See the environment variable settings on Windows system to display the value of the variable.

Certain events can prevent the installer from starting the installation wizard. Such an event is not enough disc space to launch the installation wizard, for example. If your installation fails and there is no information in the installation logs, use the -log parameter to record entries for events that cause the installer program to fail to start the installation wizard. The syntax of the install command for logging such events is:

```
install  -options fully_qualified_options_response_file_name
         -silent
         -log # !fully_qualified_log_file_name  @ALL
```

- AIX

```
install -options "/usr/IBM/WebSphere/silentFiles/myresponsefile.txt"
        -silent -log # !/usr/IBM/WebSphere/myOptionFiles/log.txt  @ALL
```

- Linux HP-UX Solaris

```
install -options "/opt/IBM/WebSphere/silentFiles/myresponsefile.txt"
        -silent -log # !/opt/IBM/WebSphere/myOptionFiles/log.txt  @ALL
```

- Windows

```
install.exe -options "C:\IBM\WebSphere\silentFiles\myresponsefile.txt"
            -silent -log # !C:\IBM\WebSphere\silentFiles\log.txt  @ALL
```

See Chapter 11, “Troubleshooting installation,” on page 283 for more information.

Example of the default file:

```
############################################################################
#
# V6.1 InstallShield Options File
```

```
#
# Wizard name: Install
# Wizard source: setup.jar
#
# This file can be used to configure Install with the options specified below
# when the wizard is run with the "-options" command line option. Read each
# setting's documentation for information on how to change its value.
# Enclose all values within a single pair of double quotes.
#
# A common use of an options file is to run the wizard in silent mode. This lets
# the options file author specify wizard settings without having to run the
# wizard in graphical or console mode. To use this options file for silent mode
# execution, use the following command line arguments when running the wizard:
#
#    -options "D:\installImage\WAS\responsefile.express.txt" -silent
#
###############################################################################

###############################################################################
#
# License Acceptance
#
# Valid Values:
# true - Accepts the license. Will install the product.
# false - Declines the license. Install will not occur.
#
# If no install occurs, this will be logged to a temporary log file in the
# user's temporary directory.
#
# By changing the silentInstallLicenseAcceptance property in this response file
# to "true", you agree that you have reviewed and agree to the terms of the
# IBM International Program License Agreement accompanying this program, which
# is located at CD_ROOT\was.primary.pak\repository\legal\lafiles.  If you do not
# agree to these terms, do not change the value or otherwise download, install,
# copy, access, or use the program and promptly return the program and proof of
# entitlement to the party from whom you acquired it to obtain a refund of the
# amount you paid.
#

-OPT silentInstallLicenseAcceptance="false"


###############################################################################
# Custom Install Package (CIP) Special Paramaters
#
# If you want to install CIP on an existing installation, e.g. apply maintenance
# or add feature, you need to set the 'installType' option to 'installAndPatch',
# for example:
#
# -OPT installType="installAndPatch"
#
# Please make sure you only set it once.  This applies to other parameters as well.
#
# You can use 'feature' option to control whether to install samples or not.
# See the "feature" section below for valid values for 'feature' option.
#
# In CIP install scenario, set 'installType' to 'addFeature' is the same as set
# it to 'installAndPatch'.  It is different from non-CIP install.
#
# By using the following option, you can choose whether to install profile
# customization at CIP install time.
#
# Valid Options:
#        maintenanceOnly               - Only installs product binary files.
#                                        If the CIP contains profile customizations,
#                                        they will NOT be installed.
#        customizationAndMaintenance   - Installs both product binary files and profile
```

```
#                                        customizations (if any).
#
#
-OPT if_cip_modifyexistinginstall=customizationAndMaintenance



################################################################################
#
# NonRoot Install Settings
#
# The option indicates whether you accept the limitations associated with installing
# as a non-root user, as follows:
#
#  - Creation of a Windows or Linux service for WebSphere Application Server
#  - Native registration with the operating system
#
# Port conflicts may occur with other installations of WebSphere Application Server
# that are not registered with the operating system.
#
# See the rins_nonroot file in the information center at
# http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/
# for more information on performing these installation actions after installation
# and avoiding port conflicts.
#
# Valid Values:
# true - Accepts the limitations. Will install the product.
# false - Do not accept the limitations. Install will not occur.
#
# Uncomment the following only if you are installing as a non-root user. Specify
# one of the valid options listed above before proceeding to install:
#
#-OPT allowNonRootSilentInstall="true"

################################################################################
#
# Operating System Prerequisite Checking
#
# If you want to disable operating system prerequisite checking, uncomment
# the following line. This will notify the installer to continue with
# the installation and log the warnings even though the prerequisite checking
# has failed.
#
#-OPT disableOSPrereqChecking="true"

################################################################################
#
# Non-blocking Prerequisite Checking
#
# If you want to disable non-blocking prerequisite checking, uncomment
# the following line. This will notify the installer to continue with
# the installation and log the warnings even though the prerequisite checking
# has failed.
#
#-OPT disableNonBlockingPrereqChecking="true"

################################################################################
#
# Install Type Settings
#
# The installType option designates the type of installation that will be
# performed.
#
# The default installType option is to install a new copy of WebSphere
# Application Server.
#
# Valid Values:
```

```
# installNew - default value, installs a new copy.
# addFeature - add features to an existing installation.
# upgrade - upgrade a trial edition to a licensed version.



###############################################################################
#
# Install a New Copy
#
# To install a new copy, be sure that the installLocation option is set to a
# new install location.
#

-OPT installType="installNew"

###############################################################################
#
# Incremental Install
#
# If you are installing additional features on top of an existing installation,
# (e.g. incremental install), uncomment the following line.  This will notify
# the installer that you are doing an incremental install.
#
#-OPT installType="addFeature"
#
# Define the new features you want to install on top of an existing WebSphere
# Application Server.  The only additional feature available in WebSphere
# Application Server is Application Server Samples.
#
# Ensure the feature option below is set to "samplesSelected" (-OPT feature="samplesSelected")
# and the installLocation option is set to an "existing" WebSphere Application
# Server install location.
#

###############################################################################
#
# Upgrade from Express Trial to Licensed version
#
# NOTE - : DO NOT Set this Option if you do not have any Express Trial installed
#          You can not do an upgrade if you do not have at least one Express Trial installed
#
# To setup an upgrade install, UNcomment the following entry
#
# -OPT installType="upgrade"
#
# Be sure the installLocation option is set to your existing Express trial install location.
#

###############################################################################
#
# Create Profile for an Existing V6.1 Installation
#
# Valid values:
#    true - creates a profile for an existing installation
#    false - does not create a profile
#
# To create a profile for an existing installation, uncomment the following
# entry. Comment out the "installType" option above since "installType"
# and "createProfile" options cannot be specified at the same time.
#
# Be sure the installLocation option is set to your existing install location.
#
#-OPT createProfile="true"

###############################################################################
#
```

```
# "Application Server samples" feature
#
# The selection state of the "Application Server samples" feature.
#
# Valid options:
#
#    samplesSelected  - Indicates that the feature is selected for installation.
#    noFeature - Indicates that the feature is not selected for installation,
#                this is the default option.
#
# For example, to select "Application Server samples" for installation, use
#
#    -OPT feature="samplesSelected"
#
# Note if feature="samplesSelected" and PROF_enableAdminSecurity="true",
# you must provide a password by uncommenting and specifying a value for
# PROF_samplesPassword in Administrative Security section below
#
-OPT feature="noFeature"

###############################################################################
#
# Install Location
#
# The install location of the product. Specify a valid directory into which the
# product should be installed. If the directory contains spaces, enclose it in
# double-quotes as shown in the Windows example below. Note that spaces in the
# install location is only supported on Windows operating systems. Maximum path
# length is 60 characters for Windows 2000 and Windows XP.
#
# Below is the list of default install locations for each supported operating
# system when you're installing as a root user.  By default, in this response
# file, the Windows install location is used.  If you want to use the default
# install location for another operating system, uncomment the appropriate
# default install location entry and then comment out the
# Windows operating system entry below.
#
# AIX Default Install Location:
#
#-OPT installLocation="/usr/IBM/WebSphere/AppServer"
#
# HP-UX, Solaris or Linux Default Install Location:
#
#-OPT installLocation="/opt/IBM/WebSphere/AppServer"
#
# i5OS Default Install Location:
#
#-OPT installLocation="/QIBM/IBM/WebSphere/AppServer/V61/productOffering"
#
# Windows Default Install Location:
#

-OPT installLocation="C:\Program Files\IBM\WebSphere\AppServer"
#
# If you are installing as non-root user on Unix or non-administrator on
# Windows, the following default install locations are suggested. Be sure you
# have write permission for the install location chosen.
#
# AIX Default Install Location:
#
#  -OPT installLocation="user's home/IBM/WebSphere/AppServer"
#
# HP-UX, Solaris or Linux Default Install Location:
#
#  -OPT installLocation="user's home/IBM/WebSphere/AppServer"
#
# Windows Default Install Location:
```

```
#
# -OPT installLocation="C:\IBM\WebSphere\AppServer"

###############################################################################
#
# Profile Creation Selection
#
# A default WebSphere Application Server profile will be created automatically
# during Express install. Use this option to instruct the installer not to
# create a default profile.
# Valid options:
# none - a profile will not be created during installation.
#
# For example, to choose no profile creation for installation, uncomment the following line
#
#-OPT profileType="none"

###############################################################################
#
# Administrative Security
#
# Choose whether to enable Administrative security during the installation
# process.
#
# If profileType="custom", Administrative security should be disabled, use
#-OPT PROF_enableAdminSecurity="false"
#
# Valid Values:
# true - Administrative security is enabled, user name and
#            password required.
# false - Administrative security is not enabled.
#
-OPT PROF_enableAdminSecurity="true"

###############################################################################
#
# Security Options
#
# The following two options should only be uncommented when
# PROF_enableAdminSecurity="true".
#
# If PROF_enableAdminSecurity="false", the following entries will be
# disregarded.
#
# If PROF_enableAdminSecurity="true", the following entries are required and must
# be filled out before proceeding with silent installation.
#
# Specify the user name for administrative security
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
-OPT PROF_adminUserName=
#
# Specify the password for the user specified in PROF_adminUserName
#
# Valid Values:
# a character string
#
-OPT PROF_adminPassword=
#
# The following option should only be uncommented when feature="samplesSelected" and
# PROF_enableAdminSecurity="true"
# Specify the password for samples user
#
```

```
# Valid Values:
# a character string
#
#-OPT PROF_samplesPassword=

###############################################################################
# if createProfile="true", you may use the following profile creation options:
###############################################################################

#
# Stand-Alone Profile
#
###############################################################################
#
# Profile name
#
# Specify the name of the profile for the Application Server. The profile
# name must be unique for this WebSphere Application Server installation.
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
#-OPT PROF_profileName=

###############################################################################
#
# Profile path
#
# Specify a valid directory to contain the files that define the run-time environment,
# such as commands,configuration files, and log files.
#
# Valid Values: An empty directory, the user must have proper permissions to the directory,
# there must be adequate disk space, total path cannot be greater than 80 (windows)
#
#-OPT PROF_profilePath=

###############################################################################
#
# Default Profile
#
# To make this profile the default target of commands that do not use their profile parameter.
# Valid Values:
#     true - make this the default profile.
#     false - do not make this the default profile.
#
# -OPT PROF_isDefault="true"

###############################################################################
#
# Host name
#
# Specify the host name for the Application Server. The host name is the domain
# name system (DNS) name (short or long) or the IP address of this computer.
# Valid Values: a valid hostname or IP address
#
#-OPT PROF_hostName=

###############################################################################
#
# Application Server Node name
#
# Specify the node name for the Application Server. Node name under one cell
# has to be unique.
#
# Valid Values:
```

```
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
#-OPT PROF_nodeName=

###############################################################################
#
# Cell name
#
# Specify the cell name for the profile to be created.
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
# -OPT PROF_cellName=

###############################################################################
#
# Starting Port
#
# Specify the starting port number for generating all ports for the profile.
# Do not use this parameter with the PROF_portsFile or PROF_defaultPorts parameters.
#
# Valid values: a positive integer port value, within the valid port range
#
#-OPT PROF_startingPort=

###############################################################################
#
# Port File
#
# Specify the path to a property file containing the desired port values for
# the new profile. Do not use this parameter with the PROF_startingPort or
# PROF_defaultPorts parameters.
# Valid values: A fully qualified path to a valid ports property file
#
#-OPT PROF_portsFile=

###############################################################################
#
# Default Ports
#
# Specify the default ports are to be used for the new profile.
# Do not use this parameter with the PROF_portsFile or PROF_startingPort parameters.
#
# Valid values:
#     true - use WAS default ports.
#     false - do not use WAS default ports.
#
#-OPT PROF_defaultPorts="true"

###############################################################################
#
# Validate Ports
#
# Validate ports to ensure they are not reserved or in use.

# Valid values:
#     true - enables port validation
#     false - disables port validation
#
#-OPT PROF_validatePorts="true"

###############################################################################
```

```
#
# WinService Check
#
# Specify whether you want to run this server as a windows service
#
# Valid values:
#     true - run as Windows service.
#     false - do not run as Windows service.
#
#-OPT PROF_winserviceCheck="true"

##############################################################################
#
# WinService Account Type
#
# Specify the type of the owner account of the Windows service to create.
# Uncomment the following ONLY if PROF_winserviceCheck="true"
#
# Valid values: specifieduser or localsystem
#
#-OPT PROF_winserviceAccountType=

##############################################################################
#
# WinService User Name
#
# Specify the user name for the windows service. Uncomment the
# following ONLY if PROF_winserviceCheck="true"
#
# Valid values: a valid user name for the current system
#
#-OPT PROF_winserviceUserName=

##############################################################################
#
# WinService Password
#
# Specify the password for the user specified by the winserviceUserName parameter
# Uncomment the following ONLY if PROF_winserviceCheck="true"
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
#-OPT PROF_winservicePassword=

##############################################################################
#
# WinService Startup Type
#
# Specify the start up method for the windows service
# Uncomment the following ONLY if PROF_winserviceCheck="true"
#
# Valid values:
#     manual - windows service must be started manually.
#     automatic - windows service will start automatically after reboot.
#     disabled - service is disabled.
#
# -OPT PROF_winserviceStartupType="automatic"

##############################################################################
#
# LinuxService Check
#
# Specify whether you want to run this server as a Linux service.
#
```

```
# Note that the root permission is required to enable Linux service.
#
# Valid values:
#     true - run as a Linux service.
#     false - do not run as a Linux service.
#
#-OPT PROF_enableService="true"

###############################################################################
#
# LinuxService User Name
#
# Specify the name of the user you wish this service to be run as. Uncomment the
# following ONLY if PROF_enableService="true". Linux services can only be created
# from profile creation if the current user is the root user.
#
# Valid values: a valid Linux user name
#
#-OPT PROF_serviceUserName=

###############################################################################
#
# WebServer Check
#
# Specify whether you wish to set the web server definition.
#
# Valid values:
#     true - enable the creation of a webserver definition.
#     false - do not enable the creation of a webserver definition.
#
#-OPT PROF_webServerCheck="true"


###############################################################################
#
# WebServer Type
#
# Specify the type of web server you are creating.
# Uncomment the following if and ONLY if PROF_webServerCheck="true".
#
# Valid values (case sensitive): IHS | IIS | SUNJAVASYSTEM | DOMINO | APACHE | HTTPSERVER_ZOS
#
#-OPT PROF_webServerType=

###############################################################################
#
# WebServer OS
#
# Specify the operating system of the system where the web server is
# installed. Uncomment the following if and ONLY if PROF_webServerCheck="true".
#
# Valid values: linux | windows | aix | hpux | solaris | os390 | os400
#
#-OPT PROF_webServerOS=

###############################################################################
#
# WebServer Name
#
# Specify the name of the web server. Uncomment the following if and ONLY if
# PROF_webServerCheck="true".
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
```

```
#-OPT PROF_webServerName=

###############################################################################
#
# WebServer Hostname
#
# Specify the hostname of the system with the web server. Uncomment the following
# if and ONLY if PROF_webServerCheck="true".
#
# Valid values: a valid hostname or IP address
#
#-OPT PROF_webServerHostname=

###############################################################################
#
# WebServer Port
#
# Specify the port from which the web server can be accessed. Uncomment the
# following if and ONLY if PROF_webServerCheck="true".
#
# Valid values: a valid port number
#
#-OPT PROF_webServerPort=

###############################################################################
#
# WebServer Install Path
#
# Specify the installation path of the web server (local or remote).
# Uncomment the following if and ONLY if PROF_webServerCheck="true".
#
# Valid values: a valid directory path
#
#-OPT PROF_webServerInstallPath=

###############################################################################
#
# WebServer Plugin Path
#
# Specify the path to the plugins that will be used by this web server.
# Uncomment the following if and ONLY if PROF_webServerCheck="true".
#
# Valid values: a valid directory path
#
#-OPT PROF_webServerPluginPath=

###############################################################################
#
# Omit Action
#
# Use this option to omit the config action specified
#
# Valid values: one of the following optional config actions
#  deployAdminConsole
#  defaultAppDeployAndConfig
#  samplesInstallAndConfig
#
#-OPT PROF_omitAction=

###############################################################################
#
# Developer Server
#
# Use this option to indicate that the default server is meant for development purposes only.
#
# Valid values:
#     true - mark this default server for development purposes only.
```

```
#     false - do not mark this default server for development purposes only.
#
#-OPT PROF_isDeveloperServer="true"

###############################################################################
#
# Tracing Control
#
# The trace output format can be controlled via the option
# -OPT traceFormat=ALL
#
# The choices for the format are 'text' and 'XML'. By default, both formats will be produced,
# in two different trace files.
#
# If only one format is required, use the traceFormat option to specify which one, as follows:
#
# Valid Options:
# text - Lines in the trace file will be in a plain text format for easy readability.
# XML - Lines in the trace file will be in the standard Java logging XML format which can
#        be viewed using any text or XML editor or using the Chainsaw tool from Apache
#        (http://logging.apache.org/log4j/docs/chainsaw.html).
#
# The amount of trace info captured can be controlled using the option:
# -OPT traceLevel=INFO
#
# Valid Options:
#
# Level    Numerical Level Description
# OFF     0  No trace file is produced
# SEVERE     1  Only severe errors are output to trace file
# WARNING    2  Messages regarding non-fatal exceptions and warnings are added to trace file
# INFO     3  Informational messages are added to the trace file (this is the default trace level)
# CONFIG     4  Configuration related messages are added to the trace file
# FINE     5  Tracing method calls for public methods
# FINER     6  Tracing method calls for non public methods except getters and setters
# FINEST     7  Trace all method calls, trace entry/exit will include parameters and return value
```

Installation type options and options for profiles: Options that you can use to install silently vary according to the installation task that you are performing:

- installNew
- addFeature
- upgrade

Options for a new installation:

```
-OPT silentInstallLicenseAcceptance=
-OPT installType="installNew"
-OPT feature=
-OPT installLocation="/QIBM/ProdData/WebSphere/AppServer/V61/<edition>"
-OPT defaultProfileLocation="/QIBM/UserData/WebSphere/AppServer/V61/<edition>"
```

Options for creating a stand-alone application server cell:

```
-OPT feature="samplesSelected"
-OPT installLocation="/QIBM/ProdData/WebSphere/AppServer/V61/<edition>"
-OPT createProfile="true"
-OPT defaultProfileLocation="/QIBM/UserData/WebSphere/AppServer/V61/<edition>"
-OPT profileType="standAlone"
-OPT silentInstallLicenseAcceptance="true"
-OPT traceFormat=ALL
-OPT traceLevel=INFO
-OPT PROF_cellName=
-OPT PROF_defaultPorts=
-OPT PROF_enableAdminSecurity="false"
-OPT PROF_hostName=
-OPT PROF_isDefault=
```

```
-OPT PROF_nodeName=
-OPT PROF_omitAction=
-OPT PROF_portsFile=
-OPT PROF_profileName=
-OPT PROF_profilePath=
-OPT PROF_serverName=
-OPT PROF_startingPort=
-OPT PROF_validatePorts=
-OPT PROF_webServerCheck=
-OPT PROF_webServerHostname=
-OPT PROF_webServerInstallPath=
-OPT PROF_webServerName=
-OPT PROF_webServerOS=
-OPT PROF_webServerPluginPath=
-OPT PROF_webServerPort=
-OPT PROF_webServerType=
-OPT PROF_winserviceAccountType=
-OPT PROF_winserviceCheck=
-OPT PROF_winservicePassword=
-OPT PROF_winserviceStartupType=
-OPT PROF_winserviceUserName=
```

More information: Use the following information as a resource list.

Updating ports in an existing profile

Use the updatePorts.ant script to change ports in an installed profile.

The updatePorts.ant script for application server profiles is in the *app_server_root*/profileTemplates/*template_name*/actions directory. To use the script, you have to identify which profile to update.

Use the following procedure to become familiar with using the updatePorts.ant script. Each step is an exercise that results in reassigning ports using a particular method that the updatePorts.ant script supports.

Look at steps for all of the operating systems mentioned. The differences are mainly in the extension of the script file and the direction of the directory delimiters. For example, Linux shell scripts (*.sh) and other commands require a ./ before the command to tell the operating system that the command is in the current working directory.

- Linux Assign nonconflicting ports to the AppSrv01 profile.

  The ANT script assigns nonconflicting ports by default. No special arguments are needed. Identify the fully qualified directory paths, profile name, unique node name, and unique cell name. Then issue the command.

  1. Create the Java properties file encoded in ISO-8895-1 file encoding, to assign nonconflicting port values to the application server profile.

     For this example, assume that the system is a Linux operating system and that you create the following /TMP/was_props/appserver.props properties file.

     ```
     WAS_HOME=/opt/IBM/WebSphere/AppServer
     was.install.root=/opt/IBM/WebSphere/AppServer
     profileName=AppSrv01
     profilePath=/opt/IBM/WebSphere/AppServer/profiles/AppSrv01
     templatePath=/opt/IBM/WebSphere/AppServer/profileTemplates/default
     nodeName=appserver_node01
     cellName=appserver_cell01
     hostName=myserver.ibm.com
     ```

  2. Open a command shell window.
  3. Change directories to the /opt/IBM/WebSphere/AppServer/bin directory.

     ```
     cd /opt/IBM/WebSphere/AppServer/bin
     ```

(Or, if the product is installed to a non-default directory, change directories to the <install_root_directory>/bin directory.)

4. Issue the command.

```
./ws_ant.sh -propertyfile /TMP/was_props/appserver.props \
            -file /opt/IBM/WebSphere/AppServer/profileTemplates/default/actions/updatePorts.ant
```

5. Open the administrative console and view the changed port assignments.

   To view the port assignments, click **Servers > Application servers > server1 > [Communications] > Ports**.

6. Run the script again and view the ports. Are they the same as before?

The resulting dynamically assigned port values apply to all of the ports currently assigned to the AppSrv01 profile, for every server listed in the serverindex.xml file for the profile node name. Each port receives a new nonconflicting value. None of the old port value assignments are used because the port values are in use at the time of the new assignment.

- Windows Assign default ports to the AppSrv02 profile.

The ANT script assigns nonconflicting ports by default. The defaultPorts=true special argument is needed. Identify the fully qualified directory paths, profile name, unique node name, and unique cell name. Then issue the command.

1. Create the Java properties file encoded in ISO-8895-1 file encoding, to assign default port values to the application server profile.

   For this example, assume that the system is a Windows operating system and that you create the following C:\temp\was_props\appserver.props properties file.

```
WAS_HOME="C:\Program Files\IBM\WebSphere\AppServer"
was.install.root="C:\Program Files\IBM\WebSphere\AppServer"
profileName=AppSrv02
profilePath="C:\Program Files\IBM\WebSphere\AppServer\profiles\AppSrv02"
templatePath="C:\Program Files\IBM\WebSphere\AppServer\profileTemplates\default"
nodeName=appserver_node02
cellName=appserver_cell02
hostName=myserver2.ibm.com
defaultPorts=true
```

   Use double quotation marks around a Windows path name with spaces. Do not use quotation marks around the path name if there are no spaces in the path.

2. Open a DOS command window.
3. Change directories to the C:\Program Files\IBM\WebSphere\AppServer\bin directory.

```
cd "C:\Program Files\IBM\WebSphere\AppServer\bin"
```

   (Or, if the product is installed to a non-default directory, change directories to the <install_root_directory>/bin directory.)

4. Issue the command.

```
ws_ant.bat -propertyfile C:\temp\was_props\appserver.props
 -file "C:\Program Files\IBM\WebSphere\AppServer\profileTemplates\default\actions\updatePorts.ant"
```

5. Open the administrative console and view the changed port assignments.

   To view the port assignments, click **Servers > Application servers > server1 > [Communications] > Ports**.

6. Run the script again and view the ports. Are they the same as before?

The resulting assigned port values are the same each time because the values are the default values. This method does not resolve conflicting port assignments. To view all port assignments for a profile, see the C:\Program Files\IBM\WebSphere\AppServer\profiles\AppSrv02\config\cells\appserver_cell02\nodes\appserver_node02\serverindex.xml file. Issue the netstat -a command to see all ports in use on the machine.

- AIX Assign ports starting at 2050 to the AppSrv03 profile.

The ANT script assigns nonconflicting ports by default. The startingPort=2050 special argument is needed. Identify the fully qualified directory paths, profile name, unique node name, and unique cell name. Then issue the command.

1. Create the Java properties file encoded in ISO-8895-1 file encoding, to assign default port values to the application server profile.

   For this example, assume that the system is an AIX operating system and that you create the following /usr/tmp/was_props/appserver.props properties file.

   ```
   WAS_HOME=/usr/IBM/WebSphere/AppServer
   was.install.root=/usr/IBM/WebSphere/AppServer
   profileName=AppSrv03
   profilePath=/usr/IBM/WebSphere/AppServer/profiles/AppSrv03"
   templatePath=/usr/IBM/WebSphere/AppServer/profileTemplates/default"
   nodeName=appserver_node03
   cellName=appserver_cell03
   hostName=myserver3.ibm.com
   startingPort=2050
   ```

2. Open a command shell window.
3. Change directories to the /usr/IBM/WebSphere/AppServer/bin directory.

   ```
   cd /usr/IBM/WebSphere/AppServer/bin
   ```

   (Or, if the product is installed to a non-default directory, change directories to the <install_root_directory>/bin directory.)
4. Issue the command.

   ```
   ./ws_ant.sh -propertyfile /usr/tmp/was_props/appserver.props \
               -file /usr/IBM/WebSphere/AppServer/profileTemplates/default/actions/updatePorts.ant
   ```

5. Open the administrative console and view the changed port assignments.

   To view the port assignments, click **Servers > Application servers > server1 > [Communications] > Ports**.
6. Run the script again and view the ports. Are they the same as before?

After using the -startingPort option, the resulting dynamically assigned port values are not the same each time because the ANT script assigns nonconflicting port values starting from the startingPort number (port 2050 in this case). This method resolves conflicting port assignments.

- HP-UX Solaris Use a port definition property file to assign ports to the AppSrv04 profile.

The ANT script assigns nonconflicting ports by default. The portsFile=/opt/was/portdefs.our_appsrv_ex.props special argument is needed. Identify the fully qualified directory paths, profile name, unique node name, and unique cell name. Then issue the command.

1. Create the Java properties file encoded in ISO-8895-1 file encoding, to assign nonconflicting port values to the application server profile.

   Assume that you create the following /opt/was/portdefs.our_appsrv_ex.props properties file:

   ```
   WC_defaulthost=19080
   WC_adminhost=19060
   WC_defaulthost_secure=19443
   WC_adminhost_secure=19043
   BOOTSTRAP_ADDRESS=22809
   SOAP_CONNECTOR_ADDRESS=28880
   SAS_SSL_SERVERAUTH_LISTENER_ADDRESS=29401
   CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS=29403
   CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS=29402
   ORB_LISTENER_ADDRESS=39100
   DCS_UNICAST_ADDRESS=39353
   SIB_ENDPOINT_ADDRESS=37276
   SIB_ENDPOINT_SECURE_ADDRESS=37286
   SIB_MQ_ENDPOINT_ADDRESS=45558
   SIB_MQ_ENDPOINT_SECURE_ADDRESS=45578
   SIP_DEFAULTHOST=45060
   SIP_DEFAULTHOST_SECURE=45061
   ```

Note: The ports used in the port definition property file should reflect the template type. The ports in this example are for the default template type, and they might vary for other template types. They can be modelled after the portdef.props file found in the template directory.

Assume that you create the following /TMP/was_props/appserver.props properties file:

```
WAS_HOME=/opt/IBM/WebSphere/AppServer
was.install.root=/opt/IBM/WebSphere/AppServer
profileName=AppSrv04
profilePath=/opt/IBM/WebSphere/AppServer/profiles/AppSrv04
templatePath=/opt/IBM/WebSphere/AppServer/profileTemplates/default
nodeName=appserver_node04
cellName=appserver_cell04
hostName=myserver4.ibm.com
portsFile=/opt/was/portdefs.our_appsrv_ex.props
```

2. Open a command shell window.
3. Change directories to the /opt/IBM/WebSphere/AppServer/bin directory.

   ```
   cd /opt/IBM/WebSphere/AppServer/bin
   ```

   (Or, if the product is installed to a non-default directory, change directories to the <install_root_directory>/bin directory.)
4. Issue the command.

   ```
   ./ws_ant.sh -propertyfile /TMP/was_props/appserver.props \
               -file /opt/IBM/WebSphere/AppServer/profileTemplates/default/actions/updatePorts.ant
   ```
5. Open the administrative console and view the changed port assignments.

   To view the port assignments, click **Servers > Application servers > server1 > [Communications] > Ports**.
6. Run the script again and view the ports. Are they the same as before?

The resulting assigned port values are from a props file. Therefore, the values do not change. This method does not resolve conflicting port assignments.

This procedure results in four different methods of port assignments with the updatePorts.ant script.

You can change port values in a variety of ways. The **install** command and the silent installation response file also support setting port values in the same manner as described in this article. In fact, the two installation methods use the same options:

- -OPT PROF_defaultPorts= [No value is required. The equal sign is a standardization misnomer.]
- -OPT PROF_startingPort=″nnnn″
- -OPT PROF_portsFile=″path_to_portsdef.props file″
- If you omit one of the preceding arguments when calling the **install** command or leave one of the preceding arguments out of your silent response file, the default action is to assign nonconflicting port values.

The use of the exact same options for a GUI installation and a silent installation is no coincidence. Most WebSphere Application Server component installation programs are implementations of the Common Install Engine for WebSphere Application Server. The use of the exact same actions for the ANT script is also because of the same pervading design theme, which is to simplify your installation experience.

Mounting disc drives on operating systems such as AIX or Linux

Some operating systems such as AIX or Linux require you to mount the drive before you can access data on the compact disc.

Insert the compact disc into the drive before mounting the drive.

Use these procedures to mount the product discs for WebSphere Application Server.

- Mounting the CD-ROM on AIX

  To mount the CD-ROM on AIX using the System Management Interface Tool (SMIT), perform the following steps:

  1. Log in as a user with root authority.
  2. Insert the CD-ROM in the drive.
  3. Create a CD-ROM mount point by entering the mkdir -p /cdrom command, where cdrom represents the CD-ROM mount point directory.
  4. Allocate a CD-ROM file system using SMIT by entering the smit storage command.
  5. After SMIT starts, click **System Storage Management (Physical & Logical Storage) > File Systems > Add / Change / Show / Delete File Systems > CDROM File Systems > Add a CDROM File System**.
  6. In the Add a CDROM File System window:
     - Enter a device name for your CD-ROM file system in the **DEVICE Name** field. Device names for CD-ROM file systems must be unique. If there is a duplicate device name, you may need to delete a previously-defined CD-ROM file system or use another name for your directory. The example uses /dev/cd0 as the device name.
     - Enter the CD-ROM mount point directory in the **MOUNT POINT** window. In our example, the mount point directory is /cdrom.
     - In the **Mount AUTOMATICALLY at system restart** field, select yes to enable automatic mounting of the file system.
     - Click **OK** to close the window, then click **Cancel** three times to exit SMIT.
  7. Next, mount the CD-ROM file system by entering the smit mountfs command.
  8. In the Mount a File System window:
     - Enter the device name for this CD-ROM file system in the **FILE SYSTEM name** field. In our example, the device name is /dev/cd0.
     - Enter the CD-ROM mount point in the **Directory over which to mount** field. In our example, the mount point is /cdrom.
     - Enter cdrfs in the **Type of Filesystem** field. To view the other kinds of file systems you can mount, click List.
     - In the **Mount as READ-ONLY system** field, select yes.
     - Accept the remaining default values and click **OK** to close the window.

     Your CD-ROM file system is now mounted. To view the contents of the CD-ROM, place the disk in the drive and enter the cd /cdrom command where *cdrom* is the CD-ROM mount point directory.

- Mounting the CD-ROM on HP-UX Because WebSphere Application Server contains several files with long file names, the mount command can fail. The following steps let you mount successfully your WebSphere Application Server product CD-ROM on the HP-UX platform:

  1. Log in as a user with root authority.
  2. In the /etc directory, add the following line to the pfs_fstab file:

     ```
     /dev/dsk/c0t2d0 mount_point pfs-rrip ro,hard
     ```

     where *mount_point* represents the mount point of the CD-ROM.
  3. Start the *pfs* daemon by entering the following commands (if they are not already running):

     ```
     /usr/sbin/pfs_mountd &
     /usr/sbin/pfsd 4 &
     ```
  4. Insert the CD-ROM in the drive and enter the following commands:

     ```
     mkdir /cdrom
     /usr/sbin/pfs_mount /cdrom
     ```

     The */cdrom* variable represents the mount point of the CD-ROM.
  5. Log out.

- Mounting the CD-ROM on Linux To mount the CD-ROM on Linux:
  1. Log in as a user with root authority.
  2. Insert the CD-ROM in the drive and enter the following command:

     ```
     mount -t iso9660 -o ro /dev/cdrom /cdrom
     ```

     The */cdrom* variable represents the mount point of the CD-ROM.
  3. Log out.

  Some window managers can automatically mount your CD-ROM for you. Consult your system documentation for more information.
- Mounting the CD-ROM on Solaris To mount the CD-ROM on Solaris:
  1. Log in as a user with root authority.
  2. Insert the CD-ROM into the drive.
  3. If the Volume Manager is not running on your system, enter the following commands to mount the CD-ROM:

     ```
     mkdir -p /cdrom/unnamed_cdrom
     mount -F hsfs -o ro /dev/dsk/c0t6d0s2 /cdrom/unnamed_cdrom
     ```

     The */cdrom/unnamed_cdrom* variable represents the CD-ROM mount directory and the /dev/dsk/c0t6d0s2 represents the CD-ROM drive device.

     If you are mounting the CD-ROM drive from a remote system using NFS, the CD-ROM file system on the remote machine must be exported with root access. You must also mount that file system with root access on the local machine.

     If the Volume Manager (vold) is running on your system, the CD-ROM is automatically mounted as:

     ```
     /cdrom/unnamed_cdrom
     ```
  4. Log out.

Return to the installation procedure to continue.

Operating system registry keys

Use the installation procedures to register WebSphere Application Server and the associated products with the native operating system registry. Associated products include the IBM HTTP Server, the Web server plug-ins, the Application Client, the Application Server Toolkit, and the Edge Components. This topic describes possible registry key values.

Installations are registered with the native operating system registries, such as the Red Hat Package Manager (RPM) on Linux systems. The InstallShield for Multiplatforms (ISMP) installation wizard also creates the vpd.properties file that contains a list of product codes that ISMP uses to track installations that it has performed.

See “Limitations of non-root installers” on page 138 for more information about registry entries.

Table 12. Keys used to register WebSphere Application Server

Registry file location	WebSphere Application Server	Application Client	IBM HTTP Server	Web Server Plug-ins	Application Server Toolkit	Edge Components	Update Installer (UPDI)
vpd.properties	WSBAA61	WSCAA61	WSIHS61	WSPAA61	WSAST61	WSEDG61	WSUPD61
AIX	WSBAA61	WSCAA61	lslpp -L|grep WSIHS61	lslpp -L|grep WSPAA61	N/A	WSEDG61	WSUPD61
HP-UX	WSBAA61	WSCAA61	swlist|grep WSIHS61	swlist|grep WSPAA61	N/A	WSEDG61	WSUPD61
Linux	WSBAA61LicensingComponent	WSCAA61	rpm -qa|grep ″WSIHS61″	rpm -qa|grep ″WSPAA61″	rpm –q|grep ″WSAST61″	WSEDG61	WSUPD61

Table 12. Keys used to register WebSphere Application Server (continued)

Registry file location	WebSphere Application Server	Application Client	IBM HTTP Server	Web Server Plug-ins	Application Server Toolkit	Edge Components	Update Installer (UPDI)
Solaris	WSBAA61	WSCAA61	WSIHS61	WSPAA61	N/A	WSEDG61	WSUPD61
Windows	HKEY_ CURRENT_ USER\ SOFTWARE\ IBM\ WebSphere Application Server, Express \6.1.0.0	HKEY_ CURRENT_ USER\ SOFTWARE\ IBM\ Application Client for WebSphere Application Server\6.1.0.0	HKLM\ SOFTWARE\ IBM\ HTTP Server\6.1.0.0	HKLM\ SOFTWARE\ IBM\ Web server Plug-ins for IBM WebSphere Application Server\6.1.0.0	HKEY_ CURRENT_ USER\ SOFTWARE\ IBM\ WebSphere Application Server Toolkit\6.1.0.0	N/A	HKLM\ SOFTWARE\ IBM\ WAS Update Installer\6.1.0.0

In addition to the vpd.properties file, the WebSphere Application Server installation programs also create a record of installed products in an install registry file. The WebSphere Application Server - Express installation program also creates a catalog signature file for use by IBM Tivoli License Manager (ITLM).

The install registry file

The Version 6.1 install registry file is an XML file that contains data entries for all of the installed products that are listed in the preceding table:

- **Product information**: product id (offering), product installation location, and product version
- **Package information**: package name, package installation location, product installation location, and any associated products

Version 6.1 does not use the .WASRegistry file that is used in Version 6.0.

The catalog signature files

WebSphere Application Server - Express provides catalog signature files to support IBM Tivoli License Manager 2.2. The ITLMReadinessComponents.xml file enables ITLM to detect and monitor WebSphere Application Server - Express software components. The ITLMReadinessOfferings.xml file contains the offering product structure.

Example package entries Linux

Issue the following command on a Linux system to show packages for the WebSphere Application Server products:

```
rpm -qa | grep WS
```

WebSphere Application Server supplements disc

Use the supplements disc to access installation programs and documentation for Application Client, IBM Support Assistant, Update Installer, GSKit, IBM HTTP Server, Installation Factory, and Web server plug-ins. You can also use the migration tools from this disc or copy the tools to your system.

The launchpad application in the root directory of the supplements disc lets you install and view information about many of the components on the disc.

The Supplements disc also has World Type and Devanagari fonts on Linux. Use your Linux system utilities to install the World Type fonts or the Devanagari fonts. Use your operating system utilities to install the Devanagari fonts on other operating systems. The Devanagari fonts support Hindi, Sanskrit and some other languages.

Limitations of non-root installers

Non-root installers can install WebSphere Application Server - Express Version 6.1 in both silent and interactive mode for full product installations and removals, incremental feature installations, edition upgrades, and silent profile creation. Installing as a non-root user in Version 6.1 works the same as installing as a root user does in previous versions. The term *non-root* implies an installer on an operating system such as AIX or Linux, but it also means a non-administrator group installer on a Windows system. However, there are limitations. In the current version of WebSphere Application Server - Express, the IBM HTTP Server, or the Web server plug-ins components, a non-root installation does not install the GSKit security components needed by the IBM HTTP Server or the Web server plug-ins for SSL support. As a result, you must have root access to install the GSKit to use SSL communication. Also, non-root install for the plug-in component is only supported if WebSphere Application Server is also installed as non-root.

For existing installations, the root or non-root installer who owns the currently installed files is the only user who can perform subsequent installation or removal operations on that installation. Such restricted operations include profile creation, unless the owner reassigns ownership of the appropriate profile directories and files to another user. The root user is not under the same restriction, and can delete an installation owned by a non-root user.

Initially, the owner is the installer. However, the installer can assign ownership of an existing installation to another user.

The set of post-install operations that are subject to this rule includes installing a feature (incremental installation), upgrading a trial, or from Express to the base product, installing maintenance, uninstalling the product, and installing a customized installation package (a CIP from the Install Factory) on top of an existing installation in a *slip* installation.

Allowing a non-owning user to perform the post-install operations introduces ownership complexities that Version 6.1 does not support. The full installer programs and the Update Installer (UPDI) check to verify that the current installer is also the owner of the installed files. A non-owner is not allowed to continue the operation.

The following expectations help define the parameters for using a non-root installer ID.

- **Non-root installations apply to all of the WebSphere software components in the product package**

  Non-root installers can install all of the components, including:
  - WebSphere Application Server
  - IBM HTTP Server
  - Web server plug-ins
  - Application Client
  - Application Server Toolkit
  - Update Installer
- **Non-root installations install an operational product**

  Whenever possible, if some portion of an installation requires root privileges, the installation programs provide an option so that the non-root installer can install an operational product, but without enabling the privileged option.
- **Installation programs identify root-only options**

  Installation programs clearly identify privileged options by disabling such options in the interface of the non-root installer.
- **Default installation locations are within your home directory**

Default installation locations are within the home directory of the non-root installer to verify a writable disk space. Default installation directories for root installers are the same as for Version 6.0. The installation programs verify that specified disk locations are writable.

- **Installation programs display a list of limitations**

  Non-root installers see a panel in the installation user interface after prerequisite checking completes. The panel clearly summarizes limitations that exist for a non-root installation.

  For example, messages might say that the GSKit cannot install and that the product cannot register natively with the operating system. The non-root installer can continue with the knowledge of the existing limitations or can cancel to install as root without the limitations.

- **Silent installers support non-root installations**

  Silent installations have a new option across all installation packages that achieves a similar objective. The allowNonRootSilentInstall option has a default value of false:

  – The installation program checks the value of this option when a non-root installer attempts the installation. The installation program ignores the option when root is installing.

  – A false value discontinues a non-root installation. The resulting message in the installation log indicates that the allowNonRootSilentInstall value must be true. The log also indicates non-root installation limitations.

  – A true value permits the installation to proceed. The resulting message in the log indicates conditions that might exist because of the non-root limitations.

  – Comments for the non-root installer option in the sample response file clearly summarize the limitations.

- **Root can use specialized installation routines to install privileged options**

  Whenever possible, separately installed privileged options are integrated with the non-root installation.

  Linux For example, a routine to install menu options on Linux systems lets a root user intervene to allow the entries for a non-root installer. See the description of using the moveWebSphereMenu.sh script later in this topic.

The following limitations and differences exist when installing as a non-root installer:

- **Port value assignment limitations**

  – Creating a profile is optional during WebSphere Application Server - Express installation.

    Port value assignments for the profile occur only when the installation creates a profile. The port value assignments are part of the profile configuration.

    The installation program does not prompt an installer for which port values to use, but instead, generates and assigns a set of non-conflicting port values. The installation program assigns appropriate port values to a non-root installer, such as greater than 1024, for example.

  – In WebSphere Application Server Version 6.0, profile creation avoids port value conflicts by examining port values in use by other WebSphere Application Server installations.

    Multiple non-root installers diminish the ability to detect and avoid port value conflicts. WebSphere Application Server installations are visible to the installer ID only, because the non-root installations do not register globally. If the root user performs all WebSphere Application Server installations, the problem is avoided.

  – When running as non-root, the IBM HTTP Server installation program displays a default port value of 8080.

    The default value for a root installer is 80.

- AIX HP-UX Linux Solaris **Operating system and ISMP registration limitations**

  – Packages installed by a non-root installer cannot register using the native operating system mechanisms, such as Red Hat Package Manager (RPM) on Linux.

    WebSphere software registers in the WebSphere Application Server install registry file and the vpd.properties file. All installable components are fully functional despite the lack of native registration.

– Solaris HP-UX ISMP uses native operating system registration on these platforms when installing as root, and does not create a vpd.properties file.

  When installing as a non-root installer, the installer programs create a vpd.properties file on all platforms, including Solaris and HP-UX.

- Windows **Operating system and ISMP registration limitations**

  Registry entries are on a non-administrator per-user basis instead of registering the software for the entire machine, which occurs when an administrator user installs.

- **GSKit limitation**

  GSKit is included in the IBM HTTP Server component and in the Web server plug-ins component. As mentioned, GSKit provides SSL capability.

  – AIX HP-UX Linux Solaris GSKit v7 relies on an absolute path to locate and correctly initialize the open source based ICC software subcomponent that handles low-level cryptography.

    GSKit cannot find ICC during a non-root installation. Because of the potential of having no cryptographic support (and possibly other unexpected effects), the installer programs do not allow a non-root installation of GSKit.

  – Additionally, GSKit v7 and earlier versions are not implemented for multiple different instances of the GSKit libraries within a single process on an operating system such as AIX or Linux.

  – GSKit v7 uses native installation methods that require root authority, such as:

    - AIX pkgadd
    - HP-UX installp
    - Linux rpm (Linux),
    - Solaris swinstall

  – The installation programs indicate that GSKit is not installable to a non-root installer.

- Windows **Adaptive Fast Path Architecture (AFPA) limitations**

  AFPA is a software architecture that dramatically improves the efficiency, and therefore the capacity, of Web servers and other network servers by caching static files.

  AFPA is a Windows kernel-level device driver within the IBM HTTP Server. AFPA provides caching of static files served from IBM HTTP Server. AFPA is recommended for very high-volume (tens of millions of hits per day) static-file Web sites only.

  Dynamic Web pages, such as those generated by WebSphere Application Server, are not usually cacheable. Most application servers should not enable AFPA.

  – A Windows kernel-level device driver cannot install from a non-administrator installer. Windows requires administrator group privileges when installing device drivers.

  – The IBM HTTP Server installation program indicates to non-admininstrator installers that AFPA is not installed.

- **Edge Components limitations**

  Edge requires root privileges because of its native installation mechanisms.

- Windows **Web Start limitations**

  Application Client Version 6.1 supports Java Web Start (JWS) on all supported platforms. Particularly on a Windows system, the Application Client requires administrator access in order to configure JWS properly, by updating Windows native registry entries with some JWS-specific entries.

  Non-administrator installers cannot register the update, which provides less than full support for JWS. For example, a JWS application cannot launch from the Internet Explorer or Mozilla browser.

  JWS is not an installable feature for the Client and cannot be separately installed by an administrator installer. The installation program lists JWS as one of the non-administrator limitations on Windows systems.

- Windows **Windows services limitations**

  - The non-root installer cannot create Windows services for any of the WebSphere Application Server processes, including the application server, the IBM HTTP Server, or the IBM HTTP Server Administrative server.
  - An administrator installer can create the service after the fact using the WASService command.
- Windows **Start Menu entry limitations**

  Entries in the menu are for the non-administrator installer, but are not available to all users.
- Linux **Gnome and KDE menu entry limitations**

  Entries in the menus are for the non-root installer instead of being applicable to all users.
- **Users and group definition limitations**

  IBM HTTP Server Administrative Server configuration creates users and user groups. A root user is required to perform such configuration.
- **Installation visibility limitations**

  The non-root installer cannot register software packages natively. The installer programs register installed components. ISMP registers installed programs in its vpd.properties file. The installer programs register installed components in the WebSphere Application Server install registry file. Both files are in the home directory of the non-root installer as opposed to being a globally shared resource available to all users.

  In case a non-root or non-administrator user is granted access or visiblity to share install information with a root or administrator user, all install information cannot be accessed in certain scenarios. If the non-root or non-administrator user has previously installed WebSphere Application Server before increased access rights are granted, the scope of the install registry will still be local instead of a global.

  However, if the non-root or non-administrator user has not installed WebSphere Application Server before and access is upgraded, it becomes possible to access global install information generated by a root or admin user.

Host name values

WebSphere Application Server requires a host name specification during installation, profile creation, and for some configuration activities. This topic describes acceptable values for host name fields.

The host name is the network name for the physical machine on which the node is installed. The host name must resolve to a physical network node on the server. When multiple network cards exist in the server, the host name or IP address must resolve to one of the network cards. Remote nodes use the host name to connect to and to communicate with this node. The following guidelines can help in determining the appropriate host name for your machine:

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

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

The value that you specify for the host name is used as the value of the hostName property in configuration documents for the stand-alone Application Server. Specify the host name value in one of the following formats:

- Fully qualified domain name servers (DNS) host name string, such as xmachine.manhattan.ibm.com
- The default short DNS host name string, such as xmachine
- Numeric IP address, such as 127.1.255.3

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

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

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

Chapter 7. Configuring the product after installation

This topic summarizes how to configure the application serving environment.

Use the First steps console to configure and test the WebSphere Application Server environment after creating a profile.

This procedure uses the First steps console to launch the installation verification test (IVT) that tests and verifies your WebSphere Application Server - Express environment. This procedure also uses the First steps console to launch the Profile Management tool to create an additional application server.

1. Start the First steps console by selecting the check box on the last panel of the wizard.

   The First steps console can start automatically at the end of the installation. Select the check box on the last panel of the Installation wizard.

   The First steps console is an easy way to start using the product. The console provides one-stop access to the administrative console, Samples Gallery, Profile Management tool, installation verification test, Migration wizard, and other activities.

   See the description of the “firststeps command” for more information.
2. Click **Installation verification** on the First steps console.

   The installation verification test starts the application server process named server1 and runs several tests to verify that the server1 process can start without errors.

   See “Using the installation verification tools” on page 147 for more information.
3. Click Profile Management tool on the First steps console to create an application server profile.

   You can create multiple application servers on your system without installing the product again.
4. Start the First steps console by selecting the check box on the last panel of the Profile Management tool.

   This First steps console belongs to the Application Server profile that you just created. Each profile has its own First steps console.
5. Click **Installation verification** on the First steps console.

   The installation verification test starts the new application server process named server1 and runs several tests to verify that the server1 process can start without error.

This procedure results in configuring and testing the application server environment.

See “Planning to install WebSphere Application Server - Express” on page 50 for diagrams of topologies that you can create using the First steps console and the Profile Management tool.

firststeps command

The firststeps command starts the First steps console. The First steps console is a post-installation ease-of-use tool for directing WebSphere Application Server - Express elements from one place. Options display dynamically on the First steps console, depending on features that you install and the availability of certain elements on a particular operating system platform. Options include verifying the installation, starting and stopping application server processes, creating profiles, accessing the administrative console, launching the Migration wizard, accessing the online information center, and accessing the Samples gallery.

First steps overview

Select the check box to start the First steps console at the end of the product installation.

You can also start the First steps console from the command line as described later in this topic.

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Option descriptions

Installation verification

This option starts the installation verification test (IVT). The test consists of starting and monitoring the application server during its start up.

If this is the first time that you have used the First steps console for this application server profile, click **Installation verification** to verify the installation. The verification process starts the application server.

The **Start the server** option is unavailable while the IVT runs.

The IVT provides the following useful information about the application server:

- The server name: server1
- The name of the profile
- The profile file path
- The type of profile: default
- The cell name
- The node name
- The current encoding
- The port number for the administrative console
- Various informational messages that include the location of the SystemOut.log file and how many errors are listed within the file
- A completion message

Start the server

This option toggles to **Stop the server** when the application server runs.

This option displays when the First steps console is in a stand-alone application server profile.

After selecting the **Start the server** option, an output screen displays with status messages. The success message informs you that the server is open for e-business. Then the menu item toggles to **Stop the server** and both the **Administrative console** option and the **Samples gallery** option enable.

If you select the **Start the server** option, the **Installation verification** option is unavailable while the application server runs.

Administrative console

This option is unavailable until the application server runs.

The administrative console is a configuration editor that runs in one of the supported Web browsers. The administrative console lets you work with XML configuration files for the stand-alone application server .

To launch the administrative console, click **Administrative console** or point your browser to http://localhost:9060/ibm/console. Substitute the host name for localhost if the address does not load. Verify the installation to verify the administrative console port number, if 9060 does not load.

The administrative console prompts for a login name. This is not a security item, but merely a tag to identify configuration changes that you make during the session. Secure signon is also available when administrative security is enabled.

The installation procedure in the information center cautions you to write down the administrative user ID and password when security is enabled during installation. Without the ID and password, you cannot use the administrative console or scripting.

Profile Management tool

This option starts the Profile Management tool. The PMT creates additional stand-alone application server profiles.

Each profile has its own administrative interface.

Each profile also has its own First steps console. The location of the command is within the profile as described later in this topic.

Samples gallery
This option starts the Samples gallery. The option is unavailable until you start the application server. The option displays when you have installed the Samples during installation.

To launch the Samples gallery, click **Samples gallery** or point your browser to http://localhost:9080/WSsamples. The Web address is case sensitive.

Substitute your own host name and default host port number if the address does not load. Verify the port number by opening the administrative console and clicking **Servers > Application servers > server1 > [Communications] Ports**. Use the WC_defaulthost port number value or the WC_defaulthost_secure value instead of 9080, which is the default.

If you do not install the Samples during the initial installation of the product, the option does not display on the First steps console. You can perform an incremental installation to add the Samples feature. After adding the Samples, the option displays on the First steps console.

Information center for WebSphere Application Server
This option links you to the online information center at http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp.

Migration wizard
This option starts the Migration wizard, which is the graphical interface to the migration tools.

The migration tools are described in the *Migrating, coexisting, and interoperating* PDF.

Exit This option closes the First steps console.

Location of the command file

The location of the firststeps command that starts the First steps console for a profile is:

- AIX HP-UX Linux Solaris *profile_root*/firststeps/firststeps.sh
- Windows *profile_root*\firststeps\firststeps.bat

Parameters

No parameters are associated with this command.

Syntax for the firststeps command

Use the following syntax for the command:

- AIX HP-UX Linux Solaris ./firststeps.sh
- Windows firststeps.bat

Link tips

The following links exist on the First steps console for the WebSphere Application Server - Express product:

Option	Link
Installation verification	Calls the ivt command. The location of the installation verification test command is: • AIX HP-UX Linux Solaris *profile_root*/bin/ivt.sh • Windows *profile_root*\bin\ivt.bat
Start the server	Calls the startServer command. The location of the startServer command is: • AIX HP-UX Linux Solaris *profile_root*/bin/startServer.sh server1 • Windows *profile_root*\bin\startServer.bat server1 When you have more than one application server on the same machine, the command starts the same application server that is associated with the First steps console.
Stop the server	Calls the stopServer command. The location of the stopServer command is: • AIX HP-UX Linux Solaris *profile_root*/bin/stopServer.sh server1 • Windows *profile_root*\bin\stopServer.bat server1
Administrative console	Opens the default browser to the http://localhost:9060/ibm/console Web address. When you have more than one application server on the same machine, the port varies. The First steps console starts the administrative console that is associated with the First steps console.
Profile Management tool	The command file name is: • AIX HP-UX Linux Solaris *app_server_root*/bin/ProfileManagement/pmt.sh • Windows *app_server_root*/bin/ProfileManagement/pmt.bat
Samples gallery	Opens the default browser to the http://localhost:9080/WSsamples Web address.
Information center for WebSphere Application Server products	Opens the default browser to the online information center: http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp
Migration wizard	Calls the **migration** command to start the Migration wizard. The location of the **migration** command is: • AIX HP-UX Linux Solaris *app_server_root*/bin/migration.sh • Windows *app_server_root*\bin\migration.bat The migration tools are also in the /migration folder on the supplements disc.

Using the installation verification tools

Use the installation verification tools to verify that the installation of the product and the application server profile is successful. A *profile* consists of files that define the runtime environment for an application server. Verify the core product files with the installver checksum tool. Verify each profile from its First steps console with the IVT tool.

After installing the product, you are ready to use the installation verification tools.

Use the installation verification tools to gain assurance that the product is successfully installed. Two tools exist. This task describes when and how to use to both tools. One tool is the checksum tool (the installver tool). The installver tool compares the checksum of each installed file to the correct checksum value for each file and reports differences. The other tool is the installation verification test (IVT). The IVT tests stand-alone application server profiles to make sure that the server processes can start.

The IVT program scans product log files for errors and verifies core functionality of the product installation.

After installing the product, the Installation wizard displays a prompt for starting the First steps console.

Installation verification is the first option on the First steps console.

The test consists of starting and monitoring the application server during its start up.

1. Run the installver tool to verify that all files are correctly installed.
   See “Verifying checksums of installed files” on page 149 for more information.
2. Use the installation verification test to verify the proper creation of profiles.
   a. Select **Installation verification** on the First steps console after installing the product.
      You can also start the First steps console from the command line as described in “firststeps command” on page 143.
      You can also start the “ivt command” on page 148 directly from the bin directory of the profile:
      - AIX HP-UX Linux Solaris *profile_root*/bin/ivt.sh
      - Windows *profile_root*\bin\ivt.bat

      If you create additional profiles, the ivt script location is within the *plugins_root*/bin directory.
   b. Observe the results in the First steps status window.
      The log file for installation verification is the *profile_root*/logs/ivtClient.log.
      The IVT provides the following useful information about the application server:
      - The application server name
      - The name of the profile
      - The profile file path
      - The type of profile
      - The node name
      - The current encoding
      - The port number for the administrative console
      - Various informational messages that include the location of the SystemOut.log file and how many errors are listed within the file
      - A completion message

      As the IVT starts the application server on a Windows platform, the IVT attempts to start the Windows service for the application server, if a Windows service exists. This is true even though the Windows service might have a manual startup type.

c. If the log shows that errors occurred during the installation verification, correct the errors and run the IVT again. If necessary, create a new profile after correcting the error, and run the IVT on the new profile.

The installver tool validates the integrity of all installed files.

The IVT tool starts the server process of a profile automatically if the server is not running. Once the server initializes, the IVT runs a series of verification tests. The tool displays pass or fail status in a console window. The tool also logs results to the *plugins_root*/logs/ivtClient.log file. As the IVT verifies your system, the tool reports any detectable errors in the SystemOut.log file.

After installing the product and verifying the installation, you can configure the installation by creating more profiles.

You can also install other packages on the product installation image, such as IBM HTTP server, the Web server plug-ins, or the Application Client.

ivt command

The ivt command starts the installation verification test (IVT) program. The IVT verifies that the installation of the application server profile was successful. A *profile* consists of files that define the runtime environment for an application server. Each profile has its own IVT command.

The IVT program starts the application server automatically if the server process is not already running. After the server process initializes, the IVT runs a series of verification tests and displays pass or fail status in a console window.

The IVT program scans the SystemOut.log file for errors and verifies core functionality of the profile.

You can start the IVT program from the command line or from the First steps console.

Location of the command file

The location of the installation verification test script for a profile is the *profile_root*/bin directory. The script file name is:

- AIX HP-UX Linux Solaris ivt.sh
- Windows ivt.bat

Parameters

The following parameters are associated with this command.

server_name
Required parameter that identifies the name of the server process, such as server1.

profile_name
Required parameter that identifies the name of the profile that contains the server definition.

-p *server_port_number*
Optional parameter that identifies the default_host port when the port is not 9080, which is the default.

-host *machine_host_name*
Optional parameter that identifies the host machine of the profile to test. The default is localhost.

Syntax for the ivt command

Use the following syntax for the command:

- AIX HP-UX Linux Solaris *profile_root*/bin/ivt.sh
- Windows *profile_root*\bin\ivt.bat

Logging

The ivt command logs results to the *profile_root*/logs/ivtClient.log file.

Example

The following examples test the server1 process in the profile01 profile on the myhost machine using the default_host on port 9081.

AIX HP-UX Linux Solaris

```
ivt.sh server1 profile01 -p 9081 -host myhost
```

Windows

```
ivt.bat server1 profile01 -p 9081 -host myhost
```

Verifying checksums of installed files

After installing the product or after installing maintenance packages, you can use the installation verification utility (IVU) to compute checksums of the installed file set to verify the checksum against the checksum in the product bill of materials.

Installing the product also installs the IVU, which is the installver command-line tool.

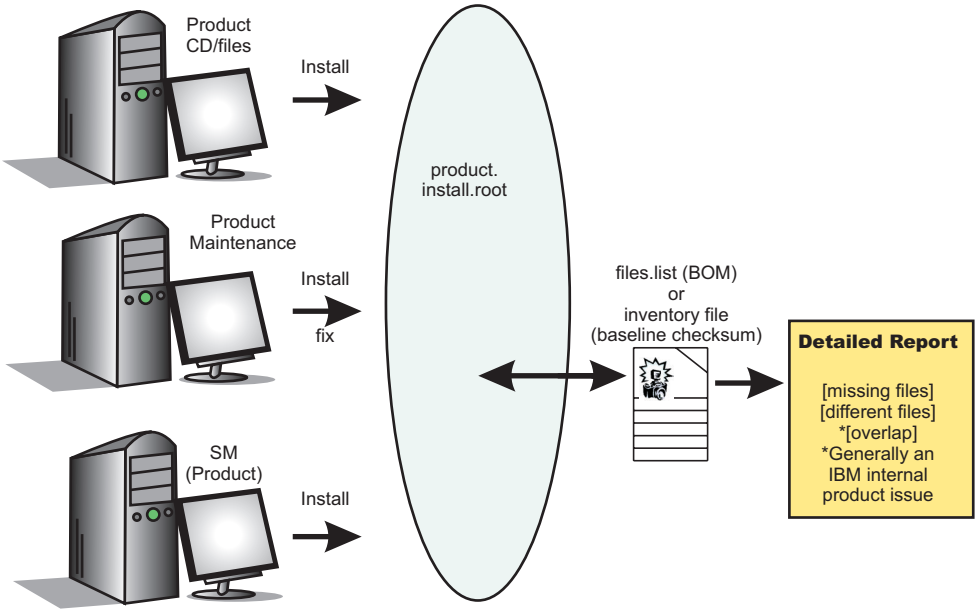
This topic describes using the **installver** command to compute a checksum on the installed files and compare the checksum to the product bill of materials.

The IVU tool is installed during the installation of the following product components:

- WebSphere Application Server - Express
- Application Client
- IBM HTTP Server
- Web server plug-ins
- Update Installer for WebSphere Application Server

You can also use the IVU to compute a new checksum for a system after you make significant configuration changes. The installver tool computes a new baseline checksum for each file in the inventory of a configured system to use to identify file changes in the later comparisons. Such a comparison is useful for detecting file tampering on the configured system, for example.

You can use the new checksums to compare installations on multiple systems. The following graphic illustrates the main use-cases where you can perform product verification at any point of the product life-cycle or use the inventory file, which is part of the baseline checksum feature, to provide full-file verification of a configured system.



Although the most common use of the tool is to compare the product bill of materials to the installed file set after installation or after installing maintenance, other tasks are also possible.

- Verify the installed files against the bill of materials.

  See “Verifying against the bill of materials” on page 151 for more information.
- Create and use a new baseline checksum.

  See “Computing a new baseline checksum for an inventory of configured files” on page 154 for more information.
- Exclude files and components from the comparison.

  See “Excluding files from a checksum comparison” on page 156 for more information.
- Include only specific files and components in the comparison.

  See “Comparing specific file and component checksums” on page 159 for more information.
- Change the default message digest algorithm for computing checksums.

  See “Changing the default message digest algorithm” on page 162 for more information.
- Handle out-of-memory conditions.

  See “Handling out-of-memory situations” on page 162 for more information.
- Verify the installver command files.

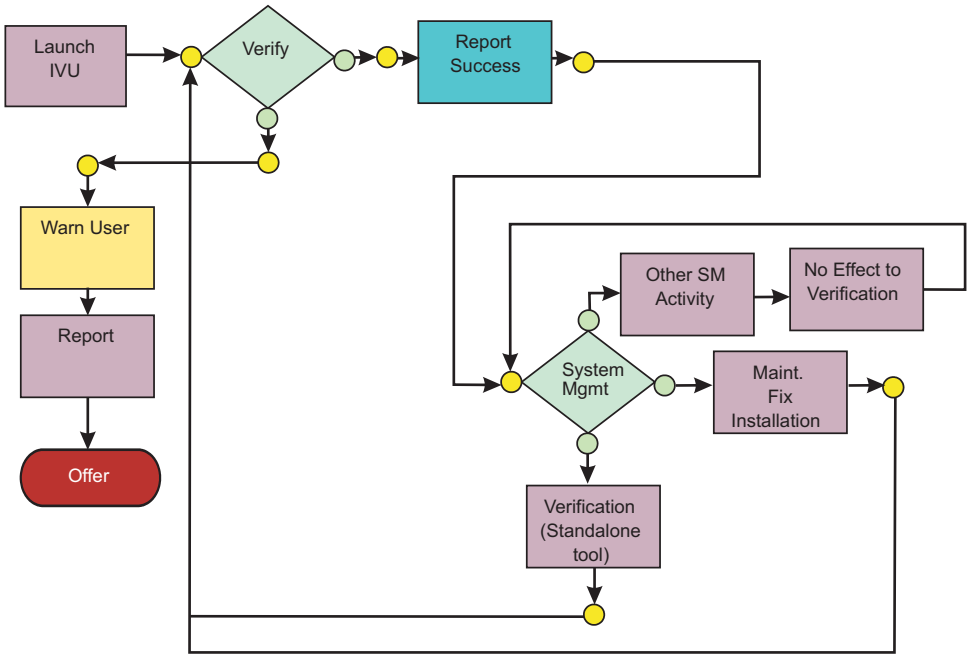
  See “Verifying the installver command” on page 163 for more information.

When you are satisfied that your installed or updated file set matches the product bill of materials, you are finished installing and verifying the product or updating and verifying the product.

IBM Support has documents and tools that can save you time gathering information needed to resolve problems. If you detect a problem, before opening a problem report see if the problem is a known problem by checking the Support page:

- http://www.ibm.com/software/webservers/appserv/was/support/

The IVU performs the tasks using the logic described in the following graphic:



Verifying against the bill of materials

After installation, verify actual checksums of installed files against a bill of materials that ships with the product. If the checksums match, the installed product is installed correctly. If the checksums differ, review the differences to determine whether a problem exists.

Install the product before attempting to compare checksums of the installed files to the shipped bill of materials.

This topic describes using the installver command to compare a set of bill-of-material files against a checksum of the installed files to verify that all installed files are correct. The product includes a bill-of-materials file for each component to provide this system of verifying installation files.

The installver tool dynamically generates a list of total components found in the installation.

- Check the bill of materials against the installed file system.

  Compare the checksum of product files to the correct checksum in the bill-of-material files:

  – AIX HP-UX Linux Solaris *app_server_root*/bin/installver.sh

  – Windows *app_server_root*\bin\installver.bat
- Compare checksums and display trace results:

  – AIX HP-UX Linux Solaris `./installver.sh -trace`

  – Windows `installver.bat -trace`
- Display usage information:

  – AIX HP-UX Linux Solaris `./installver.sh -help`

  – Windows `installver.bat -help`
- Compare checksums and include only specified files and components in the comparison:

  See “Comparing specific file and component checksums” on page 159 for more information about comparing only files and components that you list in the command.
- Compare checksums and ignore user-excluded files:

See “Excluding files from a checksum comparison” on page 156 for information about creating a list of user-excluded files.

Ignore the list of files to exclude and include the files in the comparison:

– AIX HP-UX Linux Solaris `./installver.sh -ignoreuserexclude`

– Windows `installver.bat -ignoreuserexclude`

- Compare checksums and ignore IBM-excluded files:

  Ignore the list of IBM-excluded files and include the files in the comparison:

  – AIX HP-UX Linux Solaris `./installver.sh -ignoreibmexclude`

  – Windows `installver.bat -ignoreibmexclude`

When you issue one of the checksum commands from the *app_server_root*/bin directory, the status of the command is displayed on the terminal console.

Logging results: The installver tool creates messages for each component. The tool also reports overall success based on the verification of all components in the bill of materials. The following messages indicate completion:

- I CWNVU0400I: [ivu] Total issues found : 625
- I CWNVU0340I: [ivu] Done.

The messages report the total number of issues found. If the issue count is zero, all of the components exist and no problems exist. The tool logs the results of the command to the *app_server_root*/logs/installver.log file if you use the -log parameter without specifying a file name for the log.

You can redirect the output using the -log parameter and an argument. The directory that you specify must already exist. For example:

```
./installver.sh -log /tmp/waslogs/my_installver.log
```

The following command produces this example, which shows the results of comparing the installed product against the product bill of materials.

- AIX HP-UX Linux Solaris `./installver.sh`
- Windows `installver.bat`

Example output from components with errors

This example shows errors that the comparison finds.

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\Program Files\eclipse\eclipse3.x\workspace\
  WAS.installver\test\v6x\product.installroot\
I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 0.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\backup for file listing:
  files.list
I CWNVU0260I: [ivu] The total number of components found is: 6
I CWNVU0270I: [ivu] Gathering installation root data.
W CWNVU0280W: [ivu] Component mismatch: expected mismatchcomponentname
  but found mismatchingname
I CWNVU0360I: [ivu] The following bill of materials issue is found for component
  nullvaluesample: Hash must not be null or an empty string.
I CWNVU0360I: [ivu] The following bill of materials issue is found for component
  nullvaluesample: Name must not be null or an empty string.
I CWNVU0360I: [ivu] The following bill of materials issue is found for component
  nullvaluesample: Hash must not be null or an empty string.
I CWNVU0360I: [ivu] The following bill of materials issue is found for component
  nullvaluesample: Permission must not be null or an empty string.
I CWNVU0360I: [ivu] The following bill of materials issue is found for component
```

```
  symlinksample: Hash must not be null or an empty string.
I CWNVU0290I: [ivu] Starting the verification for 6 components.

I CWNVU0470I: [ivu] Starting to analyze: _binarycomponentsample
I CWNVU0480I: [ivu] Done analyzing: _binarycomponentsample

I CWNVU0470I: [ivu] Starting to analyze: nullvaluesample
I CWNVU0430I: [ivu] The following file is missing: testpath
I CWNVU0390I: [ivu] Component issues found : 1
I CWNVU0480I: [ivu] Done analyzing: nullvaluesample

I CWNVU0470I: [ivu] Starting to analyze: overlapbinarycomponentsample
W CWNVU0422W: [ivu] The following file is overlapped: lib/binaryTest.jar
W CWNVU0425W: [ivu] The overlap is caused by: _binarycomponentsample
I CWNVU0390I: [ivu] Component issues found : 1
I CWNVU0480I: [ivu] Done analyzing: overlapbinarycomponentsample

I CWNVU0470I: [ivu] Starting to analyze: regularcomponentsample
I CWNVU0440I: [ivu] The following file is different: lib/different.jar
I CWNVU0410I: [ivu] fc19318dd13128ce14344d066510a982269c241b
                                  is the checksum in the bill of materials.
I CWNVU0420I: [ivu] 517d5a7240861ec297fa07542a7bf7470bb604fe
                                  is the checksum on the file system.
I CWNVU0440I: [ivu] The following file is different: lib/ibmtemplateexclude.jar
I CWNVU0410I: [ivu] d3ac7a4ef1a8ffb4134f2f6e7f3c0d249d74b674
                                  is the checksum in the bill of materials.
I CWNVU0420I: [ivu] d3ac7a4ef1a838b4134f2f6e7f3c0d249d74b674
                                  is the checksum on the file system.
I CWNVU0430I: [ivu] The following file is missing: lib/missing.jar
I CWNVU0440I: [ivu] The following file is different: lib/usertemplateexclude.jar
I CWNVU0410I: [ivu] 12dea96fec20593566ab75ff2c9949596833adc9
                                  is the checksum in the bill of materials.
I CWNVU0420I: [ivu] 12dea96fec20593566ab75692c9949596833adc9
                                  is the checksum on the file system.
I CWNVU0430I: [ivu] The following file is missing:
                        missingfilebutwithbaddirectory/missingBadDirectory.jar
I CWNVU0390I: [ivu] Component issues found : 5
I CWNVU0480I: [ivu] Done analyzing: regularcomponentsample

I CWNVU0470I: [ivu] Starting to analyze: symlinksample
I CWNVU0480I: [ivu] Done analyzing: symlinksample

I CWNVU0400I: [ivu] Total issues found : 7
I CWNVU0340I: [ivu] Done.
```

Example output from a typical successful installation

This example shows typical results from checking a successful installation.

You can safely ignore issues from the prereq.wccm component. These known issues do not cause overall system issues.

Carefully examine an issue before assuming that the issue is a problem.

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\WebSphere\V6x-ND\
I CWNVU0300I: [ivu] The total number of user excluded files found are 1.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 75.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\backup
                    for file listing: files.list
I CWNVU0260I: [ivu] The total number of components found is: 285
I CWNVU0270I: [ivu] Gathering installation root data.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0290I: [ivu] Starting the verification for 285 components.
```

```
I CWNVU0470I: [ivu] Starting to analyze: activity
I CWNVU0480I: [ivu] Done analyzing: activity

I CWNVU0470I: [ivu] Starting to analyze: activity.impl
I CWNVU0480I: [ivu] Done analyzing: activity.impl

I CWNVU0470I: [ivu] Starting to analyze: activity.session
I CWNVU0480I: [ivu] Done analyzing: activity.session

I CWNVU0470I: [ivu] Starting to analyze: activity.session.impl
I CWNVU0480I: [ivu] Done analyzing: activity.session.impl

I CWNVU0470I: [ivu] Starting to analyze: acwa
I CWNVU0480I: [ivu] Done analyzing: acwa

I CWNVU0470I: [ivu] Starting to analyze: adapter
I CWNVU0480I: [ivu] Done analyzing: adapter
...
I CWNVU0470I: [ivu] Starting to analyze: prereq.wccm
I CWNVU0430I: [ivu] The following file is missing: web/configDocs/activitysessionejbext/
  ActivitySessionEJBJarExtension.html
I CWNVU0430I: [ivu] The following file is missing: web/configDocs/activitysessionejbext/
  ActivitySessionEnterpriseBeanExtension.html
I CWNVU0430I: [ivu] The following file is missing: web/configDocs/activitysessionejbext/
  ContainerActivitySession.html
I CWNVU0430I: [ivu] The following file is missing: web/configDocs/activitysessionejbext/
  classes-frame.html
I CWNVU0430I: [ivu] The following file is missing: web/configDocs/activitysessionservice/
  ActivitySessionService.html

...
I CWNVU0430I: [ivu] The following file is missing: web/configDocs/wssecurity/consumer-binding.html
I CWNVU0430I: [ivu] The following file is missing: web/configDocs/wssecurity/default-bindings.html
I CWNVU0430I: [ivu] The following file is missing: web/configDocs/wssecurity/generator-binding.html
I CWNVU0390I: [ivu] Component issues found : 625
I CWNVU0480I: [ivu] Done analyzing: prereq.wccm

I CWNVU0470I: [ivu] Starting to analyze: prereq.webtlsrn
I CWNVU0480I: [ivu] Done analyzing: prereq.webtlsrn

I CWNVU0470I: [ivu] Starting to analyze: prereq.wsadie
I CWNVU0480I: [ivu] Done analyzing: prereq.wsadie

...
I CWNVU0470I: [ivu] Starting to analyze: wsexception
I CWNVU0480I: [ivu] Done analyzing: wsexception

I CWNVU0470I: [ivu] Starting to analyze: wsif
I CWNVU0480I: [ivu] Done analyzing: wsif

I CWNVU0400I: [ivu] Total issues found : 627
I CWNVU0340I: [ivu] Done.
```

See the description of the “installver command” on page 164 for explanations of each parameter.

Go to “Computing a new baseline checksum for an inventory of configured files” to learn more about the installver command.

Computing a new baseline checksum for an inventory of configured files

After installation, you can verify the actual checksums of installed files against a bill of materials that ships with the product. After configuring your system, create a new checksum so that you can compare the system periodically to the new checksum. Use the result to analyze changes to your configured system.

After configuring the product, save a new baseline checksum to establish a new checksum standard for your system.

This topic describes using the installver command to create and compare an inventory of configured files to the currently installed files.

The installver tool can compute a new baseline checksum for the inventory of all files in the installation root directory. The tool stores the new checksum by default in the sys.inv file within the current working directory. You can specify a different file path and file name. Create the file outside of the installation root directory or exclude the file from comparisons.

Later, compare the checksums in the sys.inv file (or the file that you specified when creating the inventory) to the checksums of the currently installed files to see what files have changed.

The baseline checksum report identifies missing files, additional files, and changed files.

- Create an inventory list of the files that are currently installed in the installation root directory:
  - AIX HP-UX Linux Solaris `./installver.sh -createinventory`
  - Windows `installver.bat -createinventory`

  For example, the following messages might display on a Windows system when you issue the `installver.bat -createinventory` command to create the default *app_server_root*\bin\sys.inv file:

```
W CWNVU0320W: [ivu] The
C:\IBM\WebSphere\AppServerV602\bin\sys.inv
inventory file is within the product installation root directory:
C:\IBM\WebSphere\AppServerV602.

Create the file outside of the installation root directory to omit the file from the verification.
I CWNVU0300I: [ivu] The total number of user excluded files found are 2.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
I CWNVU0310I: [ivu] Creating the following inventory file:
C:\IBM\WebSphere\AppServerV602\bin\sys.inv
I CWNVU0460I: [ivu] The utility is running.
```

  When it finishes running, a completion message is displayed:

```
 I CWNVU0340I: [ivu] Done.
```

  The sys.inv contains the new inventory:

```
#C:\IBM\WebSphere\AppServer\
#2005.10.10_06.24.06PM_EDT
#user_ID
#-createinventory -log
241fe4e309abfd8f2c5911216dbabd61dd4751a6
   |_jvm\bin\appletviewer.exe
   |42032
   |2004.10.28 05.37.02AM EDT
e00c6ea688ab67e004ec6cfac26ec48541a5b9ff
   |_jvm\bin\dbghelp.dll
   |712192
   |2004.10.28 05.36.50AM EDT
916e244deeb44b9d3218aafa3b56c8680aa31f2f
   |_jvm\bin\extcheck.exe
   |42040
   |2004.10.28 05.37.02AM EDT
...
7fc3bb38e8b90fed05cd0440953000c2cc965b44
   |web\spidocs\stylesheet.css
   |1240
   |2005.10.09 12.14.17AM EDT
22706a0d900c52f1c015c870ddeee25581c5d57b
   |web\spidocs\toHTML\index.html
   |867
   |2005.10.09 12.14.17AM EDT
```

- Create the inventory file in a directory outside of the installation root directory to exclude the inventory file from the comparison.

  - AIX HP-UX Linux Solaris `./installver.sh -createinventory /tmp/system.inv`
  - Windows `installver.bat -createinventory "C:\temp\system.inv"`
- Compare the inventory list to files that are currently installed in the installation root directory:
  - AIX HP-UX Linux Solaris `./installver.sh -compare`
  - Windows `installver.bat -compare`

  If you created the inventory file somewhere other than the default location, use the following syntax:
  - AIX HP-UX Linux Solaris `./installver.sh -compare /tmp/system.inv`
  - Windows `installver.bat -compare "C:\temp\system.inv"`
- Compare and display trace results:
  - AIX HP-UX Linux Solaris `./installver.sh -compare -trace`
  - Windows `installver.bat -compare -trace`
- Compare and exclude specified files from the inventory comparison:
  - AIX HP-UX Linux Solaris `./installver.sh -compare -exclude fn1;fn2;fn3;...`
  - Windows `installver.bat -compare -exclude fn1;fn2;fn3;...`
- Compare and include only specified files in the inventory comparison:
  - AIX HP-UX Linux Solaris `./installver.sh -compare -include fn1;fn2;fn3;...`
  - Windows `installver.bat -compare -include fn1;fn2;fn3;...`

When you issue an installver commands from the *app_server_root*/bin directory, the status of the command is displayed on the terminal console. To create a log, use the -log parameter.

See the description of the “installver command” on page 164 for explanations of each parameter.

Go to “Excluding files from a checksum comparison” to learn more about the installver command.

Excluding files from a checksum comparison

Specify individual files to exclude from a comparison, specify individual components to exclude, or create a single configurable properties file to specify a list of files to exclude from the bill of materials verification.

Install the product before comparing checksums and using exclusion properties.

This topic describes how to use exclusion properties.

By default, IBM excludes some files from the checksum comparison. You can also exclude files. The number of files excluded is reported within the first few messages:

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\IBM\WebSphere\AppServerV602\
I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\
                    backup for file listing: files.list
I CWNVU0260I: [ivu] The total number of components found is: 285
I CWNVU0270I: [ivu] Gathering installation root data.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0290I: [ivu] Starting the verification for 285 components.

I CWNVU0470I: [ivu] Starting to analyze: activity
I CWNVU0480I: [ivu] Done analyzing: activity

...
```

Several different methods are provided to exclude files from the comparison.

- Compare checksums and exclude all of the files within one or more components from the comparison:
  - AIX HP-UX Linux Solaris `./installver.sh -excludecomponent` *comp1;comp2;comp3;...*
  - Windows `installver.bat -excludecomponent` *comp1;comp2;comp3;...*
  - Windows `installver -excludecomponent` *comp1;comp2;comp3;...*

  For example, you might exclude the prereq.wccm component to avoid known but acceptable issues in the component:

  ```
  ./installver.sh -log -excludecomponent prereq.wccm
  ```

  The resulting messages show the exclusion:

  ```
  I CWNVU0160I: [ivu] Verifying.
  I CWNVU0170I: [ivu] The installation root directory is /opt/IBM/WebSphere/AppServerV602/
  I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
  I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
  I CWNVU0180I: [ivu] Searching directory properties/version/install/6.0.0.0/
                      backup for file listing: files.list
  I CWNVU0260I: [ivu] The total number of components found is: 285
  I CWNVU0270I: [ivu] Gathering installation root data.
  I CWNVU0460I: [ivu] The utility is running.
  I CWNVU0290I: [ivu] Starting the verification for 284 components.
  ...
  I CWNVU0400I: [ivu] Total issues found : 0
  I CWNVU0340I: [ivu] Done.
  ```

- Exclude certain files from the comparison:
  - AIX HP-UX Linux Solaris *app_server_root*`/bin/installver.sh -exclude` *fn1;fn2;fn3*
  - Windows *app_server_root*`\bin\installver.bat -exclude` *fn1;fn2;fn3*

  For example, suppose that you include only the prereq.wccm component for comparison:

  ```
  installver.bat -log -includecomponent prereq.wccm
  ```

  The comparison shows all of the missing file issues in the component:

  ```
  I CWNVU0160I: [ivu] Verifying.
  I CWNVU0170I: [ivu] The installation root directory is C:\IBM\WebSphere\AppServerV602\
  I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
  I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
  I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\
                      backup for file listing: files.list
  I CWNVU0260I: [ivu] The total number of components found is: 285
  I CWNVU0270I: [ivu] Gathering installation root data.
  I CWNVU0460I: [ivu] The utility is running.
  I CWNVU0290I: [ivu] Starting the verification for 1 components.

  I CWNVU0470I: [ivu] Starting to analyze: prereq.wccm
  I CWNVU0430I: [ivu] The following file is missing:
  web/configDocs/activitysessionejbext/ActivitySessionEJBJarExtension.html
  I CWNVU0430I: [ivu] The following file is missing:
  web/configDocs/activitysessionejbext/ActivitySessionEnterpriseBeanExtension.html
  I CWNVU0430I: [ivu] The following file is missing:
  web/configDocs/activitysessionejbext/ContainerActivitySession.html
  ...
  I CWNVU0390I: [ivu] Component issues found : 625
  I CWNVU0480I: [ivu] Done analyzing: prereq.wccm

  I CWNVU0400I: [ivu] Total issues found : 625
  I CWNVU0340I: [ivu] Done.
  ```

  You can exclude files. For example, exclude the highlighted files in the previous example:

```
installver -log -includecomponent prereq.wccm
 -exclude web/configDocs/activitysessionejbext/
ActivitySessionEJBJarExtension.html;web\configDocs\activitysessionejbext\
ActivitySessionEnterpriseBeanExtension.html
```

Tip: Use slashes to delimit directories.

The result shows that the excluded files were not compared:

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\IBM\WebSphere\AppServerV602\
I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\
                    backup for file listing: files.list
I CWNVU0260I: [ivu] The total number of components found is: 285
I CWNVU0270I: [ivu] Gathering installation root data.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0290I: [ivu] Starting the verification for 1 components.

I CWNVU0470I: [ivu] Starting to analyze: prereq.wccm
I CWNVU0430I: [ivu] The following file is missing:
web/configDocs/activitysessionejbext/ContainerActivitySession.html
...
I CWNVU0390I: [ivu] Component issues found : 623
I CWNVU0480I: [ivu] Done analyzing: prereq.wccm

I CWNVU0400I: [ivu] Total issues found : 623
I CWNVU0340I: [ivu] Done.
```

If the two files were in the comparison, they would be in the list and the count would be 625, as in the previous example.

Tip: The highlighted line in the example is reserved for excluded files listed in the user template file, as described in the next step. The highlighted line does not count files that you list in the installver command line with the -exclude parameter.

- Compare checksums and exclude certain files from the comparison by creating and using a user template file:

  A single user configurable properties file is available to specify a list of files to exclude from the bill of materials verification.

  1. Create an empty template file.

     – AIX HP-UX Linux Solaris *app_server_root*/bin/installver.sh -createtemplate *template_name*

     – Windows *app_server_root*\bin\installver.bat -createtemplate *template_name*

     For example, create the default user template file on a Windows system:

     ```
     installver -createtemplate
     I CWNVU0200I: [ivu] Creating template:
     C:\IBM\WebSphere\AppServerV602\profiles\
     Dmgr01\properties\ivu_user.template
     I CWNVU0340I: [ivu] Done.
     ```

     The ivu_user.template file is created in the properties directory of the default profile.

     The -template_name parameter is optional. However, a template file must reside in the properties directory of the default profile, such as the *app_server_root* directory.

  2. List files to exclude in the templates file.

     The properties file has the following format:

     ```
     <template>
      <componentfiles componentname="name_of_component">
        <file>
     ```

```
     <relativepath action="exclude">file_name</relativepath>
   </file>
 </componentfiles>
</template>
```

For example, list the component and files from the previous example:

```
<template>
 <componentfiles componentname="prereq.wccm">
  <file>
   <relativepath action="exclude">
web/configDocs/activitysessionejbext/ActivitySessionEnterpriseBeanExtension.html
   </relativepath>
  </file>
  <file>
   <relativepath action="exclude">
web/configDocs/activitysessionejbext/ActivitySessionEJBJarExtension.html
   </relativepath>
  </file>
 </componentfiles>
</template>
```

Tip: Do not use quotation marks or double quotation marks to delimit a file name.

3. Use the template file to exclude files from the comparison:

```
installver -log
```

If the ivu_user.template file exists in the properties directory of the default profile, the installver command uses it.

The result shows that some user files are excluded:

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\IBM\WebSphere\AppServerV602\
I CWNVU0300I: [ivu] The total number of user excluded files found are 2.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\
                    backup for file listing: files.list
I CWNVU0260I: [ivu] The total number of components found is: 285
I CWNVU0270I: [ivu] Gathering installation root data.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0290I: [ivu] Starting the verification for 1 components.

I CWNVU0470I: [ivu] Starting to analyze: prereq.wccm
I CWNVU0430I: [ivu] The following file is missing:
web/configDocs/activitysessionejbext/ContainerActivitySession.html

...
I CWNVU0430I: [ivu] The following file is missing:
web/configDocs/wssecurity/generator-binding.html
I CWNVU0390I: [ivu] Component issues found : 623
I CWNVU0480I: [ivu] Done analyzing: prereq.wccm

I CWNVU0400I: [ivu] Total issues found : 623
I CWNVU0340I: [ivu] Done.
```

When you issue one of the checksum commands from the *app_server_root*/bin directory, the status of the command is displayed on the terminal console or in a log file.

Go to “Comparing specific file and component checksums” to learn more about the installver command.

Comparing specific file and component checksums

Specify individual files or components to include in the bill of materials verification.

Install the product before comparing checksums of individual files and components.

This topic describes how to use inclusion properties to specify individual files and components.

By default, IBM includes all files in the checksum comparison except for the 78 IBM excluded files.

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\IBM\WebSphere\AppServerV602\
I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\
                    backup for file listing: files.list
I CWNVU0260I: [ivu] The total number of components found is: 285
I CWNVU0270I: [ivu] Gathering installation root data.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0290I: [ivu] Starting the verification for 285 components.

I CWNVU0470I: [ivu] Starting to analyze: activity
I CWNVU0480I: [ivu] Done analyzing: activity

...
```

Several different methods are provided to include only certain files in the comparison.

- Compare checksums and include specified components only in the comparison:
  - AIX HP-UX Linux Solaris `./installver.sh -includecomponent` *comp1;comp2;comp3;...*
  - Windows `installver.bat -includecomponent` *comp1;comp2;comp3;...*

  For example, you might include the activity component:
  - AIX HP-UX Linux Solaris `./installver.sh -log -includecomponent activity`
  - Windows `installver.bat -log -includecomponent activity`

  The resulting messages show the inclusion:

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\IBM\WebSphere\AppServerV602\
I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\
                    backup for file listing: files.list
I CWNVU0260I: [ivu] The total number of components found is: 285
I CWNVU0270I: [ivu] Gathering installation root data.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0290I: [ivu] Starting the verification for 1 components.

I CWNVU0470I: [ivu] Starting to analyze: activity
I CWNVU0480I: [ivu] Done analyzing: activity

I CWNVU0400I: [ivu] Total issues found : 0
I CWNVU0340I: [ivu] Done.
```

- Include only certain files in the comparison:
  - AIX HP-UX Linux Solaris *app_server_root*`/bin/installver.sh -include` *fn1;fn2;fn3*
  - Windows *app_server_root*`\bin\installver.bat -include` *fn1;fn2;fn3*

  For example, you might include only the properties/version/proxy.server.component file, which was changed to generate the checksum difference in this example.

```
installver.bat -log
 -include properties/version/proxy.server.component
```

  The result shows that the included file was in the comparison, which scanned 285 components looking for all components that refer to the file:

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\IBM\WebSphere\AppServerV602\
I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\
                    backup for file listing: files.list
I CWNVU0260I: [ivu] The total number of components found is: 285
I CWNVU0270I: [ivu] Gathering installation root data.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0290I: [ivu] Starting the verification for 285 components.

I CWNVU0470I: [ivu] Starting to analyze: activity
I CWNVU0480I: [ivu] Done analyzing: activity
...
I CWNVU0470I: [ivu] Starting to analyze: proxy.server
I CWNVU0440I: [ivu] The following file is different: properties/version/
                    proxy.server.component
I CWNVU0410I: [ivu] f385fc95977092e0482d52f9d1d5bebbc39fbb10 is the checksum
                    in the bill of materials.
I CWNVU0420I: [ivu] b43bda7f1e7202d1f9495fc74ac14b8d85830aab is the checksum
                    on the file system.
I CWNVU0390I: [ivu] Component issues found : 1
I CWNVU0480I: [ivu] Done analyzing: proxy.server
...
I CWNVU0400I: [ivu] Total issues found : 1
I CWNVU0340I: [ivu] Done.
```

If you know that a file is in only one component, you can speed up the comparison by restricting the comparison of the file to the relevant component:

```
installver.bat -log -includecomponent proxy.server -include properties/version/
   proxy.server.component
```

The result shows the comparison was restricted to one component:

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\IBM\WebSphere\AppServerV602\
I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 78.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\
                    backup for file listing: files.list
I CWNVU0260I: [ivu] The total number of components found is: 285
I CWNVU0270I: [ivu] Gathering installation root data.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0290I: [ivu] Starting the verification for 1 components.

I CWNVU0470I: [ivu] Starting to analyze: proxy.server
I CWNVU0440I: [ivu] The following file is different: properties/version/
                    proxy.server.component
I CWNVU0410I: [ivu] f385fc95977092e0482d52f9d1d5bebbc39fbb10 is the checksum
                    in the bill of materials.
I CWNVU0420I: [ivu] b43bda7f1e7202d1f9495fc74ac14b8d85830aab is the checksum
                    on the file system.
I CWNVU0390I: [ivu] Component issues found : 1
I CWNVU0480I: [ivu] Done analyzing: proxy.server

I CWNVU0400I: [ivu] Total issues found : 1
I CWNVU0340I: [ivu] Done.
```

When you issue one of the checksum commands from the *app_server_root*/bin directory, the status of the command is displayed on the terminal console or in a log file.

Go to “Changing the default message digest algorithm” on page 162 to learn more about the installver command.

Changing the default message digest algorithm

Change the default message digest algorithm from SHA to MD5 only if absolutely necessary. Edit the installver.bat file or the installver.sh file to make the change. Changing the algorithm invalidates the SHA-based checksums in the product bill of materials. For this reason, verify the product files before changing the message digest algorithm.

Install the product before attempting to change the default message digest algorithm from SHA to MD5.

The default message digest algorithm is one of the secure hash algorithms (SHA) that are part of the Secure Hash Standard (SHS) from the National Institute of Standards and Technology (NIST). See the Federal Information Processing Standards (FIPS) publication 180-2 for more information. SHA-1 is the standard hash function of the U.S. government.

Also available is the older MD5 message digest algorithm. MD5 is a deprecated type of message algorithm that is not as secure as SHA and is provided only for backward compatibility.

This topic describes changing the default message digest algorithm. You must edit the installver.bat file or the installver.sh file to change the algorithm.

Add the following environmental property to the script file:

```
-Dchecksum.type=MD5
```

The default value is:

```
-Dchecksum.type=SHA
```

Go to “Handling out-of-memory situations” to learn more about the installver command.

Handling out-of-memory situations

Memory requirements for using the installver command are related to the size of the installed file set for the product. For the basic verification scenario, comparing an installed file set with the provided bill of materials might require a maximum heap size of 128 MB to 256 MB.

Install the product at the Version 6.0.2 level or later to install the installver command tool. After installing the command, you can increase the maximum heap size setting.

If you need more memory for either a product verification or a baseline checksum verification, increase the maximum heap size setting for your Java virtual machine (JVM) by including a setting in the installver command script.

- Edit the installver command script:
  - AIX HP-UX Linux Solaris Edit the *app_server_root*/bin/installver.sh file.
  - Windows Edit the *app_server_root*\bin\installver.bat file.
- Add or increase the maximum heap size setting:
  - AIX HP-UX Linux Solaris Change the following line:

    ```
    "$JAVA_HOME"/bin/java \
    ```

    to:

    ```
    "$JAVA_HOME"/bin/java -Xmx256M \
    ```
  - Windows Change the following line:

    ```
    "%JAVA_HOME%\bin\java" "-Dproduct.home=%WAS_HOME%"
    ```

    to:

    ```
     "%JAVA_HOME%\bin\java" -Xmx256M "-Dproduct.home=%WAS_HOME%"
    ```

After you change the setting, run the installver command to verify that it works correctly.

Go to “Verifying the installver command” to learn more about the installver command.

Verifying the installver command

Use the verifyinstallver command to perform a checksum on the files that comprise the installver command.

Install the product at the Version 6.0.2 level or later before attempting to verify the checksums of the files that comprise the installver command.

This topic describes using the verifyinstallver command to compute a checksum on the installed files that comprise the installver command. Verifying the checksums of the command files ensures that the command can function properly.

1. Change directories to the bin directory in *app_server_root*.
   - AIX HP-UX Linux Solaris `cd app_server_root/bin`
   - Windows `cd app_server_root\bin`
2. Start the verifyinstallver command script from the command line.
   - AIX HP-UX Linux Solaris `./verifyinstallver.sh`
   - Windows `verifyinstallver.bat`

   You can use the -trace parameter to show verbose results. You can use the -help parameter to see usage information.

If the command successfully verifies the installver files, you see messages that are similar to the following example:

```
I CWNVU0160I: [ivu] Verifying.
I CWNVU0170I: [ivu] The installation root directory is C:\WebSphere\V6X-ND\
I CWNVU0300I: [ivu] The total number of user excluded files found are 0.
I CWNVU0300I: [ivu] The total number of IBM excluded files found are 75.
I CWNVU0180I: [ivu] Searching directory properties\version\install\6.0.0.0\backup for file listing:
 files.list
I CWNVU0260I: [ivu] The total number of components found is: 285
I CWNVU0270I: [ivu] Gathering installation root data.
I CWNVU0460I: [ivu] The utility is running.
I CWNVU0290I: [ivu] Starting the verification for 1 components.

I CWNVU0470I: [ivu] Starting to analyze: installver
I CWNVU0480I: [ivu] Done analyzing: installver

I CWNVU0400I: [ivu] Total issues found : 0
I CWNVU0340I: [ivu] Done.
```

Go to the description of the “verifyinstallver command” to learn more.

verifyinstallver command

The verifyinstallver command is a verification program that performs a checksum on the files that comprise the installver command.

Purpose

This topic describes the command-line syntax for the verifyinstallver command. Start the verifyinstallver command script from the command line. This topic describes how to locate the command and use it to verify that the installver command is valid.

Use the following syntax for the command to automatically check the bill of materials against the installed file system:

- AIX HP-UX Linux Solaris *app_server_root*/bin/verifyinstallver.sh
- Windows *app_server_root*\bin\verifyinstallver.bat

Display verbose results:

AIX HP-UX Linux Solaris

```
verifyinstallver.sh -trace
```

Windows

```
verifyinstallver.bat -trace
```

Display usage information:

AIX HP-UX Linux Solaris

```
verifyinstallver.sh -help
```

Windows

```
verifyinstallver.bat -help
```

The location of the verification program for installver command is:

- AIX HP-UX Linux Solaris *app_server_root*/bin/verifyinstallver.sh
- Windows *app_server_root*\bin\verifyinstallver.bat

Parameters

The command has optional parameters.

path_name_and_file_name
Optional parameter to identify the location of the installver command file.

The default location and filename are:

- AIX HP-UX Linux Solaris *app_server_root*/bin/installver.sh
- Windows *app_server_root*\bin\installver.bat

-help
Displays usage information.

-trace
Provides trace output of what the tool checks and what the tool discovers.

Next

Go to the description of the “installver command” to learn more.

installver command

The installver command performs two main functions. The tool computes a checksum on the installed files and compares the checksum to the shipped bill of materials for the product. The installver command can also compute a new baseline checksum for each file in the inventory of a configured system to use to identify file changes in later comparisons.

Purpose

This topic describes the location of the command file, command syntax, and links to task information about using the tool.

The default log file is the *app_server_root*/logs/installver.log file. You can redirect the output using the -log parameter and an argument. Use the -log parameter without the file argument to generate the default log file.

Computing the checksum

The installver tool computes a checksum for each installed file in the product. The tool compares each computed checksum to the correct checksum for the file. The correct checksums are shipped in the bill-of-material files. One bill-of-materials file exists for each component.

The tool parses the bill-of-materials file for each component to find the correct checksum value for each file in the component. Each product file has an entry in some bill-of-materials file. The entry for a product file lists the product file path and the correct checksum value.

Shipped bill-of-material files

Each bill-of-materials file is named files.list. Each component has one files.list file. Each files.list file is in one of the *app_server_root*/properties/version/install/6.1.0.0/backup/*component_name* directories. A *component_name* directory exists for each component.

For instance, the files.list file for the activity component is in the *app_server_root* /properties/version/install/6.1.0.0/backup/activity directory. The file resembles the following example:

```
<?xml version="1.0" encoding="UTF-8"?>

<componentfiles componentname="activity">
       <file>
              <relativepath>properties/version/activity.component</relativepath>
              <checksum>1a20dc54694e81fccd16c80f7c1bb6b46bba8768</checksum>
              <permissions>644</permissions>
              <installoperation>remove</installoperation>
       </file>
       <file>
              <relativepath>lib/activity.jar</relativepath>
              <checksum>2f056cc01be7ff42bb343e962d26328d5332c88c</checksum>
              <permissions>644</permissions>
              <installoperation>remove</installoperation>
       </file>
</componentfiles>
```

Comparing the computed checksum to the correct checksum

As the tool processes each product file in each bill-of-materials file, the tool also computes the actual checksum value of the corresponding installed product file. The tool then compares the checksum of the product file to the correct checksum value in the bill-of-materials file. The tool then reports any differences.

Location of the command file

The installver command file is located in the `bin` directory of the installation root directory:

- AIX HP-UX Linux Solaris *app_server_root*/bin/installver.sh
- Windows *app_server_root*\bin\installver.bat

Change directories to the `bin` directory to start the installver tool from the command line. The tool runs on any supported operating system except z/OS.

AIX HP-UX Linux Solaris Use the following command to start the tool on an operating system such as AIX or Linux:

```
./installver.sh
```

See the following topics for more information about the purpose of the command:

- “Verifying against the bill of materials” on page 151
- “Computing a new baseline checksum for an inventory of configured files” on page 154
- “Excluding files from a checksum comparison” on page 156
- “Comparing specific file and component checksums” on page 159
- “Changing the default message digest algorithm” on page 162
- “Handling out-of-memory situations” on page 162
- “Verifying the installver command” on page 163

Syntax for displaying usage information

- AIX HP-UX Linux Solaris `./installver.sh -help`
- Windows `installver.bat -help`

Syntax for listing all components

- AIX HP-UX Linux Solaris ./installver.sh -listcomponents
- Windows installver.bat -listcomponents

Syntax for comparing product files to the bill-of-material files

Use the following command syntax to automatically check the bill of materials against the installed file system.

- AIX HP-UX Linux Solaris *app_server_root*/bin/installver.sh
- Windows *app_server_root*\bin\installver.bat

See “Verifying against the bill of materials” on page 151 for examples of using the command to compare the installed files to the product bill-of-materials files.

Example comparisons and command usage

Compare checksums and include specified files only in the comparison:

- AIX HP-UX Linux Solaris ./installver.sh -include *fn1;fn2;fn3*
- Windows installver.bat -include *fn1;fn2;fn3*

See “Comparing specific file and component checksums” on page 159 for examples of using the command to compare only files or components that you specify.

Compare checksums and include specified components only in the comparison:

- AIX HP-UX Linux Solaris ./installver.sh -includecomponent *comp1;comp2;comp3;...*
- Windows installver.bat -includecomponent *comp1;comp2;comp3;...*

Compare checksums and exclude certain components from the comparison:

- AIX HP-UX Linux Solaris ./installver.sh -excludecomponent *comp1;comp2;comp3;...*
- Windows installver.bat -excludecomponent *comp1;comp2;comp3;...*

See “Excluding files from a checksum comparison” on page 156 for examples of using the command to exclude files from the comparison.

Compare checksums and ignore user-excluded files:

- AIX HP-UX Linux Solaris ./installver.sh -ignoreuserexclude
- Windows installver.bat -ignoreuserexclude

Compare checksums and ignore IBM-excluded files:

- AIX HP-UX Linux Solaris ./installver.sh -ignoreibmexclude
- Windows installver.bat -ignoreibmexclude

List all components only:

- AIX HP-UX Linux Solaris ./installver.sh -listcomponents
- Windows installver.bat -listcomponents

Create template (for listing excluded files) only:

- AIX HP-UX Linux Solaris ./installver.sh -createtemplate
- Windows installver.bat -createtemplate

Parameters for comparing checksums against the bill of materials

The following parameters are associated with the command when comparing product file checksums to the correct checksums in the bill of material files.

-componentdir *directory_1*; *directory_2*; *directory_n*
Optional parameter that identifies the names of directories where WebSphere Application Server products store the individual bill-of-material lists for each component.

The default value is the *app_server_root* /properties/version/install/6.1.0.0/backup directory.

The directory path delimiter can be either a colon (:) or a semi-colon (;).

-createtemplate [*file_name*]
Creates a template properties file for excluding files from the checksum comparison. Edit the template properties file to add a line for each file that you want to exclude from verification.

Without a file specification argument, the installver tool creates the *profile_root*/properties/ivu_user.template file.

If you specify a file name, the installver tool creates the file in the working directory, which is the *profile_root*/bin directory by default.

- AIX HP-UX Linux Solaris Perform the following procedure:
  1. cd *app_server_root*/bin
  2. ./installver.sh -createtemplate
- Windows Perform the following procedure:
  1. cd *app_server_root*\bin
  2. installver.bat -createtemplate

The installver tool creates the template properties file in the properties directory of the default profile.

- AIX HP-UX Linux Solaris *profile_root*/properties/ivu.user.template
- Windows *profile_root*\properties\ivu.user.template

-exclude *file1;file2;file3; ...*
Excludes files from verification.

Use a semi-colon (;) or a colon (:) to delimit file names.

-excludecomponent *component1;component2;component3; ...*
Excludes components from verification.

Use a semi-colon (;) or a colon (:) to delimit component names.

-filelist *file_name*
Optional parameter that identifies the name of the file that IBM uses to identify the correct checksums of product files in a particular product component.

The default value is files.list.

-help

Displays usage information.

-ignoreuserexclude

Ignores the default *profile_root*/properties/ivu_user.template file, if the file exists and compares the files listed in the template.

If you use the -createtemplate parameter with a file specification to create a template file in another location, the -ignoreusertemplate parameter has no effect.

-ignoreibmexclude

Compares checksums for all of the files in the installation root directory. IBM specifies certain files to exclude from the verification by default. You can cause the installver tool to verify those files as well by using the -ignoreibmexclude parameter.

-include *file1;file2;file3; ...*
Includes files in the verification and excludes all other files.

Use a semi-colon (;) or a colon (:) to delimit file names.

-includecomponent *component1;component2;component3; ...*
Includes components in the verification and excludes all other components.

Use a semi-colon (;) or a colon (:) to delimit component names.

-installroot *directory_name*
Overrides the default installation root directory.

-listcomponents

Displays a list of components in the product. Each component must have a files.list file.

-log [*file_path_and_file_name_of_log_file***]**

The default log file is the *app_server_root*/logs/installver.log file. You can redirect the output using the -log parameter and an argument.

-profilehome *directory_name*
Overrides the default profiles directory in the installation root directory.

-trace

Provides trace output of what the tool checks and what the tool discovers.

Syntax for creating and using a new baseline checksum for an inventory of configured files

Use the following syntax to create and compare an inventory of configured files to the currently installed files.

Create an inventory list of the files that are currently installed in the installation root directory

- AIX HP-UX Linux Solaris `./installver.sh -createinventory [path/file_name]`, such as `./installver.sh -createinventory /tmp/system.inv`
- Windows `installver.bat -createinventory [path\file_name]`, such as `installver.bat -createinventory C:\temp\system.inv`

Compare the inventory list to files that are currently installed in the installation root directory

- AIX HP-UX Linux Solaris `./installver.sh -compare /path/file_name`
- Windows `installver.bat -compare path\file_name`

Compare and display trace results

- AIX HP-UX Linux Solaris `./installver.sh -compare /path/file_name -trace`
- Windows `installver.bat -compare /path/file_name -trace`

Display usage information

- AIX HP-UX Linux Solaris `./installver.sh -help`
- Windows `installver.bat -help`

Compare and exclude specified files from the inventory comparison

- AIX HP-UX Linux Solaris `./installver.sh -compare /path/file_name -exclude fn1;fn2;fn3;...`
- Windows `installver.bat -compare \path\file_name -exclude fn1;fn2;fn3;...`

Compare and include only specified files in the inventory comparison

- AIX HP-UX Linux Solaris `./installver.sh -compare /path/file_name -include fn1;fn2;fn3;...`
- Windows `installver.bat -compare /path/file_name-include fn1;fn2;fn3;...`

Parameters for creating and using checksums for a file inventory

The following parameters are associated with this command.

-compare *file_path_and_file_name_of_existing_inventory_file*
Compares the existing inventory list to the existing files to determine changes.

First use the -createinventory parameter to create an inventory list. Then use the -compare parameter to compare the inventory list to the actual files that exist in the system at the time of the comparison.

The result of the comparison shows changed classes, changed files, missing files, and added files. Such a comparison is very useful for verifying the absence of virus files, for example.

-createinventory *directory_name*
Creates the new checksum by default in the sys.inv file within the current working directory, such as the *profile_root*/bin directory. You can specify a file path and file name. Create the file outside of the installation root directory or exclude the file from comparisons.

You can point the installver tool at any directory. The default directory is the installation root directory.

You can exclude files or components from the inventory.

The installver tool computes a checksum for each file. Each file entry in the inventory has the following general pattern:

```
checksum|relativepath/file_name|file_size|last_modfiied_time
```

After creating an inventory list, use the -compare parameter to compare the list to the actual files that exist in the system at the time of the comparison.

-exclude *file1;file2;file3;...*
Excludes files from comparison.

Use a semi-colon (;) or a colon (:) to delimit file names.

-help
Displays usage information.

-include *file1;file2;file3; ...*
Includes files in the comparison and excludes all other files.

Use a semi-colon (;) or a colon (:) to delimit file names.

-installroot *directory_name*
Overrides the *default installation root directory.*

-log [*file_path_and_file_name_of_log_file***]**

The default log file is the *app_server_root*/logs/installver.log file. You can redirect the output using the -log parameter and an argument.

-trace
Provides trace output of what the tool checks and what the tool discovers.

Example issues

The following examples show issues that might occur when you run the installver command to compare checksums.

Ignore entries for checksum mismatches that you introduce on purpose, such as might occur when you extend a component

The checksums differ for each file that you change:

```
I CWNVU0470I: [ivu] Starting to analyze: regularcomponentsample
I CWNVU0440I: [ivu] The following file is different: lib/different.jar
I CWNVU0410I: [ivu] fc19318dd13128ce14344d066510a982269c241b is the checksum in the bill of materials.
I CWNVU0420I: [ivu] 517d5a7240861ec297fa07542a7bf7470bb604fe is the checksum on the file system.
I CWNVU0390I: [ivu] Component issues found : 1
I CWNVU0480I: [ivu] Done analyzing: regularcomponentsample
```

Ignore issues that are obvious informational (I) messages

Some messages indicate deviations from the normally expected result, but are not indicators of a serious issue:

```
I CWNVU0360I: [ivu] The following bill of materials issue is found for component nullvaluesample:
  Hash must not be null or an empty string.
```

Overlapped files are either a potential product issue or potential tampering with the IBM provided bill of materials

```
I CWNVU0470I: [ivu] Starting to analyze: overlapbinarycomponentsample
W CWNVU0422W: [ivu] The following file is overlapped: lib/binaryTest.jar
W CWNVU0425W: [ivu] The overlap is caused by: _binarycomponentsample
I CWNVU0390I: [ivu] Component issues found : 1
I CWNVU0480I: [ivu] Done analyzing: overlapbinarycomponentsample
```

Contact IBM support for the following issue

If you see any messages with the following format, contact IBM support:

```
W CWNVU0280W: [ivu] Component mismatch: expected ... but found ...
```

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see this IBM Support page.

Next

After verifying your installation, you can create profiles or deploy an application on an existing application server profile.

After installing, updating, and verifying, the next step is to use the product. If you created a stand-alone application server or a cell, start the application server, or the deployment manager, node agent, and federated application server, to use the administrative console to deploy an existing application.

Chapter 8. Installing maintenance packages

This topic describes how to use the IBM Update Installer for WebSphere Software to install interim fixes, fix packs, and refresh packs. The Update Installer for WebSphere Software is also known as the Update Installer program, the UpdateInstaller program, and the Update installation wizard.

Use the proper authorizations to successfully install product updates.

When administrative security is enabled on WebSphere Application Server - Express, for example, you must supply the administrative user ID and password before you can update the files.

Use the Update Installer program from the same installer ID that installed the product that you are updating. Otherwise, the file ownership mismatches might require correction by the root user. For detailed information about the limitations of non-root installers in a distributed environment, consult the installing chapter of the *Installing your application serving environment* PDF book.

Important:

- The user account that originally installed the WebSphere Application Server product to be updated should be used to launch the Installation Wizard to install the Update Installer, and the same user account should be used to launch the Update Installer program to update a product.
  - When a different user account uses the *updi_root* location, that user account must have reading and running access to that location. It must also have writing access to the *updi_root*/logs directory and its subdirectory.
  - When a different user account is used to update the target WebSphere Application Server product location, that user account must have full access (reading, writing, and running) to the target location where a maintenance package is to be applied.
- AIX If a non-root user launches the Update Installer program, that user account must be able to run the **slibclean** command; otherwise, a root user must run the **slibclean** command whenever the Update Installer program is used.
- Make sure that no processes from any users are locking any files in the target location where a maintenance package is to be installed.

The Update Installer wizard is an InstallShield for Multiplatforms wizard that runs with either a graphical user interface or in silent mode with a response file.

The following descriptions contain reference information about installing interim fixes, fix packs, and refresh packs on WebSphere Application Server products and components:

Overview of the installation procedure

1. Download, unpack, and install the Update Installer for WebSphere Software; or install the Update Installer that is on the WebSphere Application Server supplements disc.
2. Download the most current version of the interim fix, fix pack, or refresh pack file from the Support site.
3. Download the interim fix, fix pack, or refresh pack from the Support Web site into the maintenance directory.
4. Use the Update Installer to install the interim fix, fix pack, or refresh pack.

   The Update Installer creates a backup file in the *app_server_root*/properties/version/nif/backup directory.

   IBM does not support restoring a backup file that you have modified.

Updating existing profiles in WebSphere Application Server products

The Update Installer updates the core product files in a WebSphere Application Server product. Service in a maintenance package might update the following files in the installation root directory:

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- The SDK, Java technology edition, in the java/jre directory
- JAR files in the lib directory
- Scripts in the bin directory
- Profile templates

Some maintenance packages provide required service for existing profiles in addition to service for the core product files. Each maintenance package that has profile maintenance provides a script that changes the profile. The Update Installer prompts you to back up your configuration when installing a maintenance package that has required maintenance for profiles.

Some maintenance packages provide optional service for existing profiles. The readme file for the maintenance package describes whether the maintenance package contains optional service for existing profiles. If so, the readme file describes how to use the script provided with the maintenance package.

Use the **backupConfig** command to back up the configuration of each profile that the maintenance package can update. Or archive the *app_server_root*/profiles directory to back up all of the profiles at once.

If you uninstall a maintenance package, the Update Installer does not uninstall the maintenance package from profiles. The reason for not removing the maintenance is that you might have configured the profile after installing the maintenance. To restore an original profile, use the **restoreConfig** command or copy the profile from the archived *profile_root* directory to replace the changed profile.

Viewing the fix level of the product

Use the versionInfo command and the historyInfo command in the bin directory of the installation root directory to display the exact fix and version level of the product. However, do not use either command while installing or uninstalling a maintenance package.

Required information. The graphical interface requires you to supply the following information:

Table 13. Information required when installing a maintenance package

Field	Valid values	Description
File path of the installation root directory of the WebSphere product or component. Installation root directory of the Update Installer. See *updi_root* for more information.	Identify the installation root directory for one of the following products: • IBM WebSphere Application Server • IBM WebSphere Application Server - Express • Embedded version of the IBM WebSphere Application Server - Express • IBM WebSphere Application Server Network Deployment • IBM WebSphere Extended Deployment • IBM Application Client for WebSphere Application Server • IBM WebSphere Business Integration Server Foundation • Web server plug-ins for WebSphere Application Server	Download, unpack, and install the Update Installer for WebSphere Software. Or install the Update Installer that is on the WebSphere Application Server supplements disc. Install the Update Installer into each component that you intend to update. The Update Installer application updates the product in its parent directory by default.
File name of the maintenance package to install.	Select a maintenance package to install from the maintenance directory.	The default maintenance package is the package with the latest date stamp and time stamp.

Important: See the topic ″Update command - known problems and workarounds″ and the release notes for your product for the latest information about the Update Installer.

The following procedure describes how to install a maintenance package. See “Uninstalling maintenance packages” on page 183 for a description of how to roll back a maintenance package.

1. Log on as root on an operating system such as AIX or Linux, or log on as a member of the administrator group on a Windows system.

   AIX HP-UX Linux Solaris In addition, verify that the umask setting is 022. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

2. Install the product that you intend to update.

   You have very likely already installed the software that you are now updating. But if not, install the software now.

3. **Optional:** Install a new version of the Update Installer.

   Back up and uninstall any older copy of the Update Installer before downloading and installing the current Update Installer. To use a newer version of the Update Installer, you must first remove the older version.

   a. Back up any files and subdirectories in the *updi_root*/maintenance directory if necessary.
   b. Uninstall the older version of the Update Installer using the program under *updi_root*/uninstall.
   c. Download, unpack, and install the Update Installer for WebSphere Software; or install the Update Installer that is on the WebSphere Application Server supplements disc.

4. Download the maintenance package *.pak file from the Support Web site into the maintenance directory.

   Download maintenance packages for the Update Installer for WebSphere Software to install from the following IBM Web pages:

   - Download maintenance packages for IBM WebSphere Extended Deployment from the IBM Support site for IBM WebSphere Extended Deployment.
   - Download maintenance packages for Version 6.x of the WebSphere Application Server products from the IBM Support site for WebSphere Application Server.

   Tip: Do not attempt to unzip or unpack the *.pak file.

5. Windows Make sure that all application servers are stopped.

   Run the **stopServer** command on all WebSphere Application Server profiles.

6. Stop all Java processes that use the IBM Software Developer Kit (SDK) that the WebSphere Application Server product provides.

   Before installing or uninstalling interim fixes, fix packs, and refresh packs on a machine, stop all Java processes on the machine that use the IBM SDK, Java Technology Edition that WebSphere Application Server provides.

   Stop all WebSphere Application Server-related Java processes that are running on the system where you are using the Update Installer program. For example, Java processes can include:

   - All Java Virtual Machines (JVMs)
   - WebSphere Application Server processes:

     WebSphere Application Server processes include application server processes, such as the process created when server1 is running.
   - IBM HTTP Server processes
   - Web server processes that use a plug-in that you are updating

- First steps consoles
- Installation verification test (IVT) processes
- The Profile Management tool
- Other InstallShield for Multiplatforms (ISMP) installation programs
- InstallShield for Multiplatforms uninstall programs
- The IBM Rational Application Developer Agent Controller

Stop all Java processes if necessary. If you install an interim fix while a WebSphere Application Server-related Java process runs, IBM does not guarantee that the product can continue to run successfully, or without error.

See the following technote for more information, Stop all WebSphere Application Server-related Java processes before using the Update Installer for WebSphere software.

7. Verify that the following prerequisite conditions are met:
   - All of the product hardware and software prerequisites exist.

     The official statement of supported hardware and software is on the Supported hardware and software Web site.
   - The WebSphere software that you are updating is correctly installed and is not corrupt.
   - The WebSphere SDK, Java technology edition is not corrupt.
   - The user is root on a system such as AIX or Linux or a member of the administrator group on a Windows system.
8. Change directories to the *updi_root* directory and use the updatecommand to install the maintenance package.

   Use the following command syntax to install the last maintenance package that you downloaded. The Update Installer wizard runs as a background process and does not display the graphical user interface when running in silent mode: Windows

   ```
   update.bat -silent -options responsefile
   ```

   AIX HP-UX Linux Solaris

   ```
   ./update.sh -silent -options responsefile
   ```

   Or, issue the update command to start the graphical user interface: Windows

   ```
   update.bat
   ```

   AIX HP-UX Linux Solaris

   ```
   ./update.sh
   ```

   The following tables show options that are available when using the **update** command.

   The commands in the first table each start the Update Installer wizard with a graphical user interface. The command in the second table causes the Update Installer wizard to run in silent mode.

Table 14. Update installer commands for installing with the graphical interface

Command example	Type of installation	Description
update.bat	Graphical interface mode	Initializes the maintenance package field with the name of the maintenance package that has the most recent date stamp and time stamp. Accept all of the default values to install the maintenance package with the most recent time stamp.

Table 14. Update installer commands for installing with the graphical interface (continued)

Command example	Type of installation	Description
update.bat -options ″responsefiles/*file_name*″	Graphical interface mode with an options file	Overrides all graphical interface values with values that you specified in the options response file. Always use a response file that is based on the response file under *updi_root*/responsefiles.
update.bat -W maintenance.package=″e: \IBM\WebSphere\AppServer \updateinstaller\ maintenance\ PQ20029.pak″	Graphical interface mode	Overrides the name of the maintenance package to apply.
update.bat -W product.location=″e: \IBM\WebSphere\AppServer″	Graphical interface mode	Overrides the location of the WebSphere software to update.
update.bat -W product.location=″e: \IBM\WebSphere\AppServer″ -W maintenance.package=″e: \IBM\WebSphere\ AppServer \updateinstaller\maintenance\ PQ20029.pak″	Graphical interface mode	Overrides the location of the WebSphere software to update and the name of the maintenance package to apply.
update.bat -OPT disableDiskSpaceCheck=true	Graphical interface mode	Overrides the prerequisite check for disk space.

Specify an appropriate JOBQ parameter value to have the job run in a different subsystem. Verify that the storage pool that the job runs in has as much memory as possible.

The command in the following table starts the Update Installer wizard in silent mode without the graphical user interface:

Table 15. Update Installer command for installing in silent mode

Command example	Type of installation	Description
update.bat -silent -options ″responsefiles/*file_name*″	Silent mode with an options file	Overrides all default values with values that you specified in the options response file. Always use a response file that is based on the response file under *updi_root*/responsefiles.

This procedure results in installing maintenance packages to update WebSphere software.

Click **Relaunch** on the last panel of the Update Installer to begin installing a second maintenance package.

After installing all maintenance packages, continue to use your WebSphere software.

install.txt

The Update Installer for WebSphere Software can use an options response file to install maintenance packages from a command line interface.

The Update Installer for WebSphere Software wizard reads the options file to determine installation choices. The Update Installer installs the maintenance package in silent mode instead of displaying a graphical user interface.

The install.txt file has one directive that identifies the backup file for installing a service update. Comments in the file describe how to set the string value.

Location of the response file

The sample options response file is named install.txt. The file is in the *updi_root*/responsefiles directory after you install the Update Installer for WebSphere Software into the installation root directory of the WebSphere software product.

Installing silently

The options file supplies the values to the Update installer wizard when installing silently. The wizard reads the options file to determine responses and does not display the graphical user interface.

The following command uses a copy of the options file named myresponsefile.txt to provide installation option responses during a silent installation:

```
./update.sh -options "responsefiles/myresponsefile.txt" -silent
```

If you do not use the -silent option, the wizard uses the response file to provide initial values for the graphical interface:

```
./update.sh -options "responsefiles/myresponsefile.txt"
```

Response file user entry validation

In a silent installation, response file validation is coded into the installation. If the validation does not pass, the failure is recorded in the log files in the *app_server_root*/logs/update/tmp directory.

Location of the maintenance package to be installed

Default directive setting

-W maintenance.package=""

Valid setting

You must set this directive to the location of the maintenance package PAK file. For example, you might specify the following location on a Linux system:

```
/opt/IBM/WebSphere/AppServer/updateinstaller/maintenance/PQ20029.pak
```

Error identifiers:

- Maintenance package *maintenance_package_name* is already installed on the system.
- Selected product is not supported.
- Configuration failed. The config action that failed was: *configuration_action*.
- Install the following prerequisite APARs before installing the current maintenance to the target product: *list_ of_ prerequisite_ maintenance_ packages_ to_ install*
- Install the following prerequisite maintenance packages before installing the package you are currently attempting to install: *list_ of_ prerequisite_ maintenance_ packages_ to_ install*
- Uninstall the following APARs before applying the current maintenance to the target product: *list_ of_ prerequisite_ maintenance_ packages_ to_ uninstall*
- Uninstall the following maintenance packages before applying the current maintenance to the target product: *list_ of_ prerequisite_ maintenance_ packages_ to_ uninstall*
- Unable to locate the correct version of *the_update_installer*. Looking for version *version_identifier*.
- *Maintenance_package* is not a valid maintenance package.

Product location

Default directive setting

-W product.location="*SPECIFY_PRODUCT_INSTALL_LOCATION_HERE*"

Valid setting

Set this directive to the installation root directory of the product. For example, you might specify the following location on a Linux system:

```
/opt/IBM/WebSphere/AppServer2
```

Error identifiers:

- Maintenance package *maintenance_package_name* is already installed on the system.
- Selected product is not supported.
- Configuration failed. The config action that failed was: *configuration_action*.
- Install the following prerequisite APARs before installing the current maintenance to the target product: *list_ of_ prerequisite_ maintenance_ packages_ to_ install*
- Install the following prerequisite maintenance packages before installing the package you are currently attempting to install: *list_ of_ prerequisite_ maintenance_ packages_ to_ install*
- Uninstall the following APARs before applying the current maintenance to the target product: *list_ of_ prerequisite_ maintenance_ packages_ to_ uninstall*
- Uninstall the following maintenance packages before applying the current maintenance to the target product: *list_ of_ prerequisite_ maintenance_ packages_ to_ uninstall*
- Unable to locate the correct version of *the_update_installer*. Looking for version *version_identifier*.
- *Maintenance_package* is not a valid maintenance package.
- *Alternate_product_directory* could not be validated as an existing directory.

Usage notes

- The file is not a read-only file.
- Edit this file directly with your flat file editor of choice, such as Kate on SLES or WordPad on a Windows platform.
- The file must exist to perform a silent installation. The Update installer wizard reads this file to determine installation parameters. Provide the fully qualified file path to the backup file.
- Save the copy of the options file in the responsefiles directory for best results.

Example install.txt file

Edit the version of the file that is included in the Update Installer for WebSphere Software ZIP file. The following example is not guaranteed to be an accurate representation of the actual file.

```
#############################################################################
#
# This is the silent install response file for installing maintenance packages
# using the update installer.
#
# A common use of an options file is to run the wizard in silent mode. This lets
# the options file author specify wizard settings without having to run the
# wizard in graphical or console mode. To use this options file for silent mode
# execution, *uncomment* and modify the parameters defined within.
#
# Use the following command line when running the wizard from the update
# installer directory:
#
#    update -options responsefiles/install.txt -silent
#
# Please enclose all values within a single pair of double quotes.
#
#############################################################################


#############################################################################
#
# Used to input the maintenance package full filename specification to be installed.
# Edit as appropriate.
```

```
#
# ie. -W maintenance.package="C:\Program Files\IBM\WebSphere\AppServer\updateinstaller\maintenance\PQ20029.pak"
#
# Note: If no package is specified, a default of the last downloaded maintenance
# package will be used (based on timestamp).
#
#-W maintenance.package=


################################################################################
#
# Used to input the product install location that will be updated.
#
# ie. -W product.location="C:\Program Files\IBM\WebSphere\AppServer"
#
# Note: The product install location should always been specified, and it should
# always be the full path.
#
-W product.location="<SPECIFY_PRODUCT_INSTALL_LOCATION_HERE>"



################################################################################
#
# Do not edit these values.
#
#
-W update.type="install"
```

Installing the Update Installer for WebSphere Software

The Update Installer for WebSphere Software has a new installation program for Version 6.1, Installation Wizard for the Update Installer. The Update Installer now uses the Common Install Engine for WebSphere Software.

A single installation of the Update Installer can be used to install maintenance on the following WebSphere software products:

- IBM WebSphere Application Server Version 6 or above
- IBM WebSphere Application Server Network Deployment Version 6 or above
- IBM WebSphere Application Server - Express Version 6 or above
- IBM Application Client for WebSphere Application Server Version 6 or above
- Web server plug-ins for WebSphere Application Server Version 6 or above
- IBM WebSphere Extended Deployment Version 5.1 or above
- IBM HTTP Server Version 6 or above
- IBM WebSphere Process Server Version 6.0 or above
- IBM WebSphere Enterprise Service Bus Version 6.0.1 or above

The Update Installer ships on the Version 6.1 supplements disc.

The Update Installer undergoes regular maintenance and offers updated versions on the WebSphere software support pages. See Recommended Updates for WebSphere Application Server. Look under your release of the WebSphere software for a link to the Update Installer download page.

Important:

- Only one copy of the Update Installer should be installed on your system at any one time for use with all Version 6.x products. Before installing a newer version of the Update Installer, you must first remove the existing Update Installer.

- The user account that originally installed the WebSphere Application Server product to be updated should be used to launch the Installation Wizard to install the Update Installer, and the same user account should be used to launch the Update Installer program to update a product.
  - When a different user account uses the *updi_root* location, that user account must have reading and running access to that location. It must also have writing access to the *updi_root*/logs directory and its subdirectory.
  - When a different user account is used to update the target WebSphere Application Server product location, that user account must have full access (reading, writing, and running) to the target location where a maintenance package is to be applied.
- AIX If a non-root user launches the Update Installer program, that user account must be able to run the **slibclean** command; otherwise, a root user must run the **slibclean** command whenever the Update Installer program is used.
- Make sure that no processes from any users are locking any files in the target location where a maintenance package is to be installed.

Hardware and software requirements

The hardware and software requirements for the Update Installer are the same as the product or component requirements that the Update Installer is used to update. For example, you can use the Update Installer to install maintenance for WebSphere software on distributed platforms and iSeries platforms. The Update Installer does not install maintenance for WebSphere Application Server for z/OS.

The official statements of support for hardware and software for the IBM WebSphere Application Server Version 6.1 are on the IBM WebSphere Application Server supported hardware and software Web site. The Web site lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system.

This topic describes how to install the Update Installer from the installation image provided in the product package.

1. Install one of the products that the Update Installer can update.

   See Chapter 6, “Installing the product and additional software,” on page 95 for more information.
2. Uninstall any previously installed Update Installer products.

   Use the **installRegistryUtils** command to examine installation locations for the installed Update Installer products.

   - AIX HP-UX Linux Solaris The command file is a script named installRegistryUtils.sh in the *app_server_root*/bin directory.
   - Windows The command file is a script named installRegistryUtils.bat in the *app_server_root*/bin directory.
3. Insert the supplements disc in a disk drive.

   Mount the drive if necessary.
4. Change directories to the UpdateInstaller directory on the supplements disc.
5. Issue the **install** command or the **install -silent** command.
6. Identify the installation root where you intend to install the Update Installer.
7. Install the code.

The Update Installer is installed under the root directory that you specified during installation.

See Chapter 8, “Installing maintenance packages,” on page 173 for information about using the Update Installer to install maintenance packages.

Uninstalling the Update Installer for WebSphere Software

The Update Installer for WebSphere Software has a new installation and uninstallation program for Version 6.1, Installation Wizard for the Update Installer.

Important: Only one copy of the Update Installer should be installed on your system at any one time for use with all Version 6.x products. Before installing a newer version of the Update Installer, you must first remove the existing Update Installer.

The Update Installer uses the Common Install Engine for WebSphere Software. Part of the Common Installer is the uninstaller program that is generated when ISMP installs the Update Installer. This procedure explains how to use the uninstaller program for the Update Installer.

1. Change directories to the Update Installer root directory that you specified during installation.
2. Issue the `uninstall` or `uninstall -silent` command.

   AIX HP-UX Linux Solaris

   ```
   ./uninstall.sh
   ```

   Windows

   ```
   uninstall.bat
   ```

   See the description of the “uninstall command” on page 196 for more information.

The Update Installer is removed from the product.

Go to “Updating the Update Installer for WebSphere Software” for information on downloading and installing the most current version of the Update Installer.

Updating the Update Installer for WebSphere Software

This topic describes how to get the latest copy of the Update Installer for WebSphere Software.

Important: Only one copy of the Update Installer should be installed on your system at any one time for use with all Version 6.x products. Before installing a newer version of the Update Installer, you must first remove the existing Update Installer.

To get the latest copy of the Update Installer, download the most current version from the support site and reinstall it. The Update Installer ships on the Version 6.1 supplements disk. The Update Installer undergoes regular maintenance and offers updated versions on the WebSphere software support pages.

See Recommended Updates for WebSphere Application Server. Look under your release of the WebSphere software for a link to the Update Installer download page.

This topic describes how to update the Update Installer after you installed it into a product.

1. Uninstall the Update Installer.

   For detailed information on uninstalling the update installer in a distributed environment, see uninstalling your product chapter in the *Installing you application serving environment* PDF book.
2. Download the updated Update Installer files from the product Support site.

   Ensure that the updi_root directory no longer exists or is empty. If it is not, run the following Qshell command before reinstalling: rm -R updi_root. For example, rm -R /QIBM/ProdData/WebSphere/Updi.

   See Recommended Updates for WebSphere Application Server to locate the Update Installer download page.
3. Extract the contents of the zip file to a directory on the system from which you will perform the install.
4. Install the new Update Installer.

For detailed information about installing the update installer, see the installing the product chapter or the *Installing your application serving environment* PDF book.

The Update Installer is installed under the root directory that you specified during installation. The update installer is installed to /QIBM/ProdData/WebSphere/UpdateInstaller/V61/updi unless you modified the installLocation option.

See Chapter 8, “Installing maintenance packages,” on page 173 for information about using the Update Installer to install maintenance packages.

Uninstalling maintenance packages

This topic describes how to use the Update Installer for WebSphere Software to uninstall interim fixes, fix packs, and refresh packs. The Update Installer for WebSphere Software is also known as the update installer program, the updateInstaller program, and the Update installation wizard.

Use the proper authorizations to successfully uninstall product updates. Use the update installer program as the root user on a Linux or UNIX platform, or as the administrator on a Windows platform.

The Update Installer wizard is an InstallShield for Multiplatforms wizard that runs with either a graphical user interface or in silent mode with a response file.

Important: See “Update command - known problems and workarounds” on page 192 for information about known problems and workarounds.

The following descriptions contain reference information about uninstalling interim fixes, fix packs, and refresh packs on WebSphere Application Server products:

Overview of the uninstall procedure

To uninstall a maintenance package:

1. Use the update installer to install the maintenance package, which creates a backup file in the *app_server_root*/properties/version/nif/backup directory. IBM does not support user modifications to backup files.
2. Use the update installer program to remove the maintenance package as described in this topic.

Viewing the fix level of the node

You can use the versionInfo command in the *app_server_root*/bin directory to display the exact fix and version level of the product. However, do not use the versionInfo command while installing or uninstalling a maintenance package.

Do not launch multiple copies of the Update Installer wizard at one time: Concurrent launches of the update installer program are not supported. Performing more than one update at the same time can produce unpredictable results, which might include a failed or faulty installation.

Required information

The graphical interface requires the following information that you must supply:

Table 16. Information required when uninstalling a maintenance package

Field	Valid values	Description
File path of the installation root directory of the WebSphere product and the Update Installer	Identify the installation root directory for one of the following products: • IBM WebSphere Application Server • IBM WebSphere Application Server - Express • Embedded version of the IBM WebSphere Application Server - Express • IBM WebSphere Application Server Network Deployment • IBM Application Client for WebSphere Application Server • Web server plug-ins for WebSphere Application Server	The Update Installer application defaults to the last-visited product location.
File name of the maintenance package to uninstall.	Select a maintenance package to uninstall from the *app_server_root*/properties/version/update/backup directory.	The default maintenance package is the package with the latest date stamp and time stamp in the *app_server_root* /properties/version/update/backup directory.

The following procedure describes how to uninstall a maintenance package.

1. Log on to the operating system.

   Linux UNIX In addition, verify that the umask setting is 022. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

2. Change directories to the *updi_root* directory.
3. Windows Use the Windows Services panel to stop all services for WebSphere Application Server processes.
4. Stop all Java processes that use the IBM Software Developer Kit (SDK) that the WebSphere Application Server product provides.

   Before uninstalling interim fixes, fix packs, and refresh packs on a machine, stop all Java processes on the machine that use the IBM SDK, Java Technology Edition that WebSphere Application Server provides.

   WebSphere Application Server processes include application server processes, such as the process created when server1 is running.

   Stop all Java processes if necessary. If you uninstall a maintenance package while a WebSphere Application Server-related Java process runs, IBM does not guarantee that the product can continue to run successfully, or without error.
5. Use the update installer to uninstall the maintenance package.

   Issue one of the following commands to uninstall with the graphical interface:

Table 17. Update installer commands for uninstalling with the graphical interface

Command example	Type of installation	Description
update.bat -W update.type=″uninstall″	Graphical interface mode	Initializes the maintenance package field with the name of the maintenance package that was most recently installed. Accept all of the default values to uninstall the maintenance package with the most recent date stamp and time stamp.
update.bat -W product.location=″e:\IBM\WebSphere\AppServer″ -W update.type=″uninstall″	Graphical interface mode	Overrides the graphical interface with the location of the WebSphere software to update. The default maintenance package to uninstall is the most recently installed maintenance package for that software.
update.bat -W backup.package=″PQ20029.pak″ -W update.type=″uninstall″	Graphical interface mode	Overrides the maintenance package field with the name of the maintenance package to uninstall.
update.bat -W product.location=″e:\IBM\WebSphere\AppServer″ -W backup.package=″PQ20029.pak″ -W update.type=″uninstall″	Graphical interface mode	Overrides the location of the WebSphere software to update and the name of the maintenance package to uninstall.
update.bat -options ″responsefiles/*file_name*″	Graphical interface mode with an options file	Overrides all default values with values that you specified in the options response file. If you omit either value from the response file, the default maintenance package is the installed package with the most recent date stamp and time stamp. The default software is the software installed in the parent directory.

Issue the following command to use the silent interface:

Table 18. Update installer command for uninstalling in silent mode

Command example	Type of installation	Description
update.bat -silent -options ″responsefiles/*file_name*″	Silent mode with an options file	Overrides all default values with values that you specified in the options response file. Always use a response file that is based on the response file under *updi_root*/responsefiles.

This procedure results in uninstalling maintenance packages to update WebSphere software.

Note: The Update Installer should not check OS prerequisites when uninstalling Custom Installation Package created by the Install Factory. When you launch the Update Installer to uninstall a Custom Installation Package, additional command line options need to be passed into Update Installer to disable OS prerequisite checking. These command line options are:

-W maintenancewarningprereqcheckactionInstallWizardBean.active=false -W

prereqswarningpanelInstallWizardBean.active=false -W
maintenanceprereqcheckactionInstallWizardBean.active=false -W
prereqsfailedpanelInstallWizardBean.active=false

On Windows issue the command:

update.bat -W maintenancewarningprereqcheckactionInstallWizardBean.active=false -W
prereqswarningpanelInstallWizardBean.active=false -W
maintenanceprereqcheckactionInstallWizardBean.active=false -W
prereqsfailedpanelInstallWizardBean.active=false

On operating systems such as AIX or Linux, issue the command:

./update.sh -W maintenancewarningprereqcheckactionInstallWizardBean.active=false -W
prereqswarningpanelInstallWizardBean.active=false -W
maintenanceprereqcheckactionInstallWizardBean.active=false -W
prereqsfailedpanelInstallWizardBean.active=false

After uninstalling maintenance packages, you can continue to use the WebSphere software.

Rolling back changes to existing profiles: Some maintenance packages for WebSphere Application Server products, such as Refresh Pack 2, update existing profiles. If you roll back a maintenance package that contains a profile update, also use any undo scripts provided with the profile update script to roll back changes to the existing profiles.

The readme file for a maintenance package describes scripts that update and scripts that roll back profile fix levels. For example, Refresh Pack 2 for WebSphere Application Server includes required service for the JDBC resource provider templates in existing profiles. See the readme for the profile update and undo scripts for the JDBC-related update for more information.

Deleting profiles created by a service level that is now rolled back: See Profiles remain at the Version 6.0.2 level after roll back for a description of a limitation that requires profiles to be at the same service level or at a lower service level that the WebSphere Application Server product.

For example, suppose that you install Fix Pack 1 for Version 6.1 (Version 6.1.0.1), create a new profile, and then roll back Fix Pack 1. You must delete the profile that you created at the Version 6.1.0.1 level to avoid possible problems.

uninstall.txt

The Update Installer for WebSphere Software can use an options response file to uninstall maintenance packages from a command line interface.

The uninstall.txt file has one directive that identifies the backup file for uninstalling a service update. Comments in the file describe how to set the string value.

The Update Installer for WebSphere Software wizard reads the options file to determine uninstall choices. The Update Installer uninstalls the maintenance package in silent mode, instead of displaying a graphical user interface.

Location of the response file

The sample options response file is named uninstall.txt. The file is in the *updi_root*/responsefiles directory after you unzip the Update Installer for WebSphere Software into the installation root directory of the WebSphere software product.

Uninstalling silently

The options file supplies the values to the Update installer wizard when uninstalling silently. The wizard reads the options file to determine responses and does not display the graphical user interface.

The following command uses a copy of the options file named myresponsefile.txt to provide uninstall option responses during a silent uninstall:

```
./update.sh -options "responsefiles/myresponsefile.txt" -silent
```

If you do not use the -silent option, the wizard uses the response file to provide initial values for the graphical interface:

```
./update.sh -options "responsefiles/myresponsefile.txt"
```

Response file user entry validation

In a silent uninstall, response file validation has been coded into the uninstall process. If the validation does not pass, the failure is recorded in the log files in the *app_server_root*/logs/update/tmp directory.

Location of the maintenance package to be uninstalled

Default directive setting

-W backup.package=""

Valid setting

You must set this directive to the location of the backup file. The backup file reverses the application of the maintenance. For example, you might specify the following location on a Linux system:

`/opt/properties/version/nif/backup/`*`maintenance_package_to_uninstall`*

Error identifiers:

- The maintenance package cannot be uninstalled. Uninstalling the maintenance would break the following superseding maintenance packages. Uninstall the superseding maintenance packages first: *list_of_superseding_maintenance_packages*
- This maintenance package cannot be uninstalled. The following maintenance packages are dependent on the package that you are attempting to uninstall: *list_of_dependent_maintenance_packages*
- This maintenance package cannot be uninstalled. The following maintenance packages are dependent on the APARs you are attempting to uninstall: *list_of_dependent_maintenance_packages*
- No installation backup packages are available for uninstalling maintenance.

Product location

Although uninstalling maintenance from another product is possible, always use the Update installer wizard from the directory structure of the product that you are updating if possible. Problems can occur when a mismatch between product SDKs occurs, for example.

Do not use this directive unless absolutely necessary.

Default directive setting

-W product.location="*SPECIFY_PRODUCT_INSTALL_LOCATION_HERE*"

Valid setting

You must set this directive to the installation root directory of the alternate product. For example, you might specify the following location on a Linux system:

`/opt/IBM/WebSphere/AppServer2`

Error identifiers:

- The maintenance package cannot be uninstalled. Uninstalling the maintenance would break the following superseding maintenance packages. Uninstall the superseding maintenance packages first: *list_of_superseding_maintenance_packages*
- This maintenance package cannot be uninstalled. The following maintenance packages are dependent on the package that you are attempting to uninstall: *list_of_dependent_maintenance_packages*

- This maintenance package cannot be uninstalled. The following maintenance packages are dependent on the APARs you are attempting to uninstall: *list_of_dependent_maintenance_packages*
- No installation backup packages are available for uninstalling maintenance.

Usage notes

- The file is not a read-only file.
- Edit this file directly with your flat file editor of choice, such as Kate on SLES or WordPad on a Windows platform.
- The file must exist to perform a silent uninstall. The Update installer wizard reads this file to determine uninstall parameters. Provide the fully qualified file path to the backup file.
- Save the copy of the options file in the responsefiles directory for best results.

Example uninstall.txt file

Edit the version of the file that is included in the Update Installer for WebSphere Software ZIP file. The following example is not guaranteed to be an accurate representation of the actual file.

```
################################################################################
#
# This is the silent install response file for uninstalling maintenance packages
# using the update installer.
#
# A common use of an options file is to run the wizard in silent mode. This lets
# the options file author specify wizard settings without having to run the
# wizard in graphical or console mode. To use this options file for silent mode
# execution, *uncomment* and modify the parameters defined within.
#
# Use the following command line when running the wizard from the update
# installer directory:
#
#    update -options responsefiles/uninstall.txt -silent
#
# Please enclose all values within a single pair of double quotes.
#
################################################################################


################################################################################
#
# Used to input the maintenance backup package filename to be uninstalled.
# This is the same filename as the package that was originally installed.
# A maintenance package can only be uninstalled if a backup package exists.
#
# ie. -W backup.package="PQ20029.pak"
#
# Note: If no package is specified, a default of the last installed maintenance
# package will be used.
#
#-W backup.package=""


################################################################################
#
# Used to modify the product install location that will be updated.
# This value should be left commented out if the Update Installer is
# being run from the recommended location
#
# ie. -W product.location="C:\Program Files\IBM\WebSphere\AppServer"
#
# Note: The product install location should always been specified, and it should
# always be the full path.
#
-W product.location="<SPECIFY_PRODUCT_INSTALL_LOCATION_HERE>"
```

```
################################################################################
#
# Do not edit these values.
#
-W update.type="uninstall"
```

update command

The **update** command is the Update Installer for WebSphere Software program. The Update installer wizard is also known as the Update installation wizard, the update installer program, and the updateInstaller program.

The update installer program installs and uninstalls interim fixes, fix packs, and refresh packs to update WebSphere software.

Overview

The **update** command calls the update installer program to install and uninstall service to update WebSphere software. This topic describes the update installer command and its command-line parameters.

The following descriptions contain reference information about the command.

See Chapter 8, “Installing maintenance packages,” on page 173 and “Uninstalling maintenance packages” on page 183 for information about using the command.

Important: See “Update command - known problems and workarounds” on page 192 for information about known problems and workarounds.

Command options

The following tables list commands for installing and uninstalling interim fixes. For AIX, HP-UX, Linux, and Solaris use the shell script: update.sh. For Windows use: update.bat, and for i5/OS use: update

Commands for installing interim fixes

Issue one of the following commands to use the graphical interface:

Table 19. Update installer commands for installing with the graphical interface

Command example	Type of installation	Description
update.bat	Graphical interface mode	Initializes the interim fix field with the name of the interim fix that has the most recent date stamp and time stamp. Accept all of the default values to install the interim fix with the most recent time stamp.
update.bat -options ″responsefiles/*file_name*″	Graphical interface mode with an options file	Overrides all graphical interface values with values that you specified in the options response file. If you omit either value, the default maintenance package is the one with the most recent date stamp and time stamp. The default software is the software installed in the parent directory.

Table 19. Update installer commands for installing with the graphical interface (continued)

Command example	Type of installation	Description
update.bat -W maintenance.package=″e: \IBM\WebSphere\AppServer \updateinstaller\ maintenance \PQ20029.pak″	Graphical interface mode	Overrides the name of the maintenance package to apply.
update.bat -W product.location=″e: \IBM\WebSphere\AppServer″	Graphical interface mode	Overrides the location of the WebSphere software to update.
update.bat -W product.location=″e: \IBM\WebSphere\AppServer″ -W maintenance.package=″e: \IBM\WebSphere\ AppServer \updateinstaller\maintenance \PQ20029.pak″	Graphical interface mode	Overrides the location of the WebSphere software to update and the name of the maintenance package to apply.
update.bat -OPT disableDiskSpaceCheck=true	Graphical interface mode	Overrides the prerequisite check for disk space.

Issue the following command to use the silent interface:

Table 20. Update installer command for installing in silent mode

Command example	Type of installation	Description
update.bat -silent -options ″responsefiles/*file_name*″	Silent mode with an options file	Overrides all default values with values that you specified in the options response file. Always use a response file that is based on the response file under *updi_root*/responsefiles.

Commands for uninstalling interim fixes

Issue one of the following commands to uninstall with the graphical interface:

Table 21. Update installer commands for uninstalling with the graphical interface

Command example	Type of installation	Description
update.bat -W update.type=″uninstall″	Graphical interface mode	Initializes the interim fix field with the name of the interim fix that was most recently installed. Accept all of the default values to uninstall the interim fix with the most recent date stamp and time stamp.
update.bat -W product.location=″e: \IBM\WebSphere\AppServer″ -W update.type=″uninstall″	Graphical interface mode	Overrides the graphical interface with the location of the WebSphere software to update. The default interim fix to uninstall is the most recently installed interim fix for that software.
update.bat -W backup.package=″PQ20029.pak″ -W update.type=″uninstall″	Graphical interface mode	Overrides the interim fix field with the name of the maintenance package to uninstall.
update.bat -W product.location=″e: \IBM\WebSphere\AppServer″ -W backup.package=″PQ20029.pak″ -W update.type=″uninstall″	Graphical interface mode	Overrides the location of the WebSphere software to update and the name of the maintenance package to uninstall.

Table 21. Update installer commands for uninstalling with the graphical interface (continued)

Command example	Type of installation	Description
update.bat -options "responsefiles/*file_name*"	Graphical interface mode with an options file	Overrides all default values with values that you specified in the options response file. If you omit either value from the response file, the default maintenance package is the installed package with the most recent date stamp and time stamp. The default software is the software installed in the parent directory.

Issue the following command to use the silent interface:

Table 22. Update installer command for installing in silent mode

Command example	Type of installation	Description
update.bat -silent -options "responsefiles/*file_name*"	Silent mode with an options file	Overrides all default values with values that you specified in the options response file. Always use a response file that is based on the response file under *updi_root*/responsefiles.

Logging

The following sections describe logging that occurs when installing and uninstalling service.

Logs created when installing service

If no installation log file exists, refer to the temporary log file in the *updi_root*/logs/update/tmp directory. If all validations pass, the installation occurs.

Then the update installer program creates the *app_server_root*/logs/update/*maintenance_package*.install directory.

Within the directory are the updatelog.txt file, the compressed updatetrace.log.gz file, and the compressed updateconfig.log.gz file. The updateconfig.log.gz file exists only when the installation of service uses the internal configuration manager utility to run ANT scripts.

Logs created when uninstalling service

If no log file exists after uninstalling an interim fix, refer to the temporary log file in the *updi_root*/logs/update/tmp directory. If all validations pass, the uninstall procedure occurs.

Then the update installer program creates the *app_server_root*/logs/update/*maintenance_package*.uninstall directory.

Within the directory are the updatelog.txt file, the compressed updatetrace.log.gz file, and the compressed updateconfig.log.gz file. The updateconfig.log.gz file exists only when the removal of service uses the internal configuration manager utility to run ANT scripts.

Indicators of success

The log file includes an indicator of success:

INSTCONFSUCCESS
The current operation was successful. You do not need to review the log file any further.

INSTCONFPARTIALSUCCESS
The current operation was partially successful. System should still be in a usable state, however some non-critical actions have failed. Consult the log file to determine what has failed and how to recover from the failure, if possible.

INSTCONFFAILED
The current operation failed. The system is no longer in a usable state. Consult the log file for more information.

Update command - known problems and workarounds

This topic describes known problems and issues associated with the Update Installer for WebSphere Software program.

The update installer program displays its version information in the title bar of the graphical interface. Version information is stored in the version.txt file in the updateinstaller directory.

A new version might ship to correspond to any new fix. Information in the version.txt file is displayed prominently in the title bar of the wizard and is also recorded in the updatelog.txt file.

Always download and use the latest version of the Update installer wizard when installing an interim fix.

The Update Installer can not automatically detect locks on files by remote processes. So you must ensure that all AppServers processes have been stopped for all your profiles, including any remote profiles.

Chapter 9. Uninstalling the product

Uninstall WebSphere Application Server - Express to remove the core product files.

If you have problems uninstalling after upgrading a trial to the full product, you might have used the product disc image to upgrade a trial that was installed from a customized installation package (CIP). You must use a full product CIP to upgrade a trial CIP. Otherwise, you cannot uninstall the trial CIP. Use the manual uninstall procedure in such as case. See “Uninstalling manually” on page 200 for more information.

The “uninstall command” on page 196 calls the uninstaller program that is created during installation. The uninstaller program is customized for each product installation, with specific disk locations and routines for removing installed features.

The uninstaller program removes registry entries, uninstalls the product, and removes all related features. The uninstaller program does not remove log files in the installation root directory.

This procedure uninstalls the WebSphere Application Server - Express product.

See the following topics to uninstall other components on the product disc:

- Uninstalling IBM HTTP Server

The time required to uninstall is dependent on the processing speed of your machine. As a rough guideline, uninstalling the core product files and one application server profile takes approximately 10 minutes when using the uninstall command.

1. AIX HP-UX Linux Solaris Log on using the same user ID that was used when the product was installed.

   Issue the **ls -al** command at the root of the WebSphere Application Server installation to find the user ID that was used to install the product.

2. Windows Log on as a user who belongs to the administrator group or as the user who installed the product.
3. Run the uninstaller program for the Web server plug-ins for WebSphere Application Server.

   If a Web server is configured to run with the Application Server, uninstall the plug-ins to remove the configuration from the Web server.
4. Stop each running Application Server with the stopServer command.

   Stop all server processes in all profiles on the machine. For example, issue the following command from the *profile_root*/bin directory to stop the server1 process in the application server profile:

   ```
   ./stopServer.sh server1
   ```

   If servers are running and security is enabled, use the following commands:

   ```
   ./stopServer.sh server1 -user user_ID -password password
   ```
5. **Optional:** Back up configuration files and log files to refer to them later if necessary.

   Use the AdminTask command scripting interface to create a configuration archive file of an existing WebSphere Application Server profile, for example.

   The uninstaller program removes all profiles by default, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile, if necessary, or use the -OPT removeProfilesOnUninstall=″false″ parameter on the uninstall command.

   Back up the config folder and the logs folder of each profile to refer to it later if necessary. You cannot reuse profiles so there is no need to back up an entire profile.
6. Issue the uninstall command.

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Run the uninstall command:

- AIX HP-UX Linux Solaris *app_server_root*/uninstall/uninstall
- Windows *app_server_root*\uninstall\uninstall.exe

The uninstaller wizard begins and displays the Welcome panel.

You can also issue the uninstall command with a silent parameter to use the wizard without the graphical user interface.

Issue the following command to start the uninstaller wizard in silent mode, without the graphical user interface, and to remove all profiles:

- AIX HP-UX Linux Solaris *app_server_root*/uninstall/uninstall -silent (default behavior)
- AIX HP-UX Linux Solaris *app_server_root*/uninstall/uninstall -silent -OPT removeProfilesOnUninstall="true"
- Windows *app_server_root*\uninstall\uninstall -silent (default behavior)
- Windows *app_server_root*\uninstall\uninstall -silent -OPT removeProfilesOnUninstall="true"

Issue the following command to start the uninstaller wizard in silent mode and to leave all profiles intact:

- AIX HP-UX Linux Solaris *app_server_root*/uninstall/uninstall -silent -OPT removeProfilesOnUninstall="false"
- Windows *app_server_root*\uninstall\uninstall -silent -OPT removeProfilesOnUninstall="false"

7. If you are using the wizard, click **Next** to begin uninstalling the product.

   The uninstaller wizard displays a confirmation panel that lists a summary of the components that you are uninstalling.

   a. Click **Next** to continue uninstalling the product.

      When using the wizard, a panel allows you to choose whether or not the uninstaller deletes all profiles before it deletes the core product files. By default, all profiles will be deleted, but this option can be deselected on the panel.

      After uninstalling profiles, the uninstaller program deletes the core product files in component order.

   b. Click **Finish** to close the wizard after the wizard removes the product.

8. Review the log file.

   Review the *app_server_root*/logs/uninstlog.txt file.

   Review the *app_server_root*/logs/uninstall/log.txt file.

   The log file records file system or other unusual errors. Look for the INSTCONFSUCCESS indicator of success in the log:

   ```
   (date_time),
   Uninstall, com.ibm.ws.install.ni.ismp.actions.
   SetExitCodeAction, msg1,
   CWUPI0000I: EXITCODE=0
   (date_time),
   Uninstall, com.ibm.ws.install.ni.ismp.actions.
   ISMPLogSuccessMessageAction, msg1,
   INSTCONFSUCCESS
   ```

9. Uninstall manually before reinstalling.

   The uninstaller program leaves some log files, including the *app_server_root*/logs/uninstall/log.txt file.

   Manually uninstall the product to remove all artifacts of the product so that you can reinstall into the same installation root directory. If you do not plan to reinstall, you do not need to manually uninstall.

   See “Uninstalling manually” on page 200 for more information.

This procedure results in uninstalling the WebSphere Application Server - Express product.

After uninstalling the product and cleaning the system with the manual uninstall procedure, you can reinstall.

See Chapter 3, “Task overview: Installing,” on page 9 for an overview of installing the product and creating a functional e-business environment.

installRegistryUtils command

The installRegistryUtils command-line tool runs on any supported operating system. The installRegistryUtils tool lists installed products and packages and assists in cleaning a particular registered product (including the associated packages), package, or all registered products (including all associated packages) which are visible to the current user.

Location of the command file

The command file is located on both the product disc and the installed product.

Note: When using the product disc, the command must be invoked on the machine targeted by the command. The tool does not work remotely.

To invoke the command file from the product disc, run the following command file from the root of the product CD:

- AIX HP-UX Linux Solaris `installRegistryUtils/bin/installRegistryUtils.sh`
- Windows `installRegistryUtils/bin/installRegistryUtils.bat`

To invoke the command file from the installed product, use the following command:

- AIX HP-UX Linux Solaris *app_server_root*`/bin/installRegistryUtils.sh`
- Windows *app_server_root*`/bin/installRegistryUtils.bat`

Syntax for the installRegistryUtils.sh command

Clean up all accessible products and packages.

```
./installRegistryUtils.sh -cleanAll
 [-userHome user_home]
```

Clean up the specified product and all associated packages.

```
./installRegistryUtils.sh -cleanProduct
  -offering offering_ID
  -installLocation installation_location
 [-userHome user_home]
```

Clean up the specified package.

```
./installRegistryUtils.sh -cleanPackage
  -pakName package_name
  -installLocation installation_location
 [-userHome user_home]
```

List all visible products.

```
./installRegistryUtils.sh -listProducts
 [-userHome user_home]
```

List all visible packages.

```
./installRegistryUtils.sh -listPackages
 [-userHome user_home]
```

Syntax for the installRegistryUtils.bat command

Clean up all accessible products and packages.

```
installRegistryUtils.bat -cleanAll
 [-userHome user_home]
```

Clean up the specified product and all associated packages.

```
installRegistryUtils.bat -cleanProduct
  -offering offering_ID
  -installLocation installation_location
 [-userHome user_home]
```

Clean up the specified package.

```
installRegistryUtils.bat -cleanPackage
  -pakName package_name
  -installLocation installation_location
 [-userHome user_home]
```

List all visible products.

```
installRegistryUtils.bat -listProducts
 [-userHome user_home]
```

List all visible packages.

```
installRegistryUtils.bat -listPackages
 [-userHome user_home]
```

Parameters

Supported arguments include:

-installLocation *installation_location*
Specifies the full path to the product installation.

-offering *offering_ID*
Identifies the offering ID, also known as the product ID, of the specified product.

-pakName *package_name*
Identifies a package name of the specified product.

-userHome *user_home*
Specifies the full path to a user home directory. This optional parameter is used by a root user to invoke the installRegistryUtils command on the home directory of another user.

---

uninstall command

The **uninstall** command uninstalls the product. When you uninstall the product, the uninstaller program removes the core product files and all of the profiles. A silent parameter runs the wizard in silent mode without displaying the graphical user interface.

Purpose

This topic describes the command-line syntax for the **uninstall** command. Start the **uninstall** command module from the command line to uninstall the product.

Before you begin uninstalling the product

Manually stop all servers before uninstalling the product.

See Chapter 9, “Uninstalling the product,” on page 193 for more information.

The command file is in the *app_server_root*\uninstall directory.

The command file is named:

- AIX HP-UX Linux Solaris uninstall
- Windows uninstall.exe

All of the installable components in the product package use this command. If the command is not applicable for a component on a particular operating system, the N/A abbreviation is displayed in the following table. A command is not applicable if the component cannot be installed (or uninstalled) on the operating system.

Table 23. Component uninstall commands by operating system

Operating System	WebSphere Application Server	Application Client	IBM HTTP Server	Web Server Plug-ins	Application Server Toolkit	Edge Components	Update Installer (UPDI)
AIX	uninstall	uninstall	uninstall	uninstall	N/A	uninstall	uninstall
HP-UX	uninstall	uninstall	uninstall	uninstall	N/A	uninstall	uninstall
i5/OS	uninstall	uninstall	N/A	uninstall	N/A	N/A	uninstall
Linux	uninstall	uninstall	uninstall	uninstall	uninstall	uninstall	uninstall
Solaris	uninstall	uninstall	uninstall	uninstall	N/A	uninstall	uninstall
Windows	uninstall	uninstall	uninstall	uninstall	uninstall	uninstall	uninstall

Parameters and syntax

This section describes the command syntax and the optional parameters for starting the Uninstaller wizard.

- Issue the following command to start the Uninstaller wizard and the graphical user interface:
  - AIX HP-UX Linux Solaris *app_server_root*/uninstall/uninstall
  - Windows *app_server_root*\uninstall\uninstall
- Issue the following command to start the Uninstaller wizard in silent mode, without the graphical user interface, and to remove all profiles:
  - AIX HP-UX Linux Solaris *app_server_root*/uninstall/uninstall -silent (default behavior)
  - AIX HP-UX Linux Solaris *app_server_root*/uninstall/uninstall -silent -OPT removeProfilesOnUninstall="true"
  - Windows *app_server_root*\uninstall\uninstall -silent (default behavior)
  - Windows *app_server_root*\uninstall\uninstall -silent -OPT removeProfilesOnUninstall="true"
- Issue the following command to start the Uninstaller wizard in silent mode and to leave all profiles intact:
  - AIX HP-UX Linux Solaris *app_server_root*/uninstall/uninstall -silent -OPT removeProfilesOnUninstall="false"
  - Windows *app_server_root*\uninstall\uninstall -silent -OPT removeProfilesOnUninstall="false"

Uninstalling WebSphere Application Server - Express removes all the product libraries and directories. If you do not specify the option to keep all the profiles when you invoke the uninstall script, the profiles are removed. If you later decide that you do not need the profiles, you can manually remove them.

Logging

Examine the *app_server_root*/logs/uninstall/log.txt file.

The log file records file system or other unusual errors. Look for the INSTCONFSUCCESS indicator of success in the log:

```
(date_time),
Uninstall, com.ibm.ws.install.ni.ismp.actions.
SetExitCodeAction, msg1,
CWUPI0000I: EXITCODE=0
(date_time),
Uninstall, com.ibm.ws.install.ni.ismp.actions.
ISMPLogSuccessMessageAction, msg1,
INSTCONFSUCCESS
```

Verify that there were no file system or other unusual errors while uninstalling. If there are problems, correct them, and uninstall manually before reinstalling the product. See “Uninstalling manually” on page 200.

After uninstalling WebSphere Application Server - Express, delete the installation root directory before reinstalling into the same directory. Deleting the old directory avoids XML configurations that are not valid that result from retaining old files.

vpd.properties file

The installer program for WebSphere Application Server - Express uses the Install Shield for Multiplatforms (ISMP) program to install code. The vpd.properties file lists program components that are currently installed. The file helps ISMP and the installer programs of WebSphere Application Server products to recognize previous installations of WebSphere Application Server products and to control options for new installations.

HP-UX Solaris **Operating system exceptions for using the vpd.properties file**

- ISMP uses the vpd.properties file to track WebSphere products that it installs on all platforms but Solaris and HP-UX.
- ISMP uses native operating system registration on these platforms when installing as root, and does not create a vpd.properties file.

  When installing as a non-root installer, the installer programs create a vpd.properties file on all platforms, including Solaris and HP-UX.

Situations that require you to edit the vpd.properties file

Certain situations require you to edit the vpd.properties file before reinstalling a WebSphere Application Server product. The uninstaller programs for WebSphere Application Server products edit the vpd.properties while uninstalling a product, to remove entries for the product and any of its features that might have entries in the file.

It is necessary to remove product entries in the vpd.properties file before you can reinstall the product. Some situations that occur require manually removing entries from the vpd.properties file before you can reinstall a product. These situations include:

- Bypassing the uninstaller program to uninstall a product manually
- Uninstalling a product manually when the uninstaller program is not present or is not working

If the vpd.properties file has entries for a product that you uninstalled, you must edit the file and remove the entries. If you do not edit the vpd.properties file to remove entries for a product or features of a product, you cannot reinstall the product into the same directory structure. If product entries in the vpd.properties file are present, the installer program reads the vpd.properties file, determines that the product is already installed, and displays the panel that prompts you to install additional features into the existing product or to install the binaries a second time. Unfortunately, the existing binaries might not be

valid at that point. The installer program does not verify the products that it finds listed in the vpd.properties file.

Location of the vpd.properties file

The location of the vpd.properties file varies per operating platform:

- AIX platforms: The root directory or the usr/lib/objrepos directory
- Linux platforms: The root directory
- Windows platforms: installation directory of the operating system, such as the C:\WINNT directory or the C:\windows directory.

Example of the vpd.properties file

The following example shows all of the entries for the vpd.properties file for Version 6.1.0.0 of the Network Deployment product on a Windows platform. The example shows entire lines but breaks each line for formatting purposes. The identifier for the first component is highlighted. The installation location of the first component is also highlighted.

```
WSBAA61|6|1|0|0|6.1.0.0|1=IBM WebSphere Application Server|
     IBM WebSphere Application Server|IBM WebSphere Application Server V6.1|IBM|http://www.ibm.com|6.1.0.0|
     /opt/IBM/WebSphere/AppServer|0|0|1|
     WSBAA61|6|1|0|0|6.1.0.0|1|0|false|
     "_uninst" "uninstall.jar" "uninstall.dat" ""|true|3|
     WSBAA61|6|1|0|0|6.1.0.0|1
WSBAA61LicensingComponent|6|1|0|0|6.1.0.0|1=LAP Component|
     LAP Component|LAP| | | |
     /opt/IBM/WebSphere/AppServer|0|0|1|
     WSBAA61|6|1|0|0|6.1.0.0|1|0|false| |true|3|
     WSBAA61LicensingComponent|6|1|0|0|6.1.0.0|1
```

Identifying entries in the vpd.properties file

Use the following table to help identify product entries.

Table 24. Identifers in the vpd.properties file for WebSphere products

Identifier	Product
WSB...61	All Version 6.1 products use this identifier to identify the core product files: • WebSphere Application Server - Express, Version 6.1 • WebSphere Application Server, Version 6.1 • WebSphere Application Server Network Deployment, Version 6.1
WSP...61	Web server plug-ins for WebSphere Application Server, Version 6.1
WSC...	WebSphere Application Server Clients, Version 6.1

Web server plug-ins for WebSphere Application Server installs the following packages:

Operating system	Registry keys
AIX, Linux, and Windows	• WSPAA61 • WSPAA61DefineglobalconstantsComponent • WSPAA61DefinelocalvariablesComponent • WSPAA61LicensingComponent • WSPAA61Webserverplugins • WSPAA61WebserverpluginsComponent • WSPAA61AddBytes • WSPAA61gskit • WSPAA61gskitComponent

Uninstalling manually

The uninstaller program leaves some files that can prevent you from reinstalling into the original directory. Delete files and registry entries to *clean* the machine so that you can reinstall into any directory. If you are not planning to reinstall, do not uninstall manually.

You can reinstall without a clean machine. Such an installation creates a coexistence scenario that can prevent you from installing into the original directory.

The uninstaller program removes all profiles, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile, if necessary.

Cleaning the machine means deleting everything from the previous installation, including log files that are left behind by the uninstall command. Before you start the procedure, back up log files, if necessary. See Chapter 11, “Troubleshooting installation,” on page 283 for the location of log files.

This procedure uninstalls your WebSphere Application Server product. See the following topics to uninstall other components on the product disc:

- Uninstalling IBM HTTP Server

Run one of the following procedures to produce a clean machine on your operating system.

- AIX Uninstall manually on an AIX system.
- HP-UX Uninstall manually on an HP-UX system.
- Linux Uninstall manually on a Linux system.
- Solaris Uninstall manually on a Solaris system.
- Windows Uninstall manually on a Windows system.

Manually uninstalling produces a clean system. A clean system has no evidence of a previously deleted installation.

Go to Chapter 3, “Task overview: Installing,” on page 9 to begin planning a new installation.

Manually uninstalling on an AIX system

Uninstall a WebSphere Application Server product from an AIX system by running the uninstaller program and performing some manual steps to remove log files and registry entries. Such registry entries can prevent you from reinstalling the product into the original directory. If you are not planning to reinstall, you do not have to uninstall manually.

The uninstaller program removes all profiles, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile if necessary. The uninstaller program removes all profiles by default, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile, if necessary, or use the -OPT removeProfilesOnUninstall=″false″ parameter on the uninstall command. The uninstaller program leaves all profiles, including all of the configuration data, applications, and other user data in each profile. Use the -OPT removeProfilesOnUninstall=″true″ parameter on the uninstall command to delete all of the data, or delete it manually at a later time, if you decide the data is unnecessary.

Determine the installation root directory for the product so that you remove the correct product and produce a clean system.

Reinstalling the product into a new directory when files remain from a previous installation can create a coexistence scenario. However, you can delete all files and registry entries to completely remove a WebSphere Application Server product. A clean system lets you reinstall the product into the original directory without coexistence.

Default directories are shown in the following planning table:

Identifier	Directory	Actual location
app_server_root	/usr/IBM/WebSphere/AppServer	
profile_root	/usr/IBM/WebSphere/AppServer/profiles	
plugins_root	/usr/IBM/WebSphere/Plugins	

The installation wizard and the Profile Management tool provide an override for your own locations for root directories.Uninstalling the product leaves the *profile_root* directory with the pctLog.txt file.

Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products.

Perform the following procedure to produce a clean system.

1. Log on as the same user ID who installed the product.
2. Use the kill command to kill all Java processes that are running.

   If running Java processes are not related to WebSphere Application Server products and it is not possible to stop them, stop all WebSphere Application Server product-related processes. Use the following command to determine all processes that are running:

   ```
   ps -ef | grep java
   ```

   Stop all WebSphere Application Server-related processes with the `kill -9` *java_pid_1 java_pid_2...java_pid_n* command.
3. Run the uninstaller program for the Web server plug-ins for WebSphere Application Server.

   If a Web server is configured to run with the application server, uninstall the plug-ins to remove the configuration from the Web server.
4. Issue the uninstall command.

   If you have already run the uninstaller program or if you cannot run the uninstaller program, skip this step.

   app_server_root`/uninstall/uninstall`

   See the description of the “uninstall command” on page 196 for more information.

   The Uninstaller wizard begins and displays the Welcome panel.

5. List WebSphere Application Server components that are installed.

   Type the following command to search for related packages:

   ```
   lslpp -l| grep -i WS
   ```

   Do not remove packages for WebSphere Application Server products that you are not uninstalling. Version 6.1 package names have a prefix of WSB or WSP and a suffix of 61. WSC package names do not have a suffix of 61.
6. Change directories to the /usr/IBM directory, or the equivalent top directory of your install.
7. Type `rm -rf WebSphere` to delete this WebSphere Application Server-related directory, but only if the AppServer directory is the only directory within the WebSphere directory. Delete the directory if the only products contained in the directory are products that you intend to delete.
8. Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products and remove the desired products from the install registry.
9. Edit the “vpd.properties file” on page 198.

   The file is located in the root directory or in the /usr/lib/objrepos directory.

   Do not delete or rename the vpd.properties file because the InstallShield MultiPlatform (ISMP) program uses it for other products that it installs. If the WebSphere Application Server product that you are uninstalling is the only product with entries in the vpd.properties file, you can delete this file.

   At this point, it should be possible to reinstall WebSphere Application Server. If not, run the odmclean.sh and aixclean.sh scripts as described in the next step.
10. Run the odmclean.sh and aixclean.sh scripts.

    Do not run the aixclean.sh script if the WebSphere MQ product is installed.

    a. Obtain the scripts from the technote document titled, Manual uninstall On AIX requires odmclean.sh and aixclean.sh on the WebSphere Application Server Support site.
    b. Edit the odmclean.sh script and replace every instance of the string /usr/WebSphere/AppServer with the actual installation root directory.
    c. Run the aixclean.sh script from the command line:

       ```
       ./aixclean.sh
       ```
    d. Run the odmclean.sh script from the command line:

       ```
       ./odmclean.sh
       ```

This procedure results in having a clean system. You can reinstall into the same directories now. A clean system has no trace of a previously deleted installation.

Go to Chapter 3, “Task overview: Installing,” on page 9 to begin planning a new installation.

Manually uninstalling on an HP-UX system

This procedure uninstalls a WebSphere Application Server product from an HP-UX system. After running the uninstaller program, manual steps remove log files and registry entries that can prevent you from reinstalling the product into the original directory. If you are not planning to reinstall, do not uninstall manually.

The uninstaller program removes all profiles, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile if necessary. The uninstaller program removes all profiles by default, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile, if necessary, or use the -OPT removeProfilesOnUninstall=″false″ parameter on the uninstall command. The uninstaller program leaves all profiles, including all of the configuration data, applications, and other user data in each profile. Use the -OPT removeProfilesOnUninstall=″true″ parameter on the uninstall command to delete all of the data, or delete it manually at a later time, if you decide the data is unnecessary.

Determine the installation root directory for the product so that you remove the correct product and produce a clean system.

Reinstalling the product into a new directory when files remain from a previous installation can create a coexistence scenario. However, you can delete all files and registry entries to completely remove a WebSphere Application Server product. A clean system lets you reinstall the product into the original directory without coexistence.

Default directories are shown in the following planning table:

Identifier	Directory	Actual location
app_server_root	/opt/IBM/WebSphere/AppServer	
profile_root	/opt/IBM/WebSphere/AppServer/profiles	
plugins_root	/opt/IBM/WebSphere/Plugins	

The installation wizard and the Profile Management tool provide an override for your own locations for root directories.Uninstalling the product leaves the *profile_root* directory with the pctLog.txt file.

Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products.

Perform the following procedure to produce a clean system.

1. Log on as the same user ID who installed the product.
2. Run the uninstaller program for the Web server plug-ins for WebSphere Application Server.

   If a Web server is configured to run with the application server, uninstall the plug-ins to remove the configuration from the Web server.
3. Use the kill command to kill all Java processes that are running.

   If running Java processes are not related to WebSphere Application Server products and it is not possible to stop them, stop all WebSphere Application Server product-related processes. Use the following command to determine all processes that are running:

   ```
   ps -ef | grep java
   ```

   Stop all WebSphere Application Server-related processes with the `kill -9` *java_pid_1 java_pid_2...java_pid_n* command.
4. Issue the uninstall command.

   If you have already run the uninstaller program or if you cannot run the uninstaller program, skip this step.

   app_server_root`/uninstall/uninstall`

   See the description of the “uninstall command” on page 196 for more information.

   The Uninstaller wizard begins and displays the Welcome panel.
5. Use HP-UX System Administration Manager (SAM) to remove packages.
   a. Start the SAM utility with the /usr/sbin/sam command.
   b. Verify that your DISPLAY and TERM environment variables are set properly.
   c. Click **Software management**.
   d. Click **View installed software**.
   e. Look for WebSphere Application Server entries or IBM HTTP Server entries in the SD list.
   f. Close the SD list.
   g. Click **Remove local host software**.
   h. Click any of the following instances that display in the SD Remove List:

- **IBM HTTP Server**
- **WSBAA61**
- **WSPAA61**
- **WSCAA**
- **gsk7bas**

i. Click **Actions > Mark for remove**.
j. Click **Actions > Remove**.
k. Click **OK** in the Remove analysis dialog box.
l. Click **Logs** to display real-time removal of selected packages.
m. Click **Done** when all packages are removed.
n. Exit SAM.

6. Search for the packages to verify their removal.
   Type **swlist | grep WS** to show packages for WebSphere Application Server.
   Package names for Web server plug-ins for WebSphere Application Server are:

```
WSPAA61
WSPAA61DGCC
WSPAA61DLVC
WSPAA61LC
WSPAA61WSPC
WSPAA61AddBytesHS
WSPAA61gskitHP
WSPAA61gskitHPC
WSPAA61jdkHP
```

7. Type `rm -rf` *app_server_root* to remove WebSphere Application Server directories in the *app_server_root* directory. Do not remove installation root directories for products that you intend to keep. Remove all of the profile directories as well.
8. Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products and remove the desired products from the install registry.

This procedure results in having a clean system. You can reinstall into the same directories now. A clean system has no trace of a previously deleted installation.

Example of displaying package names for WebSphere Application Server products

Issue the following command:

```
swlist | grep WSBAA61
```

The following package name is returned:

```
WSBAA60        6.1.0      IBM WebSphere Application Server
```

Go to Chapter 3, “Task overview: Installing,” on page 9 to begin planning a new installation.

Manually uninstalling on a Linux system

This procedure uninstalls a WebSphere Application Server product from a Linux system. After running the uninstaller program, manual steps remove log files and registry entries that can prevent you from reinstalling the product into the original directory. If you are not planning to reinstall, do not uninstall manually.

The uninstaller program removes all profiles, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile if necessary. The uninstaller program removes all profiles by default, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each

profile, if necessary, or use the -OPT removeProfilesOnUninstall=″false″ parameter on the uninstall command. The uninstaller program leaves all profiles, including all of the configuration data, applications, and other user data in each profile. Use the -OPT removeProfilesOnUninstall=″true″ parameter on the uninstall command to delete all of the data, or delete it manually at a later time, if you decide the data is unnecessary.

Determine the installation root directory for the product so that you remove the correct product and produce a clean system.

Reinstalling the product into a new directory when files remain from a previous installation can create a coexistence scenario. However, you can delete all files and registry entries to completely remove a WebSphere Application Server product. A clean system lets you reinstall the product into the original directory without coexistence.

Default directories are shown in the following planning table:

Identifier	Directory	Actual location
app_server_root	/opt/IBM/WebSphere/AppServer	
profile_root	/opt/IBM/WebSphere/AppServer/profiles	
plugins_root	/opt/IBM/WebSphere/Plugins	

The installation wizard and the Profile Management tool provide an override for your own locations for root directories.Uninstalling the product leaves the *profile_root* directory with the pctLog.txt file.

Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products.

Perform the following procedure to produce a clean system.

1. Log on as the same user ID who installed the product.
2. Run the uninstaller program for the Web server plug-ins for WebSphere Application Server.

   If a Web server is configured to run with the application server, uninstall the plug-ins to remove the configuration from the Web server.
3. Use the kill command to kill all Java processes that are running.

   If running Java processes are not related to WebSphere Application Server products and it is not possible to stop them, stop all WebSphere Application Server product-related processes. Use the following command to determine all processes that are running:

   ```
   ps -ef | grep java
   ```

   Stop all WebSphere Application Server-related processes with the `kill -9` *java_pid_1 java_pid_2...java_pid_n* command.
4. Issue the uninstall command.

   If you have already run the uninstaller program or if you cannot run the uninstaller program, skip this step.

   app_server_root`/uninstall/uninstall`

   See the description of the “uninstall command” on page 196 for more information.

   The Uninstaller wizard begins and displays the Welcome panel.
5. Search for related packages.

   See “Operating system registry keys” on page 136 for more information.

   Do not remove packages for WebSphere Application Server products that you are not uninstalling. Version 6.1 package names have a prefix of WSB or WSP and a suffix of 61. WSC package names do not have a suffix of 61.

6. If there are packages to delete, type `rpm -e packagename` to remove any packages for the product that you are uninstalling.

   Alternatively, you can search for packages to verify that everything in the list is something to delete:

   ```
   rpm -qa | grep WS
   ```

   If there is a problem with package dependencies, you can use the following command to remove the packages:

   ```
   rpm -e packagename --nodeps --justdb
   ```

   The nodeps option skips the dependency check. The justdb option updates only the package database, and not the file system. Using only the nodeps option can cause a failure in package removal if there is any mismatch in the dependent file system (files and directories).
7. Type `rm -rf app_server_root` to remove WebSphere Application Server directories in the *app_server_root* directory. Do not remove installation root directories for products that you intend to keep. Remove all of the profile directories as well.
8. Edit the “vpd.properties file” on page 198.

   Do not delete or rename the vpd.properties file because the InstallShield MultiPlatform (ISMP) program uses it for other products that it installs. If the WebSphere Application Server product that you are uninstalling is the only product with entries in the vpd.properties file, you can delete this file.
9. Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products and remove the desired products from the install registry.

This procedure results in having a clean system. You can reinstall into the same directories now. A clean system has no trace of a previously deleted installation.

Go to Chapter 3, “Task overview: Installing,” on page 9 to begin planning a new installation.

Manually uninstalling on a Solaris system

This procedure uninstalls the WebSphere Application Server product from a Solaris system. After running the uninstaller program, manual steps remove log files and registry entries that can prevent you from reinstalling the product into the original directory. If you are not planning to reinstall, do not uninstall manually.

The uninstaller program removes all profiles, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile if necessary. The uninstaller program removes all profiles by default, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile, if necessary, or use the -OPT removeProfilesOnUninstall=″false″ parameter on the uninstall command. The uninstaller program leaves all profiles, including all of the configuration data, applications, and other user data in each profile. Use the -OPT removeProfilesOnUninstall=″true″ parameter on the uninstall command to delete all of the data, or delete it manually at a later time, if you decide the data is unnecessary.

Determine the installation root directory for the product so that you remove the correct product and produce a clean system.

Reinstalling the product into a new directory when files remain from a previous installation can create a coexistence scenario. However, you can delete all files and registry entries to completely remove a WebSphere Application Server product. A clean system lets you reinstall the product into the original directory without coexistence.

Default directories are shown in the following planning table:

Identifier	Directory	Actual location
app_server_root	/opt/IBM/WebSphere/AppServer	
profile_root	/opt/IBM/WebSphere/AppServer/profiles	
plugins_root	/opt/IBM/WebSphere/Plugins	

The installation wizard and the Profile Management tool provide an override for your own locations for root directories.Uninstalling the product leaves the *profile_root* directory with the pctLog.txt file.

Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products.

Perform the following procedure to produce a clean system.

1. Log on as the same user ID who installed the product.
2. Run the uninstaller program for the Web server plug-ins for WebSphere Application Server.

   If a Web server is configured to run with the application server, uninstall the plug-ins to remove the configuration from the Web server.
3. Use the kill command to kill all Java processes that are running.

   If running Java processes are not related to WebSphere Application Server products and it is not possible to stop them, stop all WebSphere Application Server product-related processes. Use the following command to determine all processes that are running:

   ```
   ps -ef | grep java
   ```

   Stop all WebSphere Application Server-related processes with the `kill -9` *java_pid_1 java_pid_2...java_pid_n* command.
4. Issue the uninstall command.

   If you have already run the uninstaller program or if you cannot run the uninstaller program, skip this step.

   app_server_root`/uninstall/uninstall`

   See the description of the “uninstall command” on page 196 for more information.

   The Uninstaller wizard begins and displays the Welcome panel.
5. Search for related packages. Type the following command to search for packages for WebSphere Application Server products:

   ```
   pkginfo | grep WS
   ```

   If no packages appear when using these commands, skip the next step. The resulting list of packages has the following format:

   ```
   application WSBAA61        WebSphere Application Server
   ```
6. Change directories to the directory where package information is registered.

   ```
   cd /var/sadm/pkg
   ```
7. Issue the following command to remove any WebSphere Application Server-related packages.

   `pkgrm` *packagename1 packagename2 packagename3 ...*

   Do not remove packages for WebSphere Application Server products that you are not uninstalling. Version 6.1 package names have a prefix of WSB or WSP and a suffix of 61. WSC package names do not have a suffix of 61.

   Issue the following commands from the /var/sadm/pkg directory to search for and remove any WebSphere Application Server product-related packages that are registered in the /var/sadm/pkg directory:
   a. Change directories to the correct directory: cd /var/sadm/pkg
   b. ls |grep WSB|xargs -i pkgrm -n {} for WebSphere Application Server products
   c. ls |grep WSC|xargs -i pkgrm -n {} for Application Client

d. ls |grep WSP|xargs -i pkgrm -n {} for Web server plug-ins for WebSphere Application Server

Package names for Web server plug-ins for WebSphere Application Server are:

```
WSPAA61
WSPAA61AC
WSPAA61BC
WSPAA61CC
WSPAA61DC
WSPAA61FC
WSPAA61FB
WSPAA61GC
WSPAA61HC
```

If there is a problem removing the packages, remove the related package directories in the /var/sadm/pkg directory, including the preremove files.

For example, remove the following file before issuing the pkgrm -n WSBAA61 command:

```
/var/sadm/pkg/WSBAA61/install/preremove
```

8. Type `rm -rf` *app_server_root* to remove WebSphere Application Server directories in the *app_server_root* directory. Do not remove installation root directories for products that you intend to keep. Remove all of the profile directories as well.
9. Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products and remove the desired products from the install registry.

This procedure results in having a clean system. You can reinstall into the same directories now. A clean system has no trace of a previously deleted installation.

Go to Chapter 3, “Task overview: Installing,” on page 9 to begin planning a new installation.

Manually uninstalling on a Windows system

Uninstall a WebSphere Application Server product from a Windows system by running the uninstaller program and performing some manual steps to remove log files and registry entries. Such registry entries can prevent you from reinstalling the product into the original directory. If you are not planning to reinstall, you do not have to uninstall manually.

The uninstaller program removes all profiles, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile if necessary. The uninstaller program removes all profiles by default, including all of the configuration data and applications in each profile. Before you start the uninstall procedure, back up the config folder, the installableApps folder, and the installedApps folder of each profile, if necessary, or use the -OPT removeProfilesOnUninstall=″false″ parameter on the uninstall command. The uninstaller program leaves all profiles, including all of the configuration data, applications, and other user data in each profile. Use the -OPT removeProfilesOnUninstall=″true″ parameter on the uninstall command to delete all of the data, or delete it manually at a later time, if you decide the data is unnecessary.

Determine the installation root directory for the product so that you remove the correct product and produce a clean system.

Reinstalling the product into a new directory when files remain from a previous installation can create a coexistence scenario. However, you can delete all files and registry entries to completely remove a WebSphere Application Server product. A clean system lets you reinstall the product into the original directory without coexistence.

Default directories are shown in the following planning table:

Identifier	Directory	Actual location
app_server_root	C:\Program Files\IBM\WebSphere\AppServer	
profile_root	C:\Program Files\IBM\WebSphere\AppServer\profiles	
plugins_root	C:\Program Files\IBM\WebSphere\Plugins	

Windows If you move either installation root directory, move them to a shorter path name. Some Windows systems have a length restriction of 258 characters for a command. A problem can occur that prevents the successful creation of a profile when either path is too long. The maximum length for the installation root directory is 60 characters. The maximum length for the profiles installation root directory is 80 characters.

The Installation wizard and the Profile Management tool let you specify your own locations for installation root directories.

Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products.

Perform the following procedure to produce a clean system.

1. Log on with the same user ID that you used to install the product.
2. Run the uninstaller program for the Web server plug-ins for WebSphere Application Server.

   If a Web server is configured to run with the application server, uninstall the plug-ins to remove the configuration from the Web server.
3. Stop any browsers and any Java processes related to WebSphere Application Server products, as described in Chapter 9, “Uninstalling the product,” on page 193.
4. Issue the uninstall command.

   If you have already run the uninstaller program or if you cannot run the uninstaller program, skip this step.

   app_server_root\uninstall\uninstall

   See the description of the “uninstall command” on page 196 for more information.

   The Uninstaller wizard begins and displays the Welcome panel.
5. Verify that you have an Emergency Recovery Disk. Instructions for creating this disk are in the Windows help documentation.

   This step is a safeguard. This procedure does not require the recovery disk.
6. Use the regback.exe program from the Windows Resource Kit to back up the registry.

   This step is a safeguard. This procedure does not require the backup copy of the registry.
7. Delete product registry entries for the WebSphere Application Server product that you are uninstalling.

   Edit the Windows system registry by invoking theregedit.exe command from a command prompt.

   Handle the Registry with care

   Note: You can easily make a mistake while using the registry editor to view and edit registry contents. The editor does not warn you of editing errors, which can be extremely dangerous. A corrupt registry can disrupt your system to the point where your only option is to reinstall the Windows operating system.

   a. Press **Ctrl-F** to search for all instances of **WebSphere** to determine whether you should delete each entry. You might not be able to remove all of the entries related to WebSphere Application Server, which is not a problem.

   b. Expand and select keys related to **WebSphere Application Server** products.

See “Operating system registry keys” on page 136 for a list of Windows registry keys to search for and delete.

c. Click **Edit > Delete** from the menu bar for each related key.

d. Click **Yes** when asked to confirm deletion of the key.

e. Click **Registry > Exit** from the menu bar when you are finished.

8. Delete the installation root directory for the product that you are uninstalling.
9. Determine all of the profile directories and remove the directories.
10. Open a Windows Explorer window and browse to the C:\Documents and Settings\All Users\Start Menu\Programs\IBM WebSphere directory.

    If you have one installation of a WebSphere Application Server product, delete the following folder:

    `Application Server, Express v6.x`
11. Delete the %WINDIR%\IsUninst.exe file.
12. Edit the “vpd.properties file” on page 198.

    The file is located in the installation directory of the operating system, such as the C:\WINNT directory or the C:\windows directory.

    Do not delete or rename the vpd.properties file because the InstallShield MultiPlatform (ISMP) program uses it for other products that it installs. If the WebSphere Application Server product that you are uninstalling is the only product with entries in the vpd.properties file, you can delete this file.
13. Use the installRegistryUtils command to examine the installation locations for all installed WebSphere Application Server products and remove the desired products from the install registry.
14. Restart your machine if a prompt displays that directs you to restart.

This procedure results in having a clean system. You can reinstall into the same directories now. A clean system has no trace of a previously deleted installation.

Go to Chapter 3, “Task overview: Installing,” on page 9 to begin planning a new installation.

Chapter 10. Developing and installing customized installation packages

A customized installation package (CIP) is a customized WebSphere Application Server installation image that can include one or more maintenance packages, a configuration archive from a stand-alone application server profile, one or more enterprise archive files, and scripts and other files that help customize the resulting installation. The IBM Installation Factory for WebSphere Application Server creates CIPs.

Read through this topic and its related topics to prepare for creating and installing customized installation packages (CIPs). Become familiar with CIP installation options before you start to use the installation tools. Review the hardware and software requirements on the Supported hardware and software Web site to get started.

If you encounter a problem such as needing more disk space or more temporary space, or missing prerequisite packages on your system, cancel the installation, make the required changes, and restart the installation.

This topic introduces the IBM Installation Factory for WebSphere Application Server, which you can use to create a CIP. Get started by creating a build definition for the CIP using the Installation Factory console. Use the **ifgui** command to start the Installation Factory console.

After defining the build parameters, create the CIP, which has a version of the WebSphere Application Server Installation wizard. See “Getting started with the Installation Factory” on page 213 for more information about defining CIP parameters and creating the CIP.

The following procedure describes how to get started creating and installing a customized installation package for your WebSphere Application Server product.

1. Use the Installation Factory to create a customized installation package.

   See “Getting started with the Installation Factory” on page 213 for more information.
2. Prepare your operating platform for installation.

   See Chapter 5, “Preparing the operating system for product installation,” on page 65.
3. Install the Express product using the CIP Installation wizard.

   The CIP Installation wizard performs the following actions:
   - Automatically checks prerequisites.
   - Looks for a previous WebSphere Application Server Version 6.x installation to determine installation options to display.

     Options include adding features and maintenance to the product binaries, and installing a new set of product binaries at the updated maintenance level that is included in the CIP.
   - Looks for a previous Version 6.x trial installation to determine whether to offer an upgrade path from the trial installation to the full product.

     After upgrading, use the CIP Installation wizard again to install maintenance packages that are included in the CIP.
   - Creates a stand-alone application server node when installing a new set of product binaries and the maintenance packages included in the CIP.

   Choose an installation scenario to continue the installation:
   - Perform a new installation with the CIP Installation wizard.

     See “Installing a CIP for Express” on page 253 to perform a custom installation, which lets you select available features and other options to install.

     The CIP Installation wizard also installs the maintenance packages in the CIP.

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- Install maintenance packages and optionally, additional features to increment an existing installation with the CIP Installation wizard.

  See “Installing CIP features on an existing Express product” on page 258.

  The CIP Installation wizard can install maintenance to an existing product without installing features.
- Upgrade a trial version to the full product version

  See “Upgrading the Express trial to the Express product using a CIP” on page 262.

  The CIP Installation wizard does not install maintenance packages when upgrading the existing installation. Install the CIP again to install the maintenance packages.
- Perform a silent installation with the CIP Installation wizard.

  See “Installing a CIP silently” on page 264.

  A silent installation requires you to edit the response file that contains all of your installation choices. After creating a valid response file, you issue the **install** command with the silent parameter from a command window.

The CIP Installation wizard does not support the ISMP-console installation method at this time.

You can use a CIP to install IBM WebSphere Application Server - Express by following this procedure.

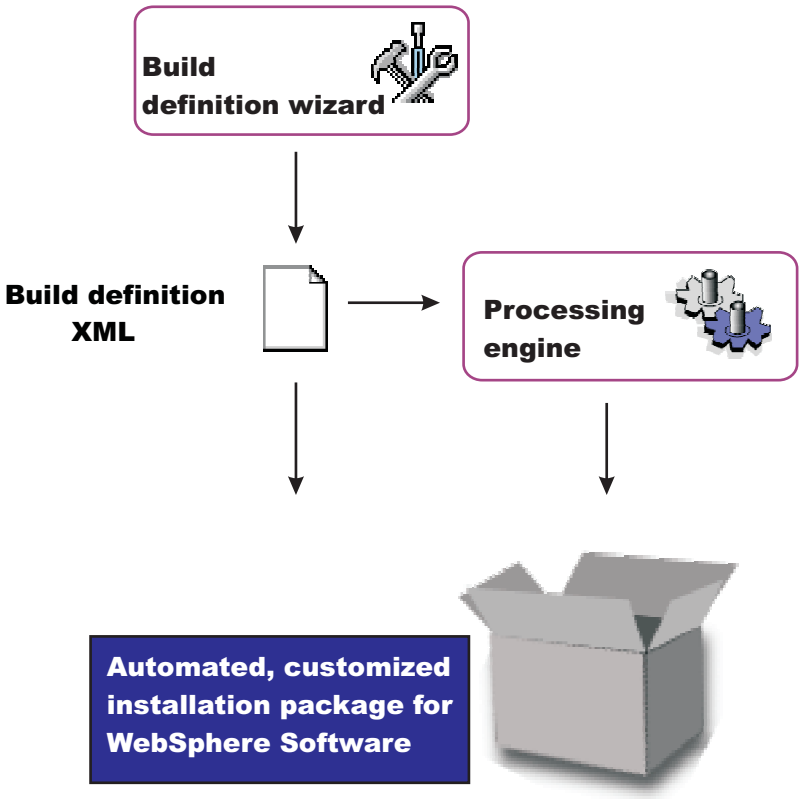
Installation Factory overview

The Installation Factory combines the installation image for a version or release of a WebSphere software product with applicable maintenance packages, a configuration archive, one or more enterprise archive files, customization scripts, and other files, to create a customized installation package.

Installing and configuring a WebSphere software product is usually a multiple step process:

1. Install the shipped version of the product.
2. Install the current fix pack.
3. Install a Java 2 Software Development Kit (SDK) fix pack.
4. Install one or more interim fixes as needed.
5. Create and configure application servers and other artifacts.
6. Deploy applications.

The Installation Factory simplifies the process by creating a single installation image, the customized installation package (CIP).



After creating the customized installation package, installing and configuring a WebSphere software product is a one-step process: install the customized installation package.

Getting started with the Installation Factory

Before creating a customized installation package (CIP), set up the Installation Factory on your system.

Setting up the Installation Factory

To set up the Installation Factory, you can either use the Installation Factory code copied from the product Supplements disc or use the code downloaded from the Installation Factory Web site.

- To set up the Installation Factory on your system using the code from the product media, perform the followings tasks:
  1. Copy the packed code from the Supplements disc to your operating system.
  2. Unpack the code.
- To set up the Installation Factory on your system using the code from the Web site, perform the followings tasks:
  1. Download the packed code from the download page for the IBM Installation Factory for WebSphere Application Server.
  2. Unpack the code.

Creating a build definition

Before creating a CIP, you must first create a *build definition* for the CIP. The build definition is an XML document that defines how the Installation Factory is to customize the WebSphere Application Server product. The Installation Factory graphical user interface (GUI) is the easiest way to create a build definition. Launch the GUI with the **ifgui** command from the `bin` directory. You can save a build definition

and use it to generate the CIP directly from the GUI. Alternately, you can pass the build definition to the command-line interface through an option on the **ifcli** command. The alternate approach is useful when you want to create the build definition interactively on one machine using the GUI, but then generate the CIP in batch mode, perhaps on a different machine, and perhaps as part of some larger automated process.

Creating and using a CIP

The overall procedure for creating and using a CIP is:

1. Gather all of the components that you intend to include in the CIP.

   Optional assets can include any of the following components:

   - Maintenance packages
   - Scripts or Java classes
   - Enterprise archive (EAR) files for applications that you intend to deploy with default deployment options on stand-alone application server profiles
   - A configuration archive (CAR) file for cloning a stand-alone application server profile in the CIP from a previously installed and customized stand-alone application server
   - Additional files (that might include EAR files that you intend to deploy with customized options included in a script, for example)

   The only required asset is the installation image, which is either the product disc or a downloaded image from the Passport Advantage site.

   Make all of the assets available on the machine where you intend to create your CIP (which might be a different machine from the one where you create the build definition.
2. Use the Installation Factory console (bin/ifgui) to create the build definition file. See the “ifgui command” for more information.

   Clicking the New build definition icon starts the Build Definition wizard. See the “Build Definition wizard panels” on page 224 for more information.
3. Use the option in the GUI to create the CIP if all of the components for the CIP are available for the GUI operating system platform.
4. Or, copy the build definition file to a machine running the target operating system and use the command-line invocation tool (`bin/ifcli`) to launch the processing engine that creates the CIP on the target operating system.

   The **ifcli** command creates CIPs for all supported operating systems. The **ifcli** command runs on a subset of the operating system platforms that the ifcli tool supports. Therefore, you might have to copy the build definition to the processing engine machine.

   See the “ifcli command” on page 239 for more information.
5. Install the CIP using the InstallShield for Multiplatforms (ISMP) Installation wizard. Panels in the CIP Installation wizard vary according to the product that you are installing. For example, the Installation wizard for a CIP for a WebSphere Application Server product is based on the Installation wizard for WebSphere Application Server Version 6.x.

   See “install command” on page 27 for more information.

ifgui command

The **ifgui** command launches the Installation Factory console and creates a build definition XML file that identifies the product to install, the features of the product, and the maintenance packages and other customizations to include in the customized installation package (CIP). The ifgui tool can also create the CIP in connected mode.

The ifgui tool is also referred to as the Build definition wizard for the Installation Factory.

Although the ifcli command-line version of the Installation Factory is supported for all Version 6.1 platforms with the exception of z/OS, the Installation Factory console (ifgui) is supported for the following operating systems:

- AIX
- Windows 2000
- Windows 2003
- Solaris
- Linux RHEL
- Linux SLES
- HP-UX

The Installation Factory uses a version of IBM Eclipse Software Development Kit (SDK) that supports 64-bit operating systems in headless mode only without a user interface. As a result, the **ifgui** command is not available on 64-bit operating systems.

Location of the command file

The command file is located in the `/bin` directory of the directory where you unpack the Installation Factory. The command file is a script named:

- AIX HP-UX Linux Solaris `ifgui.sh`
- Windows `ifgui.bat`

Logging

The **ifgui** command creates a log file that shows whether the build definition file is produced successfully. In connected mode, the log also contains information about the CIP creation. When the build definition file is not successfully built, examine the trace file to determine what is wrong.

The following files record build file definition data:

- *IF_working_directory*`/logs/trace.xml` is a detailed trace log in XML format
- *IF_working_directory*`/logs/log.txt` is the log file

The tracing and logging output and level are configurable as described in the loglevel and tracelevel parameters.

The success indicator is INSTCONFSUCCESS.

Common problems that can cause failure include mismatched refresh packs, fix packs, and interim fixes, or because of insufficient disk space.

Syntax for the ifgui.sh command

Displaying help for the command:

```
./ifgui.sh -help
```

Creating a build definition:

```
./ifgui.sh
   -loglevel log_level
   -logfile log_file_path_name
   -tracelevel trace_level
   -tracefile trace_file_path_name
```

Syntax for the ifgui.bat command

Displaying help for the command:

```
ifgui.bat -help

ifgui.bat ?
```

Creating a build definition:

```
ifgui.bat
   -loglevel log_level
   -logfile log_file_path_name
   -tracelevel trace level
   -tracefile trace_file_path_name
```

Parameters

Supported arguments include:

Windows **-?**
Shows usage information.

-help
Shows usage information.

-logfile *log_file_path_name*
Identifies the log file. The default value is *current_working_directory*/logs/log.txt.

-loglevel *log_level*
Sets the level of logging. The default value is INFO. Valid values are:

- ALL
- CONFIG
- INFO
- WARNING
- SEVERE
- OFF (Turns off logging)

-tracefile *trace_file_path_name*
Identifies the trace file. The default value is *current_working_directory*/logs/trace.xml.

-tracelevel *trace level*
Sets the level of tracing. The default value is OFF. Valid values are:

- ALL
- FINE
- FINER
- FINEST
- OFF (Turns off logging)

Using the build definition file to create a customized installation package (CIP)

Use the build definition file in connected mode to create a CIP from within the wizard. Use the build definition in disconnected mode as input to the Installation Factory processing engine to create a customized installation package. See the description of the “ifcli command” on page 239 for more information.

Build definition file

A build definition file is an XML file that identifies components and characteristics for a customized installation package (CIP).

In some cases, you might be unable to use the Installation Factory console (“ifgui command” on page 214) on the target operating system platform. You have two options in such a case:

- Use the console in disconnected mode on a supported machine to create a build definition file for the target operating system on another machine.

  Then copy the file to the target operating system and use the command line interface to start the processing engine and create the customized installation package.

  See “Creating a build definition for another machine” on page 243 for a description of such a procedure.
- Create the build definition XML document using a validating XML editor.

  Copy one of the sample build definition documents from the *IF_install_root*/samples/was directory to get started.

  After making your changes, validate the build definition document with its XML schema (the Common.xsd, BaseBuildDefinition.xsd, and BuildDefinition.xsd files) using a validating XML parser or editor. Then use the command-line interface to start the processing engine and create the customized installation package.

  The XML schema files are in the following system-specific directories:

  – AIX HP-UX Linux Solaris *IF_install_root*/eclipse/plugins/com.ibm.ws.install.factory.was_6.1.0/xsd

  – Windows *IF_install_root*\eclipse\plugins\com.ibm.ws.install.factory.was_6.1.0\xsd

Example build definition

The following example shows some elements from one version of the build definition file. See the *IF_install_root*/samples/was/SampleBuildDefinition.xml file for a current example.

Always consult the latest build definition XML schema for definitive answers to XML coding questions.

```
<?xml version="1.0" encoding="UTF-8"?>

<!--
/**
 * THIS PRODUCT CONTAINS RESTRICTED MATERIALS OF IBM
 * 5724-I63, 5724-H88, 5655-N02, 5733-W70 (C) COPYRIGHT International Business Machines Corp. 2005
 * All Rights Reserved * Licensed Materials - Property of IBM
 * US Government Users Restricted Rights - Use, duplication or disclosure
 * restricted by GSA ADP Schedule Contract with IBM Corp.
 */
-->

<basebuilddef:buildDefinition xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:basebuilddef="http://www.ibm.com/xmlns/prod/websphere/if/basebuilddef"
xmlns:builddef="http://www.ibm.com/xmlns/prod/websphere/if/builddef"
xmlns:common="http://www.ibm.com/xmlns/prod/websphere/if/common" xsi:type="builddef:BuildDefinition">
    <installFactoryVersion>
        <version>6</version>
        <release>1</release>
        <refreshPack>0</refreshPack>
        <fixPack>0</fixPack>
        <buildID></buildID>
    </installFactoryVersion>

    <description lang="en">Sample Build Definition</description>

    <qualifiedVersionedPackageId>
        <offeringId isRegEx="false">WAS</offeringId>
        <editionId isRegEx="false">ND</editionId>
        <installPackageId isRegEx="false">APPSERVER</installPackageId>

        <version>
            <version>6</version>
            <release>1</release>
            <refreshPack>0</refreshPack>
            <fixPack>0</fixPack>
```

```
    </version>
</qualifiedVersionedPackageId>

<platformInfo>
    <common:osVendor>MICROSOFT</common:osVendor>
    <common:osName>WINDOWS</common:osName>
    <common:osVersion>NA</common:osVersion>
    <common:osPatchLevel>NA</common:osPatchLevel>
    <common:osArch>x86</common:osArch>
</platformInfo>

<buildOptions>
    <targetLocation>C:\if_Created_Images</targetLocation>
    <overwriteWithoutWarning>false</overwriteWithoutWarning>
</buildOptions>

<authorInfo lang="en">
   <organization>My Company</organization>
</authorInfo>

<modeSelection>Connected</modeSelection>

<packageIdentifier>
    <fullPackageIdentifier>company.division.dept_1.0.0.0</fullPackageIdentifier>
    <identifier>company.division.dept</identifier>
    <version>1.0.0.0</version>
</packageIdentifier>

<packageMergeInfo>
    <sourceFullInstallPackageLocation>C:\WASImage\ND</sourceFullInstallPackageLocation>

    <!-- Maintenance packages Fix Pack -->
    <sourceMaintenanceInstallPackages installOrder="2" maintenanceType="fixPack">
        <rootFolder>
            <whichFolderToUse>literalRootProvided</whichFolderToUse>
            <rootFolder>C:\WASImage\Maintenance\Windows\MaintPacks</rootFolder>
        </rootFolder>
        <relativeFolder>.</relativeFolder>
        <fileNamePattern isRegEx="false">6.1.1-WS-WAS-WinX32-FP0000001.pak</fileNamePattern>
    </sourceMaintenanceInstallPackages>

    <sourceMaintenanceInstallPackages installOrder="3" maintenanceType="fixPack">
        <rootFolder>
            <whichFolderToUse>literalRootProvided</whichFolderToUse>
            <rootFolder>C:\WASImage\Maintenance\Windows\MaintPacks</rootFolder>
        </rootFolder>
        <relativeFolder>.</relativeFolder>
        <fileNamePattern isRegEx="false">6.1.1-WS-WASSDK-WinX32-FP0000001.pak</fileNamePattern>
    </sourceMaintenanceInstallPackages>

    <!-- Interim Fixes -->
          <interimFixes maintenanceType="interimFix">
                <rootFolder>
                      <whichFolderToUse>literalRootProvided</whichFolderToUse>
                      <rootFolder>C:\WASImage\Maintenance\Fixes</rootFolder>
                </rootFolder>
                <relativeFolder>.</relativeFolder>
                <fileNamePattern>PQ20029.pak</fileNamePattern>
          </interimFixes>
</packageMergeInfo>

<!-- User Files (optional) -->
<userFiles>
    <files>
        <fileSet>
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
            </rootFolder>
            <relativeFolder includeSubfolders="true">install</relativeFolder>
            <fileNamePattern isRegEx="true">.*</fileNamePattern>
        </fileSet>
```

```
        <relativeTargetFolder>scripts/install</relativeTargetFolder>
        <preserveFolderStructure>true</preserveFolderStructure>
    </files>

    <files>
        <fileSet>
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\Scripts</rootFolder>
            </rootFolder>
            <relativeFolder includeSubfolders="true">uninstall</relativeFolder>
            <fileNamePattern isRegEx="true">.*</fileNamePattern>
        </fileSet>
        <relativeTargetFolder>scripts/uninstall</relativeTargetFolder>
        <preserveFolderStructure>true</preserveFolderStructure>
    </files>
</userFiles>

<!-- Custom configuration (optional) -->
<configurationInfo>
    <!--
        Install / Uninstall time custom configuration
    -->
    <installUninstallActions>
        <installActions>
            <scripts executionOrder="1" fatalErrorWhenExecutionFailed="false">
                <rootFolder>
                    <whichFolderToUse>literalRootProvided</whichFolderToUse>
                    <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
                </rootFolder>
                <relativeFolder>.</relativeFolder>
                <fileNamePattern isRegEx="false">setupEnv1.ant</fileNamePattern>
            </scripts>

            <scripts executionOrder="2">
                <rootFolder>
                    <whichFolderToUse>literalRootProvided</whichFolderToUse>
                    <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
                </rootFolder>
                <relativeFolder>.</relativeFolder>
                <fileNamePattern isRegEx="false">setupEnv2.ant</fileNamePattern>
            </scripts>
        </installActions>

        <uninstallActions>
            <scripts executionOrder="1" fatalErrorWhenExecutionFailed="false">
                <rootFolder>
                    <whichFolderToUse>literalRootProvided</whichFolderToUse>
                    <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
                </rootFolder>
                <relativeFolder>.</relativeFolder>
                <fileNamePattern isRegEx="false">cleanupEnv.ant</fileNamePattern>
           </scripts>
        </uninstallActions>
    </installUninstallActions>

    <!--
        Profile creation / deletion custom configuration
    -->
    <profileActions>
        <!--
            Profile Type - default
        -->
        <profileType>
            <profileType>default</profileType>
            <common:displayName>
                <messageKey>COMD.ProfileType.default</messageKey>
                <alternateText />
            </common:displayName>
        </profileType>

        <profileCreationActions>
```

```
        <!--
            Configuration Archive
        -->
        <configurationArchive executionOrder="1" fatalErrorWhenExecutionFailed="true">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\CAs</rootFolder>
            </rootFolder>
            <relativeFolder>.</relativeFolder>
            <fileNamePattern isRegEx="false">AppSrv01.car</fileNamePattern>
        </configurationArchive>

        <!--
            DeployEAR(s)
        -->
        <deployEARs executionOrder="2" fatalErrorWhenExecutionFailed="true"
                                              applicationName="SAMPLE GALLERY">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\EARs</rootFolder>
            </rootFolder>
            <relativeFolder>.</relativeFolder>
            <fileNamePattern isRegEx="false">SamplesGallery.ear</fileNamePattern>
        </deployEARs>

        <deployEARs executionOrder="3" fatalErrorWhenExecutionFailed="true"
                                               applicationName="Cache Monitor">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\EARs</rootFolder>
            </rootFolder>
            <relativeFolder>.</relativeFolder>
            <fileNamePattern isRegEx="false">CacheMonitor.ear</fileNamePattern>
        </deployEARs>

        <!--
            Script(s)
        -->
        <scripts executionOrder="4" fatalErrorWhenExecutionFailed="false">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
            </rootFolder>
            <relativeFolder>create</relativeFolder>
            <fileNamePattern isRegEx="false">create_SC1.jacl</fileNamePattern>
        </scripts>
    </profileCreationActions>

    <profileDeletionActions>
        <!--
            Script(s)
        -->
        <scripts executionOrder="1" fatalErrorWhenExecutionFailed="false">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
            </rootFolder>
            <relativeFolder></relativeFolder>
            <fileNamePattern isRegEx="false">delete_SC1.ant</fileNamePattern>
        </scripts>
    </profileDeletionActions>
</profileActions>

<!--
    Custom Configuration for dmgr
-->
<profileActions>
    <!--
        Profile Type - dmgr
    -->
    <profileType>
        <profileType>dmgr</profileType>
```

```
        <common:displayName>
            <messageKey>COMD.ProfileType.dmgr</messageKey>
            <alternateText />
        </common:displayName>
    </profileType>

    <profileCreationActions>
        <!--
            Script(s)
        -->
        <scripts executionOrder="2" fatalErrorWhenExecutionFailed="false">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
            </rootFolder>
            <relativeFolder>create</relativeFolder>
            <fileNamePattern isRegEx="false">create_SC1.jacl</fileNamePattern>
        </scripts>
    </profileCreationActions>

    <profileDeletionActions>
        <!--
            Script(s)
        -->
        <scripts executionOrder="1" fatalErrorWhenExecutionFailed="false">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
            </rootFolder>
            <relativeFolder></relativeFolder>
            <fileNamePattern isRegEx="false">delete_SC1.ant</fileNamePattern>
        </scripts>
    </profileDeletionActions>
</profileActions>

<!--
    Custom Configuration for managed
-->
<profileActions>
    <!--
        Profile Type - managed
    -->
    <profileType>
        <profileType>managed</profileType>
        <common:displayName>
            <messageKey>COMD.ProfileType.managed</messageKey>
            <alternateText />
        </common:displayName>
    </profileType>

    <profileCreationActions>
        <!--
            Script(s)
        -->
        <scripts executionOrder="1" fatalErrorWhenExecutionFailed="false">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
            </rootFolder>
            <relativeFolder>create</relativeFolder>
            <fileNamePattern isRegEx="false">create_SC1.jacl</fileNamePattern>
        </scripts>
    </profileCreationActions>

    <profileDeletionActions>
        <!--
            Script(s)
        -->
        <scripts executionOrder="1" fatalErrorWhenExecutionFailed="false">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WAS Customizations\Scripts\</rootFolder>
```

```
            </rootFolder>
            <relativeFolder></relativeFolder>
            <fileNamePattern isRegEx="false">delete_SC1.ant</fileNamePattern>
        </scripts>
    </profileDeletionActions>
</profileActions>

<profileSetActions>
    <!--
        Custom Configuration for profile set - cell
    -->
    <profileSetName>
        <profileSet>cell</profileSet>
        <common:displayName>
            <messageKey>COMD.profileType.cell</messageKey>
        </common:displayName>
    </profileSetName>

    <profiles>
        <!--
            Custom Configuration for dmgr
        -->
        <profileType>
            <profileType>dmgr</profileType>
            <common:displayName>
                <messageKey>COMD.profileType.dmgr</messageKey>
            </common:displayName>
        </profileType>

        <profileCreationActions>
            <!--
                Script(s)
            -->
            <scripts executionOrder="1" fatalErrorWhenExecutionFailed="true">
                <rootFolder>
                    <whichFolderToUse>literalRootProvided</whichFolderToUse>
                    <rootFolder>D:\Test\WAS Customizations\Scripts\create\</rootFolder>
                </rootFolder>
                <relativeFolder includeSubfolders="false">.</relativeFolder>
                <fileNamePattern isRegEx="false" permissions="755">create_SC3.bat</fileNamePattern>
            </scripts>
        </profileCreationActions>

        <profileDeletionActions>
            <scripts executionOrder="1" fatalErrorWhenExecutionFailed="true">
                <rootFolder>
                    <whichFolderToUse>literalRootProvided</whichFolderToUse>
                    <rootFolder>D:\Test\WAS Customizations\Scripts\delete\</rootFolder>
                </rootFolder>
                <relativeFolder includeSubfolders="false">.</relativeFolder>
                <fileNamePattern isRegEx="false" permissions="755">delete_SC3.bat</fileNamePattern>
            </scripts>
        </profileDeletionActions>
    </profiles>

    <profiles>
        <!--
            Custom Configuration for federated application server
        -->
        <profileType>
            <profileType>default</profileType>
            <common:displayName>
                <messageKey>COMD.profileType.default</messageKey>
            </common:displayName>
        </profileType>

        <profileCreationActions>
            <!--
                Script(s)
            -->
            <scripts executionOrder="1" fatalErrorWhenExecutionFailed="true">
                <rootFolder>
```

```
                        <whichFolderToUse>literalRootProvided</whichFolderToUse>
                        <rootFolder>D:\Test\WAS Customizations\Scripts\create\</rootFolder>
                    </rootFolder>
                    <relativeFolder includeSubfolders="false">.</relativeFolder>
                    <fileNamePattern isRegEx="false" permissions="755">create_SC3.bat</fileNamePattern>
                </scripts>

                <scripts executionOrder="2" fatalErrorWhenExecutionFailed="true">
                    <rootFolder>
                        <whichFolderToUse>literalRootProvided</whichFolderToUse>
                        <rootFolder>D:\Test\WAS Customizations\Scripts\create\</rootFolder>
                    </rootFolder>
                    <relativeFolder includeSubfolders="false">.</relativeFolder>
                    <fileNamePattern isRegEx="false" permissions="755">create_SC1.jacl</fileNamePattern>
                </scripts>
            </profileCreationActions>

            <profileDeletionActions>
                <scripts executionOrder="1" fatalErrorWhenExecutionFailed="true">
                    <rootFolder>
                        <whichFolderToUse>literalRootProvided</whichFolderToUse>
                        <rootFolder>D:\Test\WAS Customizations\Scripts\delete\</rootFolder>
                    </rootFolder>
                    <relativeFolder includeSubfolders="false">.</relativeFolder>
                    <fileNamePattern isRegEx="false" permissions="755">delete_SC3.bat</fileNamePattern>
                </scripts>
            </profileDeletionActions>
        </profiles>
    </profileSetActions>

</configurationInfo>

<common:features>
    <feature>
        <featureId>
            <featureId isRegEx="false">server.samples</featureId>
        </featureId>
        <selectedByDefault>false</selectedByDefault>
        <userModifiable>true</userModifiable>
        <hidden>false</hidden>
    </feature>
</common:features>
</basebuilddef:buildDefinition>
```

Build Definition wizard

To create a customized installation package (CIP), first create a build definition file, which the Installation Factory uses to generate the CIP. The build definition file describes exactly what the Installation Factory includes in the CIP so that you can achieve the installation customizations that you require.

The Build Definition wizard within the Installation Factory GUI steps you through the process of creating a build definition file. You can create as many different build definition files as needed to define the CIPs you require. You can also use the Build Definition wizard to modify an existing build definition file. A build definition file saves as an XML document in a location that you choose.

See sample build definition files in the `samples/was` directory.

Each panel in the Build Definition wizard prompts you for information about the CIP. For example, prompts exist for the locations of maintenance packages, EAR files, scripts, and other components that you can include. Another prompt requests the location for generating the CIP. All of this information is saved in the new build definition file, or modified and saved in a build definition file that you are changing.

The last wizard panel provides an option for generating a CIP that is based on the content of the build definition file that you just defined. Alternately, you can only save the build definition file, for later use with the **ifcli** command. The **ifcli** command generates the CIP outside of the GUI, perhaps even on a different machine or operating system.

When you create a new build definition file, an initial wizard helps you choose the specific product and installation package to customize, such as an installation package for the WebSphere Application Server product. This wizard is the Product Selection wizard.

Once you have selected the installation package to customize, the Build Definition wizard helps you create the build definition file, as previously described.

Build Definition wizard panels

Build Definition wizard panels identify each component and characteristic of the customized installation package (CIP).

Use the following panels to identify components to include in the CIP:

1. "Product selection"
2. "Mode selection" on page 225
3. "Package identification" on page 227
4. "Build information" on page 227
5. "Product installation image" on page 229
6. "Feature selection" on page 230
7. "Maintenance packages" on page 230
8. "Install and uninstall scripts" on page 232
9. "Profile customization" on page 234
10. "Additional files" on page 236
11. "Authorship" on page 237
12. "Customized installation package preview" on page 238

Product selection

The Installation Factory console starts the Product Selection wizard when you create a new build definition file. The Product Selection wizard provides several panels for selecting one of the WebSphere products that the Installation Factory supports.

Identify the WebSphere software product that you intend to install. For example, you might create a customized installation package (CIP) for the WebSphere Application Server product.

The wizard provides the following levels of product identifiers:

- Product, such as IBM WebSphere Application Server
- Edition, such as Network Deployment
- Package, such as WebSphere Application Server

For example, choose **IBM WebSphere Application Server 6.1** from the list in the Products field.

In the Edition selection panel, select one of the following editions:

Express
WebSphere Application Server - Express

Base WebSphere Application Server

Network Deployment
WebSphere Application Server Network Deployment

The installation image for any of the WebSphere Application Server product offerings has four installable components for most operating systems:

- **WebSphere Application Server**
- Application Client
- IBM HTTP Server
- Web server plug-ins for WebSphere Application Server

At this time, the only package of the four that the Installation Factory supports is the WebSphere Application Server package. Select the package in the Package selection panel. Click **Finish** to complete the Product Selection wizard.

Mode selection

When the Build Definition wizard has access to the product installation image, maintenance packages, and other components required to create the customized installation package (CIP), then you can use it in what is called ″connected mode.″ In this mode, the Build Definition wizard can validate the files that are provided as input and optionally generate the CIP in addition to creating the build definition file. If the product installation image, maintenance packages, and other components are not accessible because they are on a separate machine, the Build Definition wizard can only be used in disconnected mode. In disconnected mode, the Build Definition wizard can be used to create a build definition file for a target platform but it is not able to validate any of the input nor actually generate a CIP. The build definition file can then be copied to the target machine and used as input to the ifcli command to actually generate the CIP, at which time all of the input that was provided in the Build Definition wizard is validated.

Choose connected mode when the Build Definition wizard and the processing engine run on the same machine. Choose disconnected mode when the Build Definition wizard is creating a build definition file for use on another machine.

The mode affects component location specifications

In connected mode, specify local file paths for all components. The processing engine that builds the CIP is also on this machine. Therefore, the processing engine can access the local components.

In disconnected mode, specify component locations in terms of the target machine, where the processing engine will run to build the CIP.

For example, suppose that the product installation image is on the target machine in the /tmp/IBM/WASimage directory. Specify the location in terms of the target machine where the processing engine must find the product image to include in the CIP.

The mode affects component validation

The Build Definition wizard can validate connected installation images, maintenance packages, and other components while creating the build definition file because everything is on the same machine.

When running in disconnected mode, the Build Definition wizard does not attempt to access components and cannot verify the components. In such a case, the Installation Factory relies on the processing engine to verify all components. The processing engine verifies each component as it includes the component in the customized installation package.

The mode affects the target operating system

Disconnected mode provides a selection field to identify the target operating system and hardware platform. Choose the operating system and hardware platform where the processing engine runs to create the CIP.

The command-line invocation tool (ifcli) runs on 32-bit kernels and 64-bit kernels.

Supported architectures

Supported architectures for running the ifcli tool and for installing the CIP include:

HP PA-RISC
The Installation Factory ifcli tool runs on 32-bit HP-UX 11iv1 kernels on PA-RISC platforms.

The CIP for 32-bit WebSphere Application Server products also provides 64-bit compatibility support for installing on 64-bit HP-UX 11iv1 kernels on PA-RISC hardware platforms.

HP Itanium
The Installation Factory ifcli tool runs on 64-bit HP-UX 11iv2 kernels on Itanium platforms.

IBM PowerPC32
The Installation Factory ifcli tool runs on 32-bit AIX 5L 5.1 systems, AIX 5L 5.2 systems, AIX 5L 5.3 systems, and Linux systems.

The CIP for 32-bit WebSphere Application Server products also provides 64-bit compatibility support for installing on 64-bit AIX or Linux kernels running on 64-bit pSeries hardware platforms.

IBM p5 and pSeries Power4
The Installation Factory ifcli tool runs on AIX System p5 and pSeries Power4 - 64 bit or 64-bit Linux kernels.

Intel IA32
The Installation Factory ifcli tool runs on 32-bit Intel and AMD hardware platforms running 32-bit Linux kernels or 32-bit Windows kernels.

The CIP for 32-bit WebSphere Application Server products supports Windows 2000 Advanced Server SP4, Windows 2000 Server SP4, Windows 2000 Professional SP4 (development only), Windows Server 2003 Datacenter, Windows Server 2003 Enterprise, Windows Server 2003 Standard, and Windows XP Professional SP1a (development only) on 32-bit Intel and AMD platforms.

IBM S/390
The Installation Factory ifcli tool runs on 31-bit mainframe hardware platforms running 31-bit Linux kernels.

The CIP for 31-bit WebSphere Application Server products also provides 64-bit compatibility support for installing on 64-bit Linux kernels on zSeries platforms.

IBM System z9 and zSeries
The Installation Factory ifcli tool runs on Linux z9 and zSeries - 64 bit.

Opteron / EM64T
The Installation Factory ifcli tool runs on Opteron or EM64T hardware platforms running the 64-bit Solaris 10 operating system kernel.

Sun Sparc
The Installation Factory ifcli tool runs on 32-bit Solaris 9 and Solaris 10 operating system kernels on SPARC and UltraSPARC 60 platforms.

The CIP for 32-bit WebSphere Application Server products also provides 64-bit compatibility support for installing on 64-bit Solaris 9 and Solaris 10 kernels.

Package identification

Specify an identifier and version for the customized installation package (CIP).

Package identification fields include:

- Identifier: Type a descriptor. For example, if you work in the Functional Verification Test department on the installation development team for WebSphere Application Server, you might use com.ibm.toronto.fvt.was to identify test CIPs that you create. Suppose that you work in IT for the Sports Information department at the University of North Carolina. You might use edu.unc.tarheels.sid.was as an identifer for CIPs that you create to install WebSphere Application Server updates on machines used by the Press.

  The package identifier is designed to be universally unique. Multiple CIPs can install on a single installation. Each CIP installs customization assets in the installation under a unique directory. The unique directory name is modelled after the unique identifier provided. For this reason, the identifier must be unique. That is why IBM suggests a unique reverse domain notation with a version number.
- Version: Type a version number to help identify CIPs that you create. For example, the GUI field is pre-filled with 1.0.0.0, so you may want to start with that and increment from there.

  The version number of the CIP does not have to reflect the version number of the product.
- Full package identifier: Informational only. This field shows the concatenation of the previous two fields. The Installation Factory uses this unique identifier as the name of a directory that holds the customized installation package. For example, the full package identifier might be edu.unc.tarheels.sid.was_1.0.0.0.

  The full package identifier must:
  - Contain 35 or fewer characters on Windows platforms
  - Start and end with alphabetic characters (A-Z, a-z) or numbers (0-9) only
  - Contain alphabetic characters (A-Z, a-z), numbers (0-9), periods (.) and underscores (_) only
  - Not contain spaces or these characters: ~ ` ! @ # $ % ^ & ( ) { } [ ] | \ / : ; , ? ' " < = > + *

Build information

The Build Definition wizard creates the XML build definition file, which specifies the location for outputting the customized installation package (CIP). The name and location of both files are under your control. The build definition file is always saved to a directory path on the Build Definition wizard machine.

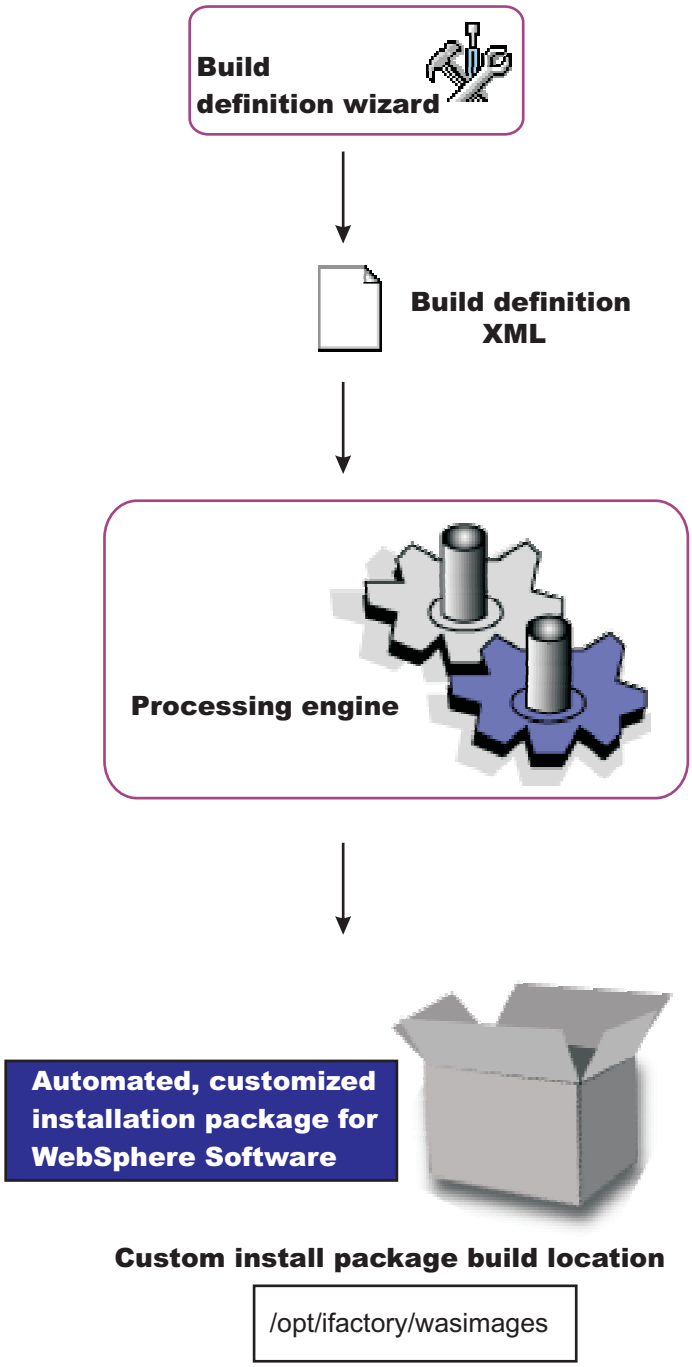
Name the build definition file in the Build Definition field.

You can think of the build definition file as a response file for the processing engine. The XML file provides the information that the processing engine needs to locate all of the components for the CIP.

Name the directory where you want to create the CIP in the Customized Installation Package field. The Installation Factory creates a compressed file containing the CIP and stores the file in the directory name that you specify.

Note: Windows The number of characters in the CIP build directory must be no more than 30 characters.

The processing engine reads the CIP location from the build definition file to determine where to store the CIP.



Browse button

You can type directly into each field to identify the file and directory locations, which do not yet have to exist. Or, click **Browse** in connected mode to search for and select either an existing file (build definition) or an existing directory (CIP).

Validation

Validation will be performed when you click **Next**.

The build definition file will be created automatically. If the specified file already exists, a warning dialog will pop up when you click **Finish** verifying you want to overwrite the file.

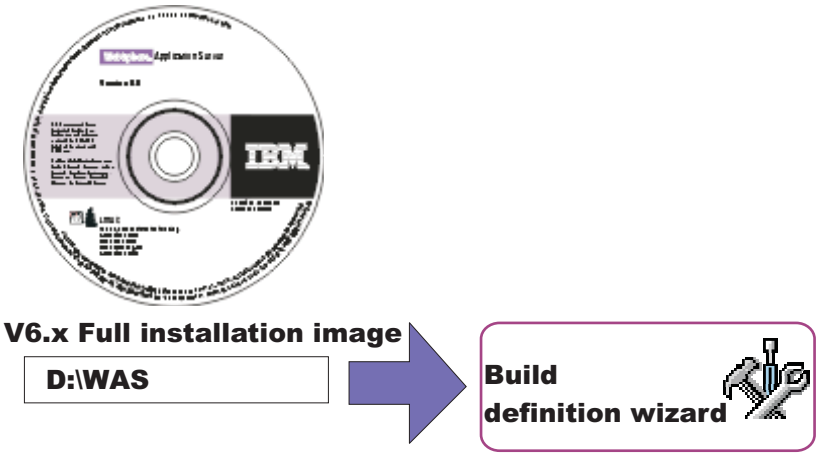
The directory for the CIP will be created automatically. If the specified directory already exists, a warning dialog will pop up when you click **Finish** verifying you want to overwrite the current contents.

Product installation image

The build definition file must provide the processing engine with the location of the directory that contains the installation image for the WebSphere software product.

Specify the location of the directory for the product installation image in the product installation image directory path field.

For WebSphere Application Server products, for example, the directory is the WAS directory on the product disc or downloaded installation image:



You can also specify the parent directory, such as /tmp if the image is in the /tmp/WAS directory, for example.

Browse button

You can type directly into the field to identify the directory location. Or, click **Browse** in connected mode to search for and select the existing directory.

Validation

The processing engine requires the directory to exist and to have a valid installation image that matched the product that you selected with the Product Selection wizard. In connected mode, validation occurs when you click **Next**. In disconnected mode, the processing engine performs validation while building the customized installation package.

Disconnected mode affects file path specifications

The directory for the installation image must exist in connected mode. In disconnected mode, remember to specify the file path in terms of the machine on which the processing engine machine runs. Specify the mount point for the CD drive on the target machine, for example. The processing engine must be able to locate the image at build time.

Feature selection

The build definition file must identify product features to include in the customized installation package (CIP). Select the features to include. Features that you include in the CIP are displayed when an installer uses the CIP to install the product.

Features

Required features are listed with the word ″Required″ appended to the feature name, but are not selectable. Some products contain features that you must include in the CIP to have a viable product to install.

Optional features that you do not include in the CIP are not available when an installer uses the CIP to install the product.

Selecting optional features

Click **Select All** to select all optional features in the list.

Click **Clear All** to clear all previously selected optional features.

Use **Ctrl+left-mouse-button** to select one feature at a time. Click one feature then use **shift+left-mouse-button** to click the opposite end of a span of sequential features and select them all.

Maintenance packages

Optionally select maintenance packages (*.pak files) to include in the customized installation package (CIP).

Selecting maintenance packages is optional. The types of packages to include are your choice. For example, you can skip fix packs and install an interim fix. Or you can install one fix pack and five interim fixes.

Fix pack compressed files are bundled with the Update Installer for WebSphere Software. Decompress the file to expose the maintenance package (*.pak) file in the /updateinstaller/maintenance directory.

Always select a PAK file when selecting a maintenance package, such as the `updateinstaller\maintenance\6.1-WS-WAS-WinX32-RP0000001.pak` file.

You can select only one fix pack and SDK fix pack. Fix packs are cumulative. Always select the latest package available when possible.

Browse button

You can type directly into each field to identify the file path and file name of the *.pak file. Or, click **Browse** in connected mode to search for and select the existing file.

Validation

The processing engine requires selected maintenance packages to have a valid file path and valid format. In connected mode, validation of the file path occurs when you click **Next**. Validation of whether a maintenance package is valid occurs only when you click **Verify Maintenance Package**.

In disconnected mode, the processing engine performs validation while building the customized installation package.

Disconnected mode affects file path specifications

The directory and valid maintenance package must exist in connected mode. In disconnected mode, remember to specify the file path and the name of the *.pak file in terms of the machine on which the processing engine machine runs. The processing engine must be able to locate the maintenance package at build time.

What are maintenance packages?

Maintenance packages include fix packs and interim fixes.

Fix pack: A fix pack is a cumulative package of fixes, such as Version 6.1.2.1.

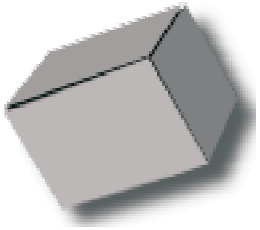
Fix packs install on top of a previous fix pack, such as applying Version 6.1.2.2 to Version 6.1.2.1. Fix packs are cumulative, so Version 6.1.2.2 includes all fixes in Version 6.1.2.1.

Check the list of delivered fixes in the fix pack to determine which interim fixes must be reinstalled. If an interim fix is deleted, but the fix is not in the fix pack, reinstall the interim fix.

Fix packs for the Java 2 Software Developer Kit (SDK): Fix packs for the Java 2 SDK include cumulative maintenance for the SDK.

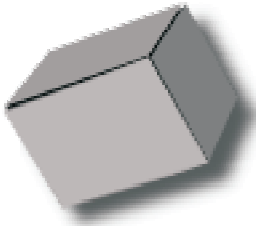
Interim fix: An interim fix is a single published emergency fix that resolves one or more product defects, such as PQ79582.

An interim fix can be applied to a release or fix pack where applicable. Interim fixes are validated by at least one customer prior to publish.



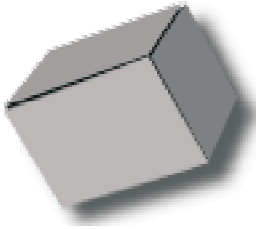
Refresh packs
Rp1

C:\WAS_downloads\name_of_refresh_pack_1_ZIP_file.pak



Fix packs
FP3

C:\WAS_downloads\name_of_fix_pack_3_ZIP_file.pak



SDK, Java technology edition fix pack
SDK

C:\WAS_downloads\name_of_SDK_fix_pack_ZIP_file.pak

Interim fixes
iFix “A” and iFix “B”

C:\WAS_downloads\name_of_ifix_A_file.pak
C:\WAS_downloads\name_of_ifix_B_file.pak

Install and uninstall scripts

The Build definition wizard provides a way to include configuration scripts that run after successfully installing the customized installation package (CIP) or before uninstalling the CIP. Such scripts run when the installation is a new installation. If you are updating an existing installation by installing a CIP that includes maintenance, these scripts do not run.

Install tab

Identify scripts that run after successfully installing the CIP.

Uninstall tab

Identify scripts that run before uninstalling the CIP during a full uninstall.

File name

Identify the script file.

Directory path

Identify the directory where the script file resides.

Failure Action

Identify what action to take if a script fails. Valid choices include:
- Fatal error
- Continue

Add Scripts...

Opens a file browsing dialog window where you can search for and select scripts to include in the CIP. Scripts can be any of the following supported script types:
- ANT scripts (*.ant)
- Windows batch files (*.bat)
- Shell scripts (*.sh)
- JACL scripts
- Jython scripts
- Jar files

The .jar files should have the main class defined in the META-INF/MANIFEST.MF file inside each .jar file.

Scripts are in the *cip_uid_root*/config/install directory when the CIP is installed. These scripts run as configuration actions after all of the configuration actions run that are in the normal installation procedure.

Modify...

Select an entry and click **Modify** to change the file name or the directory path.

Remove

Removes selected scripts from the CIP.

Move Up

Move a script up in the list to make it run earlier than scripts below it.

Move Down

Move a script down in the list to make it run after scripts above it.

Profile customization

The Build definition wizard provides a way to include profile customizations that include scripts to run at profile creation or deletion, deploying one or more enterprise archive (EAR) files, and restoring one configuration archive (CAR) file.

Restore a configuration archive to help configure a new stand-alone application server profile. You can also deploy EAR files on stand-alone application server profiles.

Customization occur when you use a CIP profile that includes customized configuration actions.

EAR files deploy with default deployment options. If you must deploy an EAR file with different options, simply include the EAR file as a user file. Then include a script to deploy the EAR file.

Scripts can run at profile creation or deletion time, in the order you specify. A script can call other scripts that you can include as user files.

See “Creating customized CIP profiles from the command line” on page 246 for information about using the command line to create and restore profiles when you cannot use the enhanced Profile Management tool in the CIP.

Profile Creation

Identify scripts that run or files to include after successfully installing the CIP. Perform such actions as running scripts, including and restoring a configuration archive, including an enterprise archive (EAR) file, and deploying the applications within an EAR file.

If you are restoring a customized profile that uses messaging, you must also include a script to configure the service integration bus (SIB). The original SIB configuration is not portable and, therefore, is not included in the CIP.

Profile Deletion

Identify scripts that run when the profile is unaugmented.

At profile deletion time, the CIP can specify additional scripts to run. Generally, these scripts are needed to “undo” the customization actions that occurred at profile creation time. If there are any profile deletion time configuration actions to run, the *cip_app_server_root*/if_augmentingTemplates/deleteRegistry.xml file contains the configuration actions. The manageprofiles command should normally unaugment any IF customized augments when deleting a profile.

Action Type

Identify the type of configuration action:

- Run a script
- Import a configuration archive
- Deploy an enterprise archive

File Name

Identify scripts, enterprise archive files, or the configuration archive file.

Directory Path

Identify the directory that contains scripts, enterprise archive files, or the configuration archive file.

Failure Action

Identify what action to take if a script fails or a file fails to load. Valid choices include:

- Fatal error
- Continue

Add Scripts...

Opens a file browsing dialog window where you can search for and select scripts to include in the CIP. Scripts can be any of the following supported script types:

- ANT scripts (*.ant)
- Windows Windows batch files (*.bat)
- Shell scripts (*.sh)
- JAR files (.jar)
- JACL scripts (.jacl)
- Jython scripts (.py)

Add Enterprise Archives...

Opens a browse dialog where you can search for and select an enterprise application archive (EAR) file to include in the CIP for an application server profile.

An EAR file is a enhanced Java archive (JAR) file, defined by the J2EE standard used to deploy J2EE applications to J2EE application servers. An EAR file contains enterprise beans, a deployment descriptor, and Web archive (WAR) files for individual Web applications.

Add Configuration Archive...

Opens a browse dialog where you can search for and select a configuration archive file to include in the CIP for an application server profile.

A configuration archive file is an exported configuration file from an existing stand-alone application server profile. Use the AdminTask command scripting interface to create the configuration archive.

The configuration archive contains all of the configuration data for a stand-alone application server, including security settings, resources, defined ports, and so on. The advantage of using a configuration archive is that all of this configuration, including any enterprise archive (EAR) files, can be reliably restored to many nodes. Importing a configuration archive also offers some performance advantages over creating a stand-alone application server in the normal way.

See Administrative command invocation syntax for a description of using an administrative command. See Commands for the AdminTask object for a description of the exportWasprofile and importWasprofile commands that are available for the AdminTask object.

Modify...

Select an entry and click **Modify** to change the file path and file name or the directory path and directory name.

Remove

Removes selected scripts, enterprise archive files, or the configuration archive file from the CIP.

Move Up

Move a script, enterprise archive file, or the configuration archive file up in the list to make it run earlier than other actions below it.

Move Down

Move a script, enterprise archive file, or the configuration archive file down in the list to make it run after other actions above it.

Additional files

You can add files and directories to the customized installation package (CIP). For example, although you can deploy enterprise archive (EAR) files in the Profile Customization panel, those EAR files must deploy with default deployment options. If you must deploy an EAR with different options, include the EAR file as an additional file. Then include a script in the Profile Customization panel to deploy the EAR file.

Scripts can run at any of four times, at CIP installation time and at full uninstall time, and at profile creation or deletion time. A script can call other scripts that you can include as additional files.

All additional files and directories are in the installed CIP in the *cip_uid_root*/userFiles directory.

Add Files...

Browse within a configured system or within a cache of relevant files to select additional files to include in the CIP.

For example, you can include one or more script files that are called by a script listed in the Profile Customization panel. When the script runs at profile creation or deletion time, the script can call other scripts that you include as additional files.

Similarly, a script listed in the Install and Uninstall Scripts panel runs at CIP installation or CIP deletion time. Such a script can call other scripts that you include as additional files.

Add Directories...

Browse to select additional directories to include in the CIP.

You can include a directory full of scripts, for example. Or a directory full of EAR files.

File Name

Identify the file.

Directory Path

Identify the directory where the file resides.

Modify...

Select an entry and click **Modify** to change the file path and file name or the directory path and directory name.

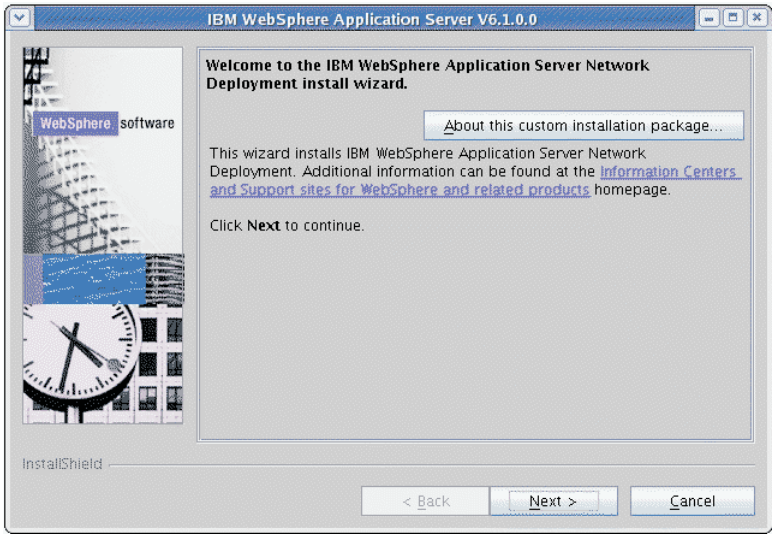
Remove

Removes selected files and directories from the CIP.

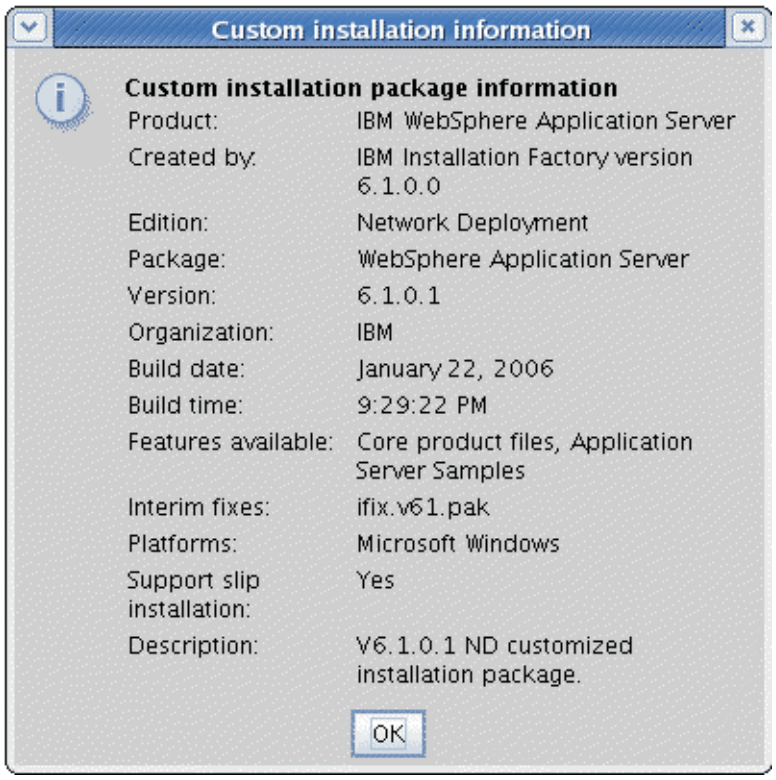
Authorship

Specify an identifier and version for the customized installation package (CIP). You can also provide other information about the CIP.

When using the customized installation package to install a WebSphere Application Server product, a panel similar to the following Network Deployment example is displayed:



If the installer clicks **About this custom installation package**, a panel similar to the following example is displayed:



The package identifer information is gathered near the beginning of the Build Definition wizard in the Package Identification panel.

The Organization field and the Description field show the information that you provide in the Build Definition wizard.

Fields in this section are displayed in a panel in the CIP Installation wizard titled, About this custom installation:

- Organization: Provide another layer of identification for the CIP.
- Description: Provide a description of the CIP.

Customized installation package preview

The Build Definition wizard provides a summary panel to let you review all of your selections. If you run the Build Definition wizard in connected mode, you can also start the processing engine to build the customized installation package (CIP). If you run the Build Definition wizard in disconnected mode, copy the build definition file to the target system before using the ifcli module to start the processing engine.

The Build Definition wizard produces the XML build definition for input to the processing engine. The processing engine uses the build definition file to locate all of the components that it includes in the CIP.

Disconnected mode affects CIP generation

Select the **Save build definition file and generate customized installation package** radio button if you are in connected mode and the Build Definition wizard and the processing engine are running on the same machine. Otherwise, select the **Save the build definition file only** radio button to save the file. You might intend to use the build definition file on another machine, for example.

Estimate Size and Available Space

Click **Estimate Size and Available Space** to get an estimate of the size of the customized installation package that will be generated.

Click **Finish** to start building the customized installation package when you are running in connected mode. Creating the customized installation package requires time. The more maintenance packages selected, the longer the time required.

A status indicator displays near the bottom of the panel. When processing completes, a completion message displays and the Installation Factory console returns.

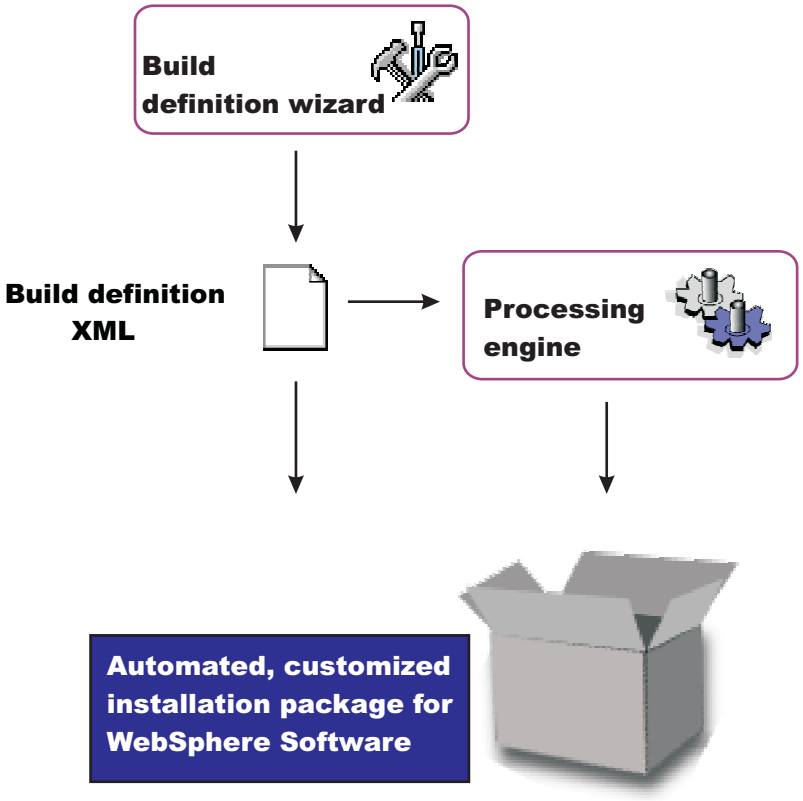
Disconnected mode processing

The **Save build definition file and generate customized installation package** radio button is inactive if you are in disconnected mode.

The Customized installation package preview panel shows the location of the build definition file. Click **Finish** to save the build definition file and return to the Installation Factory console.

Copy the build definition file to the system that has the processing engine. Start the processing engine with the *install_factory_root*/bin/ifcli script.

The processing engine reads the build definition file and creates the customized installation package.



ifcli command

The **ifcli** command-line tool runs on any supported operating system. The ifcli tool accepts a build definition XML file as input and invokes the Installation Factory processing engine. The processing engine interprets the XML file, locates the product source files and maintenance packages, and then creates a customized installation package (CIP).

The ifcli tool is also referred to as the *command-line interface* tool or the *command-line invocation* tool for the Installation Factory.

Running the ifcli tool and installing the CIP are supported for the following architectures:

HP PA-RISC
The Installation Factory ifcli tool runs on 32-bit HP-UX 11iv2 kernels on PA-RISC platforms.

The CIP for 32-bit WebSphere Application Server products also provides 64-bit compatibility support for installing on 64-bit HP-UX 11iv2 kernels on PA-RISC hardware platforms.

HP Itanium
The Installation Factory ifcli tool runs on 64-bit HP-UX 11iv2 kernels on Itanium platforms.

IBM PowerPC32
The Installation Factory ifcli tool runs on 32-bit AIX 5L 5.1 systems, AIX 5L 5.2 systems, AIX 5L 5.3 systems, and Linux systems.

The CIP for 32-bit WebSphere Application Server products also provides 64-bit compatibility support for installing on 64-bit AIX or Linux kernels running on 64-bit pSeries hardware platforms.

IBM p5 and pSeries Power4
The Installation Factory ifcli tool runs on AIX System p5 and pSeries Power4 - 64 bit or 64-bit Linux kernels.

Intel IA32

The Installation Factory ifcli tool runs on 32-bit Intel and AMD hardware platforms running 32-bit Linux kernels or 32-bit Windows kernels.

The CIP for 32-bit WebSphere Application Server products supports Windows 2000 Advanced Server SP4, Windows 2000 Server SP4, Windows 2000 Professional SP4 (development only), Windows Server 2003 Datacenter, Windows Server 2003 Enterprise, Windows Server 2003 Standard, and Windows XP Professional SP1a (development only) on 32-bit Intel and AMD platforms.

IBM S/390

The Installation Factory ifcli tool runs on 31-bit mainframe hardware platforms running 31-bit Linux kernels.

The CIP for 31-bit WebSphere Application Server products also provides 64-bit compatibility support for installing on 64-bit Linux kernels on zSeries platforms.

IBM System z9 and zSeries

The Installation Factory ifcli tool runs on Linux z9 and zSeries - 64 bit.

Opteron / EM64T

The Installation Factory ifcli tool runs on Opteron or EM64T hardware platforms running 64-bit Linux kernels, Windows 2003 x64 editions, or the 64-bit Solaris 10 operating system kernel.

Sun Sparc

The Installation Factory ifcli tool runs on 32-bit Solaris 9 and Solaris 10 operating system kernels on SPARC and UltraSPARC 60 platforms.

The CIP for 32-bit WebSphere Application Server products also provides 64-bit compatibility support for installing on 64-bit Solaris 9 and Solaris 10 kernels.

Location of the command file

The command file is located in the `/bin` directory of the directory where you unpack the Installation Factory. The command file is a script named:

- AIX HP-UX Linux Solaris `ifcli.sh`
- Windows `ifcli.bat`

Logging

The **ifcli** command creates a build log file that shows whether the customized installation image is produced successfully. When the CIP is not successfully built, examine the trace file to determine what is wrong.

The following files record CIP creation data:

- `trace.xml` is a detailed trace log in XML format
- `log.txt` is the log file

The tracing and logging output and level are configurable as described in the logLevel and traceLevel parameters.

Syntax for the ifcli.sh command

Displaying help for the command:

```
./ifcli.sh -help
```

Creating a customized installation package:

```
./ifcli.sh -buildDef build_definition_file
   -silent
   -logLevel log_level
   -logFile log_file_path_name
   -traceLevel trace level
   -traceFile trace_file_path_name
```

Syntax for the ifcli.bat command

Displaying help for the command:

```
ifcli.bat -help

ifcli.bat ?
```

Creating a customized installation package:

```
ifcli.bat -buildDef build_definition_file
   -silent
   -logLevel log_level
   -logFile log_file_path_name
   -traceLevel trace level
    -traceFile trace_file_path_name
```

Parameters

Supported arguments include:

Windows **-?**
Shows usage information.

-buildDef *build_definition_file*
Identifies the build definition file that the Build Definition wizard creates.

-help
Shows usage information.

-logFile *log_file_path_name*
Identifies the log file. The default value is *current_working_directory*/logs/log.txt.

-logLevel *log_level*
Sets the level of logging. The default value is INFO. Valid values are:

- ALL
- CONFIG
- INFO
- WARNING
- SEVERE
- OFF (Turns off logging)

-silent
Specifies that the processing engine runs in silent mode, without displaying results to the console.

-traceFile *trace_file_path_name*
Identifies the trace file. The default value is *current_working_directory*/logs/trace.xml.

-traceLevel *trace level*
Sets the level of tracing. The default value is OFF. Valid values are:

- ALL
- FINE
- FINER
- FINEST
- OFF (Turns off logging)

Using the customized installation package to install the product

Use the Installation Factory installer program for WebSphere Application Server products to install a customized installation package for a WebSphere Application Server product. Each supported product has its own installer program. See the “install command” on page 250 for more information.

Creating a build definition and CIP on the processing engine machine

This topic describes how to create a build definition and CIP when the processing engine and the Build definition wizard are on the same machine.

If you are creating a build definition for the processing engine that runs on another machine, see “Creating a build definition for another machine” on page 243.

Use the following procedure to create the build definition document and the customized installation package on one machine.

1. Download the Installation Factory code from the download page for the IBM Installation Factory for WebSphere Application Server and unpack the code.

   See the download page for a complete list of tested operating systems.

   Use the Installation Factory console and the processing engine on the same machine with a tested and certified operating system.
2. Mount or access the product installation image for your operating system.

   You need the image to create the customized installation package.
3. Download maintenance packages.

   Locate download packages for Version 6.x of the WebSphere Application Server products on the following Web site: Recommended updates for WebSphere Application Server and Network Deployment. The information also applies to the Express product.
4. Start the Installation Factory console with the ifgui script.
   - AIX HP-UX Linux Solaris Use the *IF_root*/bin/ifgui.sh script.
   - Windows Use the *IF_root*\bin\ifgui.bat script.
5. Create a new build definition or edit an existing build definition.

   Click the button for a New build definition to start two wizards in sequence. The two wizards are the Product Selection wizard and the Build Definition wizard.

   Click the button to Open a build definition file . Opening an existing build definition starts the Build Definition wizard only. If you must change the product, start a new build definition.
6. Select the check box for connected mode processing so that you can create a customized installation package later in addition to creating the build definition file.

   Browse to select the installation image directory and the maintenance package files.
7. Provide all required parameters to identify the product, installation image, maintenance packages, the configuration archive file, enterprise archive files, other files and directories, scripts, the output location for the build definition file, and the output location for the customized installation package (CIP).
8. Select the Save build definition file and generate customized installation package option.
9. Click **Finish** to generate the CIP.

   The amount of time required to generate the CIP depends on the number of maintenance packages and the number of features that you include in the package.

   The Installation Factory logs a completion message in the /logs/install/log.txt file when the processing engine is finished.

10. Installers can now install the customized installation package using the InstallShield for Multiplatforms (ISMP) Installation wizard that is included in the CIP. Panels in the CIP Installation wizard vary according to the product that you are installing.

    The Installation wizard for WebSphere Application Server products is the install command in the *CIP_directory*/WAS directory.

11. Create a CIP-based custom stand-alone application server profile.

    Use one of the following methods to create the profile:

    - After the CIP installation, run the Profile management tool.
    - After the CIP installation, run the **manageprofiles** command once to do a create and augment.
    - After the CIP installation, run the **manageprofiles** command twice sequentially to do a create and then an augment.

      Alternatively, you can run the **manageprofiles** command once to augment an existing profile.
    - In a scratch installation, do the following within the CIP installation wizard:

      On the Install Sample Applications panel, select the **Install profile customizations** checkbox.

    If the profile that you create has a configuration archive in it, then it will be imported.

In some cases, you might be unable to use the console on the target operating system platform. You have two options in such a case:

- Use the console in disconnected mode on a supported machine to create a build definition file for the target operating system on another machine.

  Then copy the file to the target operating system and use the command line interface to start the processing engine and create the customized installation package.

  See “Creating a build definition for another machine” for a description of such a procedure.
- Create the build definition XML document using a validating XML editor.

  Copy one of the sample build definition documents from the *IF_root*/samples/was directory to get started.

  After making your changes, validate the build definition document with its XML schema (the Commom.xsd, BaseBuildDefinition.xsd, and BuildDefinition.xsd files) using a validating XML parser or editor. Then use the command line interface to start the processing engine and create the customized installation package.

Creating a build definition for another machine

This procedure describes how to use the Build Definition wizard to create a build definition for the processing engine that runs on another machine.

If you are creating a build definition for the processing engine that runs on the same machine as the Build Definition wizard, see “Creating a build definition and CIP on the processing engine machine” on page 242.

The download page has a complete list of tested operating systems for the Installation Factory console.

In some cases, you might not be able to use the console on the target operating system platform. You have two options in such a case:

- Use the console in disconnected mode on a supported machine to create a build definition file for the target operating system on another machine.

  Then copy the file to the target operating system and use the command line interface to create the customized installation package. This topic describes such a procedure.
- Create the build definition XML document using a validating XML editor.

  Copy one of the sample build definition documents from the *IF_root*/samples/was directory to get started.

After making your changes, validate the build definition document with its XML schema (the Commom.xsd, BaseBuildDefinition.xsd, and BuildDefinition.xsd files) using a validating XML parser or editor. Then use the command line interface to start the processing engine and create the customized installation package.

This procedure describes a configuration where the Build Definition wizard is not on the same machine as the target system. Although the Build Definition wizard cannot access the installation image and the maintenance packages on the target operating system, you can enter the information manually. Use directory paths and file names that exist on the target operating system.

Run the Build Definition wizard on a supported operating system such as AIX or Linux to create the build definition file for an unsupported UNIX-based system. Use the Build Definition wizard on a Windows 2000 or Windows 2003 machine to create the build definition file for another Windows system.

For example, assume that you run the console on a RHEL 3 system that cannot access a target AIX system. The Build Definition wizard cannot browse to file locations on the target system. However, you can type the directory path of the AIX location for the Network Deployment installation image and other elements of the customized installation package (CIP).

The Build Definition wizard cannot verify the installation image because the wizard cannot access the directory on the AIX system. Verification occurs later, when the processing engine that runs on the target operating system builds the customized installation package. If the installation image or the maintenance packages are not valid, the processing engine logs the problem.

Use the following procedure to create and install the customized installation package.

1. Download the Installation Factory code that is appropriate for the Build Definition operating system.

   Download the code from the download page for the IBM Installation Factory for WebSphere Application Server. Unpack the code on the Build Definition machine.
2. Download the Installation Factory code that is appropriate for the target processing engine system.

   Download the code from the download page for the IBM Installation Factory for WebSphere Application Server. Unpack the code on the target operating system. The target operating system is where you run the Installation Factory processing engine to create the customized installation package.
3. Copy the Installation Factory code from the Supplements disc to your operating system. For further details, see “Getting started with the Installation Factory” on page 213.
4. Mount or access the product installation image on the target operating system platform.

   You need to know the location of the image so that you can create a build definition file that points to the image.

   Write down the mount point or the storage location so that you can provide the storage location to the Build Definition wizard that is running on the other machine.
5. Download maintenance packages to the target operating system.

   Locate download packages for Version 6.x of the WebSphere Application Server products on the following Web site: Recommended fixes for WebSphere Application Server

   Refresh pack ZIP files and fix pack ZIP files are bundled with the Update Installer for WebSphere Software. Unzip the file to expose the maintenance package (*.pak) file in the updateinstaller/maintenance directory.

   Write down the storage location of the downloaded maintenance package so that you can provide the location to the Build Definition wizard that is running on the other machine.
6. Start the Installation Factory console on a supported system such as AIX or Linux with the *IF_root*/bin/ifgui.sh script.

   Or start the Installation Factory console with the *IF_root*\bin\ifgui.bat script on Windows systems.
7. Create a new build definition or edit an existing build definition.

Clicking the New build definition icon starts two wizards in sequence, the Product Selection wizard and the Build Definition wizard.

Clicking the Open a build definition file icon starts only the Build Definition wizard. If you must change the product, start a new build definition.

8. Select the check box for disconnected mode processing because you are creating the build definition for another machine.
9. Provide all required parameters to identify the product, installation image, maintenance packages, the configuration archive file, enterprise archive files, other files and directories, scripts, the output location for the build definition file, and the output location for the customized installation package (CIP).

   All of the locations must refer to locations on the target operating system machine.

   The Build Definition wizard cannot verify the installation image, the maintenance packages, or any other files or scripts that you enter in disconnected mode. Always enter directory paths and file names in relation to the target operating system machine and not the machine you are using to create the build definition.
10. Click **Finish** to save the build definition file on the Build Definition machine.
11. Copy the build definition file from the Build Definition machine to the target operating system platform.
12. Use the command-line invocation tool (ifcli) on the target operating system platform to launch the processing engine that creates the CIP on the target operating system.

    The amount of time required to generate the CIP is dependent on the number of maintenance packages and the number of features that you are including in the package.

    The processing engine logs a completion message in the /logs/install/log.txt file when the processing engine is finished.
13. Install the customized installation package using the InstallShield for Multiplatforms (ISMP) Installation wizard that is included in the CIP. Panels in the CIP Installation wizard vary according to the product that you are installing.

    The Installation wizard for WebSphere Application Server products is in the WAS directory and is named either install (operating systems such as AIX or Linux) or install.exe (Windows).

Configuration archive files

A configuration archive (CAR) file captures the configuration of a stand-alone application server profile for later restoration. The CAR can help clone the original profile to another machine or system.

The Installation Factory allows for a previously exported configuration archive of an existing stand-alone application server profile to be bundled with an installation image, maintenance packages, user files, and scripts. The resulting bundle is a *customized installation package*, or *CIP*.

A CIP constructed in this manner can be used to install an exact replica of a model application serving environment with installed maintenance packages, configured profiles, and deployed applications. Configuration archive allow one to restore a pre-configured, working, and tested stand-alone application server configuration from a source machine to one or more target machines. For this reason, the configuration archive support is one of the key customizations that make CIPs so powerful when creating large scale topologies.

The series of configuration events for using a configuration archive and other CIP customizations is shown in the following Version 6.x. example:

1. An expert installs Version 6.x.
2. The expert creates a default (stand-alone application server) profile, deploys applications, and makes other configuration changes.
3. The expert creates a configuration archive of the default profile using the AdminTask exportWasprofile command.

Note: The first steps above are optional and are only required if a configuration archive needs to be exported for inclusion in a CIP. If configuration archive customization is not required, then the steps above can be omitted.

4. The expert uses the Installation Factory to create a CIP that includes the 6.x product image.
   a. The expert optionally includes scripts to run during install time or uninstall time.
   b. The expert optionally includes the configuration archive in the CIP when configuration profile customization for the Stand Alone Application Server config.
   c. The expert optionally includes EARs for profile customization.
   d. The expert optionally includes scripts to run either at profile creation time or profile deletion time.
   e. The expert optionally includes additional files to be installed on the system.
5. The expert distributes the CIP to installers who require the pre-configured system for their users.
6. The installers install the CIP.
7. The installers create a profile.

   If you are an installer, you can use one of the following methods to create the profile:
   - After the CIP installation, run the Profile management tool.
   - After the CIP installation, run the **manageprofiles** command once to do a create and augment.
   - After the CIP installation, run the **manageprofiles** command twice sequentially to do a create and then an augment.

     Alternatively, you can run the **manageprofiles** command once to augment an existing profile.
   - In a scratch installation, do the following within the CIP installation wizard:

     On the Install Sample Applications panel, select the **Install profile customizations** checkbox.

   The profile will be automatically restored.

See “Creating customized CIP profiles from the command line” for more information about restoring a configuration archive while creating a stand-alone application server profile.

Creating customized CIP profiles from the command line

The Installation Factory allows for customized installation package (CIP) to be created that bundles an installation image, maintenance packages, previously exported stand-alone application server configuration archives, EARs, user files, and scripts. The resulting bundle is a *customized installation package*, or *CIP*. An installer can use an existing CIP to install an exact replica of a model application serving environment, with installed maintenance packages, configured profiles, and deployed applications. Installers can use the Profile Management tool in the CIP to create a profile, which automatically restores any profile customizations that are included in the CIP. If you cannot use the Profile Management tool, use the commands described in this topic to create pre-configured profiles.

The installer can use the Profile Management tool to create CIP profiles and automatically restore the profile customizations that are included in the CIP. Or, the installer can use the **manageprofiles** command to perform the same tasks manually from the command line.

If you cannot use the enhanced Profile Management tool in the CIP to create and configure profiles, use the **manageprofiles** command to perform the task, as described in this topic.

See “Creating customized profiles” on page 249 for a description of using the enhanced Profile Management tool, which is a graphical user interface.

You must have previously installed a CIP to create CIP profiles and restore customizations that are included in the CIP.

If you are restoring a customized profile that uses messaging, you must also include a script to configure the service integration bus (SIB). The original SIB configuration is not portable and, therefore, is not included in the CIP.

The series of configuration events for using a configuration archive and other CIP customizations is shown in the following Version 6.x. example:

1. An expert installs Version 6.x.
2. The expert creates a default (stand-alone application server) profile, deploys applications, and makes other configuration changes.
3. The expert creates a configuration archive of the default profile using the AdminTask exportWasprofile command.

   Note: The first steps above are optional and are only required if a configuration archive needs to be exported for inclusion in a CIP. If configuration archive customization is not required, then the steps above can be omitted.
4. The expert uses the Installation Factory to create a CIP that includes the 6.x product image.
   a. The expert optionally includes scripts to run during install time or uninstall time.
   b. The expert optionally includes the configuration archive in the CIP when configuration profile customization for the Stand Alone Application Server config.
   c. The expert optionally includes EARs for profile customization.
   d. The expert optionally includes scripts to run either at profile creation time or profile deletion time.
   e. The expert optionally includes additional files to be installed on the system.
5. The expert distributes the CIP to installers who require the pre-configured system for their users.
6. The installers install the CIP.
7. The installers create a profile.

   If you are an installer, you can use one of the following methods to create the profile:
   - After the CIP installation, run the Profile management tool.
   - After the CIP installation, run the **manageprofiles** command once to do a create and augment.
   - After the CIP installation, run the **manageprofiles** command twice sequentially to do a create and then an augment.

     Alternatively, you can run the **manageprofiles** command once to augment an existing profile.
   - In a scratch installation, do the following within the CIP installation wizard:

     On the Install Sample Applications panel, select the **Install profile customizations** checkbox.

   The profile will be automatically restored.

A configuration archive is available for an application server CIP profile. A special profile template enables the importation of a configuration archive file into the application server profile.

Use the Profile Management tool to create CIP profiles that accept configuration actions that are included in the CIP. Use the application server CIP profile when you are restoring a configuration archive file or other customizations. The Profile Management tool can also create normal profiles that do not accept customizations.

- When you run the Profile Management tool with CIP customized profiles installed, the Environment Selection panel will show environments with -- *cip_uid* at the end. These are the customized profiles, and each of them will create a regular profile and then apply the customizations through a profile augmentation. If the customized profile that you select contains a configuration archive, then it will be imported.
- The first four environments listed on the Environment Selection panel, which do not have a -- *cip_uid* at the end, are the regular profile types. If you want a regular profile without customizations, select one of these.
- Augment an application server profile that includes a CAR file.

1. Create the profile from the minimal default template.

   AIX HP-UX Linux Solaris

   ```
   app_server_root/bin/manageprofiles.sh
   -create
   -profileName my_profile
   -profilePath "app_server_root/profiles/my_profile"
   -templatePath app_server_root/cip/profileTemplates/minimal
   ```

   Windows

   ```
   app_server_root\bin\manageprofiles.bat
   -create
   -profileName my_profile
   -profilePath "app_server_root\profiles\my_profile"
   -templatePath app_server_root\cip\profileTemplates\minimal
   ```

2. Augment the profile using the customizations for the default profile.

   AIX HP-UX Linux Solaris

   ```
   app_server_root/profiles/my_profile/bin/manageprofiles.sh
   -augment
   -profileName my_profile
   -templatePath cip_app_server_root/if_augmentingTemplates/default
   ```

   Windows

   ```
   app_server_root\profiles\my_profile\bin\manageprofiles.bat
   -augment
   -profileName my_profile
   -templatePath cip_app_server_root\if_augmentingTemplates\default
   ```

- Augment an application server profile that does not include a CAR file.

  Use the regular default template in this two-step procedure:

  1. Create the profile from the default template.

     AIX HP-UX Linux Solaris

     ```
     app_server_root/bin/manageprofiles.sh
     -create
     -profileName my_profile
     -profilePath "app_server_root/profiles/my_profile"
     -templatePath cip_app_server_root/profileTemplates/default
     ```

     Windows

     ```
     app_server_root\bin\manageprofiles.bat
     -create
     -profileName my_profile
     -profilePath "app_server_root\profiles\my_profile"
     -templatePath cip_app_server_root\profileTemplates\default
     ```

  2. Augment the profile using the customizations (that do not include a CAR) for the default profile.

     AIX HP-UX Linux Solaris

     ```
     app_server_root/profiles/my_profile/bin/manageprofiles.sh
     -augment
     -profileName my_profile
     -templatePath cip_app_server_root/if_augmentingTemplates/default
     ```

     Windows

     ```
     app_server_root\profiles\my_profile\bin\manageprofiles.bat
     -augment
     -profileName my_profile
     -templatePath cip_app_server_root\if_augmentingTemplates\default
     ```

After creating a profile and applying the customizations, the target installation should have a profile that is fully configured in the manner as designed by the CIP creator. If a configuration archive was imported, then the target profile should be a fully configured clone of the source profile where the configuration archive was exported.

To create a profile without the exact same customizations, in other words, a normal profile, use the normal profile templates in the *cip_app_server_root*/profileTemplates directory and do not augment the profiles.

After installing your customized system, install a Web server and plug-ins, if necessary, and startthe application server to test your applications.

Creating customized profiles

The Installation Factory captures the configuration of an existing application server profile and bundles it with an installation image, maintenance packages, and user files and scripts. The resulting bundled model environment is a *customized installation package*, or *CIP*. An installer can use a CIP to install an exact replica of the model application serving environment, with identically installed maintenance packages, configured profiles, and deployed applications.

The installer can use the Profile Management tool to create CIP profiles and automatically restore the profile customizations that are included in the CIP. Or, the installer can use the **manageprofiles** command to perform the same tasks manually from the command line.

If you cannot use the Profile Management tool, use the **manageprofiles** command to restore the customized profiles as described in “Creating customized CIP profiles from the command line” on page 246.

You must have previously installed a CIP to create CIP profiles and restore customizations that are included in the CIP.

If you are restoring a customized profile that uses messaging, you must also include a script to configure the service integration bus (SIB). The original SIB configuration is not portable and, therefore, is not included in the CIP.

The series of configuration events for using a configuration archive and other CIP customizations is shown in the following Version 6.x. example:

1. An expert installs Version 6.x.
2. The expert creates a default (stand-alone application server) profile, deploys applications, and makes other configuration changes.
3. The expert creates a configuration archive of the default profile using the AdminTask exportWasprofile command.

   Note: The first steps above are optional and are only required if a configuration archive needs to be exported for inclusion in a CIP. If configuration archive customization is not required, then the steps above can be omitted.
4. The expert uses the Installation Factory to create a CIP that includes the 6.x product image.

   The CIP optionally includes a refresh pack as well as a fix pack.

   a. The expert optionally includes scripts to run during install time or uninstall time.
   b. The expert optionally includes the configuration archive in the CIP when configuration profile customization for the Stand Alone Application Server config.
   c. You can only include EARs for the standalone profile
   d. You can include scripts for all profile types.
   e. The expert optionally includes additional files to be installed on the system.
5. The expert distributes the CIP to installers who require the pre-configured system for their users.

6. The installers install the CIP.
7. The installers create a profile.

   If you are an installer, you can use one of the following methods to create the profile:
   - After the CIP installation, run the Profile management tool.
   - After the CIP installation, run the **manageprofiles** command once to do a create and augment.
   - After the CIP installation, run the **manageprofiles** command twice sequentially to do a create and then an augment.

     Alternatively, you can run the **manageprofiles** command once to augment an existing profile.
   - In a scratch installation, do the following within the CIP installation wizard:

     On the Install Sample Applications panel, select the **Install profile customizations** checkbox.

   The profile will be automatically restored.

A configuration archive is available for an application server CIP profile. A special profile template enables the importation of a configuration archive file into the application server profile.

Use the Profile Management tool to create CIP profiles that accept configuration actions that are included in the CIP. Use the application server CIP profile when you are restoring a configuration archive file or other customizations. The Profile Management tool can also create normal profiles that do not accept customizations.

- When you run the Profile Management tool with CIP customized profiles installed, the Environment Selection panel will show environments with -- *cip_uid* at the end. These are the customized profiles, and each of them will create a regular profile and then apply the customizations through a profile augmentation. If the customized profile that you select contains a configuration archive, then it will be imported.
- The first four environments listed on the Environment Selection panel, which do not have a -- *cip_uid* at the end, are the regular profile types. If you want a regular profile without customizations, select one of these.
- Create and augment an application server profile that includes a CAR file.

  The Profile Management tool automatically augments the profile with any customizations that exist for the default application server profile.
- Create and augment an application server profile that does not include a CAR file.

  Choose the application server profile in the enhanced Profile Management tool. The Profile Management tool uses the appropriate profile to create an application server that does not require the CAR, but that still accepts other customizations.

  The Profile Management tool automatically augments a CIP profile with any customizations that exist for the profile type.

After creating the profile and restoring the customizations, the installation should have a profile that is configured like the profile in the model product installation that was the pattern for the CIP. Existing customizations are used only when you create a CIP profile with the Profile Management tool.

After installing your customized system, install a Web server and plug-ins, if necessary, and startthe application server to test your applications.

install command

This topic describes the Installation Factory installer program for WebSphere Application Server products. The install command starts the InstallShield for Multiplatforms (ISMP) Installation wizard. The Installation Factory installer program for WebSphere Application Server installs the customized installation package (CIP) that includes the product image and one or more maintenance packages.

The Installation Factory installer for WebSphere Application Server is based on the Version 6.x full installer program. The Installation Factory installer program is sometimes referred to as the CIP Installation wizard or the Installation Factory Installation wizard.

The Installation wizard has the capability to perform a new product installation, an incremental installation by adding features to an existing installation, or an update to an existing installation that updates the installation to a new service level. The term *slip install* is sometimes used to describe an update to an existing installation that updates the installation to a new service level.

The CIP Installation wizard can also upgrade an Express product. After upgrading, run the Installation wizard again to update the base product to the maintenance level included in the CIP.

Location of the command file

The install command file is located in the *customized_installation_package*/WAS directory.

Logging

The logging system of the Installation Factory installer program includes:

- ISMP logging to the *app_server_root*/logs/install/log.txt file
- Component deployment and configuration logging
- Profile-related logging to a temporary file in the system temp directory
- Profile-related logging to a dedicated log file when creating, deleting, augmenting, or unaugmenting a profile:
  - *app_server_root*/logs/manageprofiles/*profile_name*_create.log
  - *app_server_root*/logs/manageprofiles/*profile_name*_delete.log
  - *app_server_root*/logs/manageprofiles/*profile_name*_augment.log
  - *app_server_root*/logs/manageprofiles/*profile_name*_unaugment.log
- Other profile-related logging:
  - *app_server_root*/logs/manageprofiles/*profile_name*
  - *app_server_root*/profiles/*profile_name*/logs

Operating systems such as AIX or Linux: Syntax for the install command

Installing using the graphical user interface:

```
./install
```

Installing silently using a customized response file:

```
./install -options /tmp/WAS/myoptionsfile.txt -silent
```

Windows: Syntax for the install.exe command

Installing using the graphical user interface:

```
install
```

Installing silently using a customized response file:

```
install -options "C:\temp\WAS\myoptionsfile.txt" -silent
```

Installing a CIP

Install a customized installation package (CIP) for WebSphere Application Server - Express on AIX 5L, HP-UX, Linux, Solaris, or Windows operating systems.

Before you use the installation tools, read this topic to prepare for installation and to learn about installation options. Also read the hardware and software requirements on the Supported hardware and software Web site to get started.

Windows The installation procedure requires the installer ID to have the following advanced user rights, *Act as part of the operating system* and *Log on as a service* to install Windows services.

AIX HP-UX Linux Solaris The installer ID can be a non-root user ID. However, some installation procedures might require the installer ID to be the root user. For detailed information on non-root limitations see, “Limitations of non-root installers” on page 138.

This topic describes how to install the product using a CIP. A CIP installation runs the installation wizard in GUI or silent mode.

The installation wizard performs the following actions:

- Automatically checks prerequisites
- Looks for a previous WebSphere Application Server Version 6.1 installation to determine whether to let you add features to the product binaries or to install a new set of product binaries
- Looks for a previous Version 6.1 installation to determine whether to let you upgrade from a trial installation to the real product
- Installs the necessary product binaries
- Creates a standalone application server node

1. Plan your installation as described in Chapter 4, “Planning the installation,” on page 49.
2. Prepare your operating platform for installation as described in Chapter 5, “Preparing the operating system for product installation,” on page 65.
3. Review the roadmap for installing the Express product as described in “Roadmap: Installing the Express product” on page 96.
4. Install the Express product.

   If you cannot use a graphical user interface on your operating system for some reason, use the wizard in silent mode.

   Choose an installation scenario to continue the installation:

   - **Graphical user interface:** Perform a custom installation with the wizard as described in “Installing a CIP for Express” on page 253.

     The custom installation lets you select features to install.
   - **Graphical user interface:** Install additional features to an existing installation as described in “Installing CIP features on an existing Express product” on page 258.

     After installing Express, you can install it again to update the system files by installing previously uninstalled features.
   - **Graphical user interface:** Upgrade a trial version to a product version as described in “Upgrading the Express trial to the Express product using a CIP” on page 262.
   - **Command-line interface:** Perform a silent installation as described in “Installing a CIP silently” on page 264.

     A silent installation requires you to edit the response file that contains all of your installation choices. After creating a valid response file, issue the install command with the -silent parameter and the -options parameter from a command window.

   The installer program does not support the ISMP-console installation method at this time.

   If you encounter a problem such as needing more disk space or temporary space or missing prerequisite packages on your system, cancel the installation, make the required changes, and restart the installation.

You can install a CIP for IBM WebSphere Application Server - Express Version 6.x by following this procedure.

You can also install IBM HTTP Server, the Web server plug-ins for WebSphere Application Server, and the application clients for WebSphere Application Server.

Installing a CIP for Express

Install a IBM WebSphere Application Server - Express customized installation package (CIP) using the Installation wizard on distributed operating system platforms. You install from a CIP image created with the Installation Factory.

Before starting this installation, see “Planning to install WebSphere Application Server - Express” on page 50. The diagrams show typical topologies for the product. The solutions are also in the *Installation solution diagrams* in the launchpad. See “Using the launchpad to start the installation” on page 25.

Perform the following installation to select available features for the WebSphere Application Server - Express product and to select characteristics for the application server profile.

1. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

   Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:
   - Act as part of the operating system
   - Log on as a service

   For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

   Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.

2. Insert the CD or DVD with the CIP into the disc drive, or access the directory where the CIP is located.

   Mount the drive if necessary as described in “Mounting disc drives on operating systems such as AIX or Linux” on page 134.

3. Start the installation directly with the **install** command.

   - AIX HP-UX Linux Solaris /WAS/install
   - Windows \WAS\install

   If a problem occurs with the Java Runtime Environment (JRE), use the WebSphere Application Server JRE in the /java/jre/bin directory of an installation image to start the installation.

   After launching the Installation wizard from the command line, the installer wizard initializes and then displays the Welcome panel.

4. Click **Next** to continue.

The license agreement displays.

5. Click the radio button beside the **I accept the terms in the license agreement** message to agree to the license agreement and click **Next** to continue.

   After you accept the licensing terms, the installation wizard checks for a supported operating system and prerequisite patches.

   If you encounter a problem such as not having the right prerequisite updates on your system, cancel the installation, make the required changes, and restart the installation.

   Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site if you have not already done so.

   The Web site lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system.

   Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

6. After confirming that your operating system is supported and that you have installed all necessary patches, click **Next** to continue.

   The Installation wizard checks for a previous installation at the same product level.

   Specifically, the wizard looks for an existing Version 6.1 installation.

   If the wizard detects a previous installation, it displays the Existing installation panel, where you can:

   - Add features to the existing installation.

     See “Installing CIP features on an existing Express product” on page 258.
   - Perform a new installation to another directory.
   - Perform an upgrade of a trial installation to the full product.

     See “Upgrading the Express trial to the Express product using a CIP” on page 262.
   - Add maintenance from a CIP to the existing installation.
   - Add files, directories, enterprise application archive (EAR) files, and a configuration archive (CAR) file from a CIP to the existing installation.
   - Use scripts in a CIP to configure the existing system.

   This procedure assumes that you do not have an existing installation that you intend to update.

7. Select features to install and click **Next**.

   In Version 6.1, just one feature is available, which installs the Samples Gallery.

   A CIP might not have the Samples feature. You can install only what was included in the CIP.

   Note: If an existing installation is at a lower level than the CIP or at the same level as the CIP, the core product will be updated to the CIP level automatically. If an existing installation is at a higher level than the CIP, the core product will not be down leveled. The feature panel only shows the features you are missing, if you select to install the new feature from CIP, the installed features will be at the same level of CIP, which is lower than existing installation. Thus incremental install on a higher level of existing installation is not recommended.

Table 25. Features for the WebSphere Application Server - Express product

Feature	Description
Application Server Samples	Installs the Samples Gallery and Plants By WebSphere applications.

   For better performance in either a development or production environment, do not install the Samples. By omitting the Samples, you can improve application server startup time by 60 percent and save 15 percent of disc space. You can save up to 30 percent of process footprint (based on a maximum heap size of 256 MB).

   The installation wizard displays a confirmation panel.

8. Specify the destination of the installation root directory and click **Next**.

Specify the location of the installation root directory for the product binaries, which are also known as the core product files or system files.

The core product files do not change unless you:

- Install a CIP
- Add a feature
- Install service, such as fix packs or interim fixes
- Install another product that extends the Express product.

The system-owned default *app_server_root* directories for installing as a root user or an administrator user are different than the user-owned default *app_server_root* directories when installing as a non-root installer.

Restriction:

- Deleting the default target location and leaving an installation directory field empty prevents you from continuing.
- AIX HP-UX Linux Solaris Do not use symbolic links as the destination directory. Symbolic links are not supported.
- AIX HP-UX Linux Solaris Spaces are not supported in the name of the installation directory on operating systems such as AIX or Linux.
- Windows Do not use a semicolon in the directory name on Windows systems. WebSphere Application Server cannot install properly on a Windows platform if the target directory includes a semicolon. A semicolon is the character used to construct the class path on Windows systems.

The installer program checks for required space before calling the installation wizard. If you do not have enough space, stop the installation program, free space by deleting unused files and emptying the recycle bin, and restart the installation.

9. Enable administrative security.

   The default setting is to enable administrative security. Clear the check box to disable security or supply an administrative ID and password.

   Tip:

   - In environments where you plan to have multiple standalone application servers, the security policy of each application server profile is independent of the others. Changes to the security policies in one application server profile are not synchronized with the other profiles.
   - Write down the user name and password. You cannot log onto the administrative console without it. You cannot use WebSphere Application Server at all unless you know the ID and password.

10. Specify the node and host names for the application server and click **Next**.

    A good practice is to use unique names for each application server that you create. However, unique names are important only at the profile name level in the configuration directory.

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

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

Field name	Default value	Constraints	Description
Node name	DefaultNode	Avoid using reserved folder names.	Pick any name except for the reserved names. To help organize your installation, use a unique name if you plan to create more than one application server on the machine. However, a unique name for a stand-alone application server is not required.
Host name	DNS name of your machine	See the following considerations for the host name field.	Use the actual DNS name or IP address of your machine to enable communication with your machine. See additional information about the host name following this table.

Node name considerations

Windows The installation directory path must be no longer than 60 characters.

See “Host name values” on page 141 for more information.

Windows After specifying application server characteristics, the wizard displays the Windows service definition panel, if you are installing on a Windows platform.

11. Windows Choose whether to run the application server as a Windows service on a Windows platform, then click **Next**.

    Version 6 attempts to start Windows services for application server processes started by a startServer command. For example, if you configure an application server as a Windows service and issue the startServer command, the wasservice command attempts to start the defined service.

    If you chose to install a local system service, you do not have to specify your user ID or password. If you create a specified user type of service, you must specify the user ID and the password for the user who is to run the service. The user must have *Log on as a service* authority for the service to run properly.

    To perform this installation task, the user ID must not have spaces in its name. The ID must also belong to the administrator group and must have the advanced user rights *Act as part of the operating system* and *Log on as a service*. The installation wizard grants the user ID the advanced user rights if it does not already have them, if the user ID belongs to the administrator group.

    You can also create other Windows services after the installation is complete, to start other server processes.

    The installation wizard shows which components are selected for installation in a pre-installation summary panel.

12. Review the summary information, then click **Next** to install the product code or **Back** to change your specifications.

    The installation wizard creates the uninstaller program and then displays a progress panel that shows which components are being installed. At the end of the installation, the wizard displays the Installation completion panel.

13. Verify the success of the installer program by examining the completion panel and the log.txt file for installation status.

    Examine the *app_server_root*/logs/install/log.txt file to verify that there were no file system or other unusual errors while installing. If there are problems, correct them, and reinstall the product.

    The slip install log for the Installation Factory is located in the *app_server_root*/logs/install/log.txt file, which is the same log file as for a normal installation. If the file already exists, new log messages are appended to the file.

    If you use the Update Installer to uninstall maintenance packages that the Installation Factory installed in a slip installation, the results are in a log in the *app_server_root*/logs/update/*name_of_CIP* directory.

    If problems occur, consult the following applicable logs:

Log files for WebSphere Application Server - Express: The following table shows the installation logs, content, and indicators of success and failure for WebSphere Application Server - Express for Version 6.1:

Table 26. Installation and profile creation logs for WebSphere Application Server - Express

Log	Content	Indicators
app_server_root /logs/install/log.txt	Logs all installation events	**Return code** **Meaning** **0** Success **1** Failure **2** Partial Success
app_server_root/logs/ manageprofiles/ *profile_name*_create.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.
app_server_root/logs/ manageprofiles/ *profile_name*_delete.log	• Traces all events that occur during the deletion of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile deletion failure. **INSTCONFSUCCESS** Successful profile deletion. **INSTCONFPARTIALSUCCESS** Profile deletion errors occurred but the profile is still deleted. Additional information identifies the errors.
app_server_root/logs/install/ installconfig.log.gz	• Logs the activities of ANT configuration scripts that run at the end of the installation procedure • Gzip file	**Configuration action failed:** Unsuccessful ANT script configuration. **Configuration action succeeded:** Successful ANT script configuration.

If the installation of the core product files fails, fix the error and reinstall.

If the creation of a profile fails, fix the error and run the Profile Management tool to recreate the profile.

Troubleshoot the installation if the *app_server_root*/logs/install/log.txt file or the *app_server_root*/logs/ manageprofiles/*profile_name*_create.log file does not contain a record of any problems, but problems exist.

See Chapter 11, “Troubleshooting installation,” on page 283 and “Installation component troubleshooting tips” on page 301 for more information.

Windows Examine the Start menu entry. The menu is an indication of a successful installation:

- **[All] Programs > IBM WebSphere > Application Server, Express v6.1**

If problems exist that cause you to reinstall the product, correct the errors, uninstall the product as described in Chapter 9, “Uninstalling the product,” on page 193, reboot a Windows machine or log off and back on as root on a machine with an operating system such as AIX or Linux, and reinstall.

14. Click **Finish** to close the installation wizard.

    Select the check box to open the First Steps console, then click **Finish**.

This procedure results in the installation wizard installing WebSphere Application Server - Express into the installation root directory. The installation wizard creates a profile named default that provides the runtime environment for the server1 application server.

Further configuration is not necessary at this time. However, you can create additional stand-alone application servers with the Profile Management tool. Each profile is created in the *profile_root* directory by default.

Installing CIP features on an existing Express product

This topic describes how to install a customized installation package (CIP) that includes the IBM WebSphere Application Server - Express, Version 6.1 product and one or more maintenance packages. This topic describes how to use the CIP installation wizard to install features that are included in the CIP. The installation wizard also installs maintenance packages that are included in the CIP.

This topics assumes that you have a CIP that contains installable features.

For information on creating a CIP, see Chapter 10, “Developing and installing customized installation packages,” on page 211.

Knowing what component to install and in what order to install the component is an important consideration. At some time before starting this installation, see “Planning to install WebSphere Application Server - Express” on page 50.

Perform the following installation to add features to an existing WebSphere Application Server - Express installation.

This installation also installs maintenance packages that are included in the CIP.

1. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

   Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:
   - Act as part of the operating system
   - Log on as a service

   For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

   Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.
2. Insert the CD-ROM or DVD with the customized installation package (CIP). Or access the directory where the CIP is located. If necessary, mount the disc drive as described in “Mounting disc drives on operating systems such as AIX or Linux” on page 134.
3. Start the installation directly with the install command.

a. Change to the WAS directory.
b. Run the install command.
   - `./install`
   - Windows `install`

After launching the CIP installation wizard from the command line, the wizard initializes and then displays the Welcome panel. Click **About this custom installation package** to display detailed information about the current custom installation package, such as the edition and version.

4. Click **Next** to continue.

   The license agreement displays.

5. Click the radio button beside the **I accept the terms in the license agreement** message to agree to the license agreement and click **Next** to continue.

   After you accept the licensing terms, the installation wizard checks for a supported operating system and prerequisite patches.

   If you encounter a problem such as not having the right prerequisite updates on your system, cancel the installation, make the required changes, and restart the installation.

   Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site if you have not already done so.

   The Web site lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system.

   Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

6. After confirming that your operating system is supported and that you have installed all necessary patches, click **Next** to continue.

   The installation wizard checks for a previous installation at the same major product level.

   If the wizard detects a previous installation, it displays the Existing installation panel, where you can:
   - Add maintenance to the existing installation
   - Add features to the existing installation
   - Add files, directories, enterprise application archive (EAR) files, and configuration archive (CAR) files to the existing installation
   - Use scripts to configure the existing system
   - Perform a new installation to another directory
   - Perform an upgrade of a trial installation to the full product
   - Perform an upgrade of an Express installation to the full product

   This task describes the scenario where a previous installation exists and you are adding features with an incremental installation.

7. Select the option to install additional features, then click **Next** to continue to the Features selection panel.

   Do not change the installation directory unless another existing installation is in another directory. An incremental installation adds features to the shared binaries identified in the location field.

   You can add available CIP features to the binaries at any time, by running the CIP Installation wizard again. Installing additional features does not affect profiles that you might have already created. (Profiles are run-time environments that are described in a later step.)

   When adding features during an incremental installation, the wizard displays the Features selection panel.

8. Select features to install and click **Next**.

   In Version 6.1, just one feature is available, which installs the Samples Gallery.

   A CIP might not have the Samples feature. You can install only what was included in the CIP.

Note: If an existing installation is at a lower level than the CIP or at the same level as the CIP, the core product will be updated to the CIP level automatically. If an existing installation is at a higher level than the CIP, the core product will not be down leveled. The feature panel only shows the features you are missing, if you select to install the new feature from CIP, the installed features will be at the same level of CIP, which is lower than existing installation. Thus incremental install on a higher level of existing installation is not recommended.

Table 27. Features for the WebSphere Application Server - Express product

Feature	Description
Application Server Samples	Installs the Samples Gallery and Plants By WebSphere applications.

For better performance in either a development or production environment, do not install the Samples. By omitting the Samples, you can improve application server startup time by 60 percent and save 15 percent of disc space. You can save up to 30 percent of process footprint (based on a maximum heap size of 256 MB).

The installation wizard displays a confirmation panel.

9. Review the summary information and click **Next** to install the product code or **Back** to change your specifications.

   The disc space shown on the pre-installation summary panel includes space for the Java Virtual Machine (JVM). Subtract the size of the JVM for your operating system to determine the installed size on disc for the features that you selected.

Table 28. JVM sizes

AIX	HP-UX	Linux	Solaris	Windows
59 MB	pa-risc: 109 MB 64 bit: 137 MB	ia32: 83 MB 64 bit: 133 MB	81 MB	ia32: 75 MB 64 bit: 71 MB

Verify that you have the total amount of free space shown before installing. Space is required for a working copy of the JVM during the installation.

The installation wizard creates the uninstaller program and then displays a progress panel that shows which components are being installed. At the end of the installation, the wizard displays the Installation completion panel.

At the end of the installation, the wizard displays the Installation completion panel.

10. Verify the success of the installer program by examining the completion panel and the log.txt file for installation status.

    Examine the *app_server_root*/logs/install/log.txt file to verify that there were no file system or other unusual errors while installing. If there are problems, correct them, and reinstall the product.

    The slip install log for the Installation Factory is located in the *app_server_root*/logs/install/log.txt file, which is the same log file as for a normal installation. If the file already exists, new log messages are appended to the file.

    If you use the Update Installer to uninstall maintenance packages that the Installation Factory installed in a slip installation, the results are in a log in the *app_server_root*/logs/update/*name_of_CIP* directory.

    If problems occur, consult the following applicable logs:

    Log files for WebSphere Application Server - Express: The following table shows the installation logs, content, and indicators of success and failure for WebSphere Application Server - Express for Version 6.1:

Table 29. Installation and profile creation logs for WebSphere Application Server - Express

Log	Content	Indicators
app_server_root /logs/install/log.txt	Logs all installation events	**Return code** **Meaning** **0** Success **1** Failure **2** Partial Success
app_server_root/logs/ manageprofiles/ *profile_name*_create.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.
app_server_root/logs/ manageprofiles/ *profile_name*_delete.log	• Traces all events that occur during the deletion of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile deletion failure. **INSTCONFSUCCESS** Successful profile deletion. **INSTCONFPARTIALSUCCESS** Profile deletion errors occurred but the profile is still deleted. Additional information identifies the errors.
app_server_root/logs/install/ installconfig.log.gz	• Logs the activities of ANT configuration scripts that run at the end of the installation procedure • Gzip file	**Configuration action failed:** Unsuccessful ANT script configuration. **Configuration action succeeded:** Successful ANT script configuration.

If the installation of the core product files fails, fix the error and reinstall.

If the creation of a profile fails, fix the error and run the Profile Management tool to recreate the profile.

Troubleshoot the installation if the *app_server_root*/logs/install/log.txt file or the *app_server_root*/logs/ manageprofiles/*profile_name*_create.log file does not contain a record of any problems, but problems exist.

See Chapter 11, “Troubleshooting installation,” on page 283 and “Installation component troubleshooting tips” on page 301 for more information.

Windows Examine the Start menu entry. The menu is an indication of a successful installation:

- **[All] Programs > IBM WebSphere > Application Server, Express v6.1**

If problems exist that cause you to reinstall the product, correct the errors, uninstall the product as described in Chapter 9, “Uninstalling the product,” on page 193, reboot a Windows machine or log off and back on as root on a machine with an operating system such as AIX or Linux, and reinstall.

11. Click **Finish** to close the installation wizard.

    Select the check box to open the First Steps console, then click **Finish**.

The Installation wizard installs the new features in the existing installation root directory. The Installation wizard configures the WebSphere Application Server - Express product for the new features.

The Installation wizard updates selected features to the new maintenance level. If any maintenance package includes service for an existing profile, the profile is updated to the new service level.

Further configuration is not necessary at this time. However, you can create additional stand-alone application servers with the Profile Management tool. Each profile is created in the *profile_root* directory by default.

Deploy an application to get started!

Upgrading the Express trial to the Express product using a CIP

This topic describes one of the installation options for a customized installation package (CIP) that includes the IBM WebSphere Application Server - Express, Version 6 product and one or more maintenance packages. This topic describes how to use the installation wizard to upgrade a trial installation of the Express product to the full Express product.

This topics assumes that you have a CIP that contains the full Express product.

For information on creating a CIP, see Chapter 10, “Developing and installing customized installation packages,” on page 211.

Knowing what component to install and in what order to install the component is an important consideration. At some time before starting this installation, see “Planning to install WebSphere Application Server - Express” on page 50.

Perform the following installation to upgrade a trial installation to the full WebSphere Application Server - Express product.

1. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

   Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:
   - Act as part of the operating system
   - Log on as a service

   For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

   Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.
2. Insert the CD-ROM or DVD with the customized installation package (CIP). Or access the directory where the CIP is located. If necessary, mount the disc drive as described in “Mounting disc drives on operating systems such as AIX or Linux” on page 134.
3. Start the installation directly with the install command.
   a. Change to the WAS directory.

b. Run the install command.
   - `./install`
   - Windows `install`

   After launching the CIP installation wizard from the command line, the wizard initializes and then displays the Welcome panel. Click **About this custom installation package** to display detailed information about the current custom installation package, such as the edition and version.

4. Click **Next** to continue.

   The license agreement displays.

5. Click the radio button beside the **I accept the terms in the license agreement** message to agree to the license agreement and click **Next** to continue.

   After you accept the licensing terms, the installation wizard checks for a supported operating system and prerequisite patches.

   If you encounter a problem such as not having the right prerequisite updates on your system, cancel the installation, make the required changes, and restart the installation.

   Although the installation wizard checks for prerequisite operating system patches with the prereqChecker application, review the prerequisites on the Supported hardware and software Web site if you have not already done so.

   The Web site lists all supported operating systems and the operating system fixes and patches that you must install to have a compliant operating system.

   Refer to the documentation for non-IBM prerequisite and corequisite products to learn how to migrate to their supported versions.

6. After confirming that your operating system is supported and that you have installed all necessary patches, click **Next** to continue.

   The installation wizard checks for a previous installation at the same major product level.

   If the wizard detects a previous installation, it displays the Existing installation panel, where you can:
   - Add maintenance to the existing installation
   - Add features to the existing installation
   - Add files, directories, enterprise application archive (EAR) files, and configuration archive (CAR) files to the existing installation
   - Use scripts to configure the existing system
   - Perform a new installation to another directory
   - Perform an upgrade of a trial installation to the full product
   - Perform an upgrade of an Express installation to the full product

   This task describes the scenario where a previous installation of the Express Trial exists and you are installing a CIP to upgrade the trial. The CIP includes the Express product and one or more maintenance packages.

   After upgrading, install the CIP again to install the maintenance to the upgraded product.

   Select the Upgrade option and click **Next**. The installer program installs the new license files and updates the system properties to indicate that the full product is installed.

The wizard completes the upgrade. The wizard exits at the end of the upgrade without presenting another panel.

This procedure results in upgrading a trial installation to the full WebSphere Application Server - Express product.

You can install the CIP again to add features or install maintenance. Or you can use the Profile Management tool to create more stand-alone application servers.

See information on creating profiles in the Administering applications and their environment PDF.

If you have already created the topology that you require, try deploying an application in your environment.

Installing a CIP silently

Installing a customized installation package (CIP) using silent installation refers to using a file to supply installation options without user interaction. To configure the installation, change the options in the response file before you issue the installation command. Silent installation mode does not accept interactive installation options. To specify non-default options during a silent installation, you must use the response file. To install silently, you must accept the license agreement in the agreement option.

You can install a customized installation package (CIP) that includes a WebSphere Application Server product and one or more maintenance packages and other customizations. The Installation Factory must create a CIP before you can install the CIP. See Chapter 10, “Developing and installing customized installation packages,” on page 211 for more information about creating a customized installation package (CIP).

Knowing what component to install and in what order to install the component is an important consideration. At some time before starting this installation, see “Planning to install WebSphere Application Server - Express” on page 50. The diagrams show typical topologies for the product.

Use this procedure to perform a silent installation of the product.

A silent installation uses the Installation wizard to install the product in silent mode, without the graphical user interface. Instead of displaying a wizard interface, the silent installation causes the installation program to read all of your responses from a file that you provide.

1. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

   To set the umask setting to 022, issue the following command:

   ```
   umask 022
   ```

   Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:
   - Act as part of the operating system
   - Log on as a service

   For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

   Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.
2. Copy the response file as myoptionsfile to your disk drive and customize it.

   See “Customizing the response file for an Express CIP” on page 266.

   The name of the original file is “responsefile.express.txt” on page 267.
3. Issue the proper command to use your custom response file. For example, issue one of the following commands:

- AIX HP-UX Linux Solaris *mnt_cdrom*/WAS/install -options /tmp/WAS/myoptionsfile.txt -silent
- Windows "*disc_drive_D*:\WAS\install" -options "C:\temp\WAS\myoptionsfile.txt" -silent

The installation wizard and the Profile Management tool record installation events in the following log files:

Table 30. Installation and profile creation logs for WebSphere Application Server - Express

Log	Content	Indicators
app_server_root/logs/install/log.txt	Logs all installation events	**Return code** **Meaning** **0** Success **1** Failure **2** Partial Success
app_server_root/logs/manageprofiles/*profile_name*_create.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.
app_server_root/logs/manageprofiles/*profile_name*_delete.log	• Traces all events that occur during the deletion of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile deletion failure. **INSTCONFSUCCESS** Successful profile deletion. **INSTCONFPARTIALSUCCESS** Profile deletion errors occurred but the profile is still deleted. Additional information identifies the errors.
app_server_root/logs/install/installconfig.log.gz	• Logs the activities of ANT configuration scripts that run at the end of the installation procedure • Gzip file	**Configuration action failed:** Unsuccessful ANT script configuration. **Configuration action succeeded:** Successful ANT script configuration.

Log more information when InstallShield MultiPlatform (ISMP) cannot start the installation wizard.

If the *profile_root* directory does not exist, the pmt.log file is in the USER_HOME directory. Issue the env command to display the USER_HOME directory on operating systems such as AIX or Linux. See the environment variable settings on Windows system to display the value of the variable.

Certain events can prevent ISMP from starting the Installation wizard. Such an event is not enough disk space to launch the Installation wizard for example. If your installation fails and there is no information in the installation logs, use the -is:javaconsole parameter to record entries for events that cause the ISMP program to fail to start the installation wizard. The syntax of the **install** command for observing such events is:

AIX HP-UX Linux Solaris

```
./install -is:javaconsole
```

Windows

```
install.exe -is:javaconsole
```

Ensure that you have at least 250 MB free in your temporary directory before attempting to install WebSphere Application Server.

Go to “Installing a CIP” on page 251 to continue the installation and configuration of your system.

Customizing the response file for an Express CIP

In silent mode, the Installation wizard gathers installation options from a response file instead of from the graphical user interface. This topic describes how to customize the response file for installing a customized installation package (CIP) for the WebSphere Application Server - Express product silently. A silent installation does not use the graphical user interface of the Installation wizard.

Customize the response file to add your selections before attempting to install silently.

Use the response file to supply values to the installation wizard as the wizard runs in silent mode. The wizard does not display interactive panels when it runs in silent mode, but reads values from the response file instead.

Be precise when supplying values in the file: Customize the options response file precisely to let the installation program read the option values that the file contains. Incorrect specifications affect the silent interface of the installation wizard. For example, always enclose values in double quotation marks.

If you customize the response file incorrectly, the installation wizard cannot install the product with the -options or -silent parameters. If the error is an invalid option value, the installer displays a warning message that you must confirm and stops the installation.

Compare your options response file to the responsefile.express.txt file that is shipped with the product to make the necessary corrections. After correcting the file, reinstall.

Perform the following procedure to edit the response file.

1. Locate the sample options response file. The file is named responsefile.express.txt in the WAS directory on the product CD-ROM or DVD.
2. Copy the file to preserve it in its original form. For example, copy it as *myoptions* on your disc drive.
3. Edit the copy in your flat file editor of choice, on the target operating system. Read the directions within the response file to choose appropriate values.

   Important: AIX To prepare the file for a silent installation on AIX, use line-end characters (0x0D0A) to terminate each line of the options response file. The safest method of preparing the file is to edit the file on the target operating system.
4. Include custom option responses that reflect parameters for your system.

   See “responsefile.express.txt” on page 267 for an example response file and a description of each option.
5. Save the file.
6. Log on to the operating system.

   AIX HP-UX Linux Solaris In addition, select a umask that would allow the owner to read/write to the files, and allow others to access them according to the prevailing system policy. For root, a umask of 022 is recommended. For non-root users a umask of 002 or 022 could be used, depending on whether or not the users share the group. To verify the umask setting, issue the following command:

   ```
   umask
   ```

To set the umask setting to 022, issue the following command:

```
umask 022
```

Windows When installing on a Windows system, a Windows service is automatically created to autostart the application server if your installer user account has the following advanced user rights:

- Act as part of the operating system
- Log on as a service

For example, on some Windows systems, click **Administrative Tools > Local Security Policy > User Rights Assignments** to set the advanced options. See your Windows documentation for more information.

Windows If you plan to run the application server as a Windows service, do not install from a user ID that contains spaces. A user ID with spaces cannot be validated. Such a user ID is not allowed to continue the installation. To work around this problem, install with a user ID that does not contain spaces.

7. Issue the proper command to use your custom response file. For example, issue one of the following commands:
   - AIX HP-UX Linux Solaris *mnt_cdrom*/WAS/install -options /tmp/WAS/myoptionsfile.txt -silent
   - Windows "*disc_drive_D*:\WAS\install" -options "C:\temp\WAS\myoptionsfile.txt" -silent

This procedure results in creating a customized response file and using the file to start a silent installation. The silent installation takes some time to complete.

Edit the version of the file that ships with the WebSphere Application Server - Express product. The example in "responsefile.express.txt" is not guaranteed to be an accurate representation of what ships with the product.

After installing the product from the installation image, the next step is to check for available updates. See Chapter 8, "Installing maintenance packages," on page 173 for more information.

After updating the Express product, verify the installation and start the application server.

If you install Rational Application Developer, you can use the tutorials on the product Welcome page to begin learning how to develop and deploy applications.

Use the First steps console to verify the installation, start the Profile Management tool, start the application server, or open the administrative console, where you can deploy sample applications.

Windows On Windows systems, use the Start menu to locate IBM WebSphere and select appropriate menu options to display the **First steps** option for the profile that you intend to verify.

AIX HP-UX Linux Solaris The First steps console, firststeps.sh, is available in the *profile_root*/firststeps directory. A separate First steps console exists for each profile, except custom profiles. Use the First Steps console of each profile to verify the profile.

Use the installver program to compare the checksum of all installed files against the bill of materials that ships with the product, if you want to perform more installation verification. See "Verifying checksums of installed files" on page 149.

After verifying the product installation and starting the stand-alone application server, use the administrative console to deploy an existing application.

responsefile.express.txt:

Installing WebSphere Application Server - Express using silent installation refers to using a file to supply installation options without user interaction. To configure the installation, change the options in the response file before you issue the installation command. Silent installation mode does not accept interactive installation options. To specify non-default options during a silent installation, you must use the response file. To install silently, you must accept the license agreement in the agreement option.

Verify that the required disk space is available.

See Chapter 5, “Preparing the operating system for product installation,” on page 65 for more information.

Do not use the default response file that is shipped on the product disk to install the product because the value of the silentInstallLicenseAcceptance option is false. Copy the file to change the value to true.

Location of the response file: The sample options response file is named `responsefile.express.txt`.

Creating an operational environment: Installing a new installation of WebSphere Application Server - Express with the response file creates an operational environment by default. The installer program:

1. Installs the new product code.
2. Creates the default profile.

   You can create additional profiles using any of these available methods:

   - Use the Profile Management tool.
   - Use the **manageprofiles** command.
   - Install with the response file with the createProfile=″true″ option and create a stand-alone application server profile with the -OPT profileType=″standAlone″ option.

Installing with a response file:

1. Copy the `responsefile.express.txt` file from the `WAS` directory on the product disk to a place that you can easily identify on your system.
2. Edit the file to customize the values for your installation.
3. Save the file as `myresponsefile.txt`, for example.
4. Start the installation. For example:

   AIX HP-UX Linux Solaris

   ```
   install -options /tmp/WAS/myresponsefile.txt -silent
   ```

   Windows

   ```
   install -options C:\temp\WAS\myresponsefile.txt -silent
   ```
5. After the installation, examine the logs for success.

Logging:

The installation wizard and the Profile Management tool record installation events in the following log files.

Table 31. Installation and profile creation logs for WebSphere Application Server - Express

Log	Content	Indicators
app_server_root /logs/install/log.txt	Logs all installation events	**Return code** **Meaning** **0** Success **1** Failure **2** Partial Success

Table 31. Installation and profile creation logs for WebSphere Application Server - Express (continued)

Log	Content	Indicators
app_server_root/logs/ manageprofiles/ *profile_name*_create.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.
app_server_root/logs/ manageprofiles/ *profile_name*_delete.log	• Traces all events that occur during the deletion of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile deletion failure. **INSTCONFSUCCESS** Successful profile deletion. **INSTCONFPARTIALSUCCESS** Profile deletion errors occurred but the profile is still deleted. Additional information identifies the errors.
app_server_root/logs/install/ installconfig.log.gz	• Logs the activities of ANT configuration scripts that run at the end of the installation procedure • Gzip file	**Configuration action failed:** Unsuccessful ANT script configuration. **Configuration action succeeded:** Successful ANT script configuration.

Information that ISMP can log when it cannot start the Installation wizard

Verify or troubleshoot the installation if the *app_server_root*/logs/install/log.txt file or the *profile_root*/logs/manageprofiles/pmt.log file does not contain a record of a problem, but problems exist. If the *profile_root* directory exists, the pmt.log file is in the logs/manageprofiles directory. If the error happens early in the installation, look for the logs in the system temporary area. The installation program copies the logs from the system temporary area to the logs directory at the end of the installation.

If the *profile_root* directory does not exist, the pmt.log file is in the USER_HOME directory. Issue the env command to display the USER_HOME directory on operating systems such as AIX or Linux. See the environment variable settings on Windows system to display the value of the variable.

Certain events can prevent the installer from starting the installation wizard. Such an event is not enough disc space to launch the installation wizard, for example. If your installation fails and there is no information in the installation logs, use the -log parameter to record entries for events that cause the installer program to fail to start the installation wizard. The syntax of the install command for logging such events is:

```
install  -options fully_qualified_options_response_file_name
         -silent
         -log # !fully_qualified_log_file_name  @ALL
```

- AIX

```
install -options "/usr/IBM/WebSphere/silentFiles/myresponsefile.txt"
        -silent -log # !/usr/IBM/WebSphere/myOptionFiles/log.txt  @ALL
```

- Linux HP-UX Solaris

```
install -options "/opt/IBM/WebSphere/silentFiles/myresponsefile.txt"
        -silent -log # !/opt/IBM/WebSphere/myOptionFiles/log.txt  @ALL
```

- Windows

```
install.exe -options "C:\IBM\WebSphere\silentFiles\myresponsefile.txt"
            -silent -log # !C:\IBM\WebSphere\silentFiles\log.txt  @ALL
```

See Chapter 11, “Troubleshooting installation,” on page 283 for more information.

Example of the default file:

```
############################################################################
#
# V6.1 InstallShield Options File
#
# Wizard name: Install
# Wizard source: setup.jar
#
# This file can be used to configure Install with the options specified below
# when the wizard is run with the "-options" command line option. Read each
# setting's documentation for information on how to change its value.
# Enclose all values within a single pair of double quotes.
#
# A common use of an options file is to run the wizard in silent mode. This lets
# the options file author specify wizard settings without having to run the
# wizard in graphical or console mode. To use this options file for silent mode
# execution, use the following command line arguments when running the wizard:
#
#    -options "D:\installImage\WAS\responsefile.express.txt" -silent
#
############################################################################

############################################################################
#
# License Acceptance
#
# Valid Values:
# true - Accepts the license. Will install the product.
# false - Declines the license. Install will not occur.
#
# If no install occurs, this will be logged to a temporary log file in the
# user's temporary directory.
#
# By changing the silentInstallLicenseAcceptance property in this response file
# to "true", you agree that you have reviewed and agree to the terms of the
# IBM International Program License Agreement accompanying this program, which
# is located at CD_ROOT\was.primary.pak\repository\legal\lafiles.  If you do not
# agree to these terms, do not change the value or otherwise download, install,
# copy, access, or use the program and promptly return the program and proof of
# entitlement to the party from whom you acquired it to obtain a refund of the
# amount you paid.
#

-OPT silentInstallLicenseAcceptance="false"


############################################################################
# Custom Install Package (CIP) Special Paramaters
#
# If you want to install CIP on an existing installation, e.g. apply maintenance
# or add feature, you need to set the 'installType' option to 'installAndPatch',
# for example:
#
# -OPT installType="installAndPatch"
#
# Please make sure you only set it once.  This applies to other parameters as well.
#
# You can use 'feature' option to control whether to install samples or not.
# See the "feature" section below for valid values for 'feature' option.
```

```
#
# In CIP install scenario, set 'installType' to 'addFeature' is the same as set
# it to 'installAndPatch'.  It is different from non-CIP install.
#
# By using the following option, you can choose whether to install profile
# customization at CIP install time.
#
# Valid Options:
#        maintenanceOnly               - Only installs product binary files.
#                                        If the CIP contains profile customizations,
#                                        they will NOT be installed.
#        customizationAndMaintenance   - Installs both product binary files and profile
#                                        customizations (if any).
#
#
-OPT if_cip_modifyexistinginstall=customizationAndMaintenance



################################################################################
#
# NonRoot Install Settings
#
# The option indicates whether you accept the limitations associated with installing
# as a non-root user, as follows:
#
#  - Creation of a Windows or Linux service for WebSphere Application Server
#  - Native registration with the operating system
#
# Port conflicts may occur with other installations of WebSphere Application Server
# that are not registered with the operating system.
#
# See the rins_nonroot file in the information center at
# http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/
# for more information on performing these installation actions after installation
# and avoiding port conflicts.
#
# Valid Values:
# true - Accepts the limitations. Will install the product.
# false - Do not accept the limitations. Install will not occur.
#
# Uncomment the following only if you are installing as a non-root user. Specify
# one of the valid options listed above before proceeding to install:
#
#-OPT allowNonRootSilentInstall="true"

################################################################################
#
# Operating System Prerequisite Checking
#
# If you want to disable operating system prerequisite checking, uncomment
# the following line. This will notify the installer to continue with
# the installation and log the warnings even though the prerequisite checking
# has failed.
#
#-OPT disableOSPrereqChecking="true"

################################################################################
#
# Non-blocking Prerequisite Checking
#
# If you want to disable non-blocking prerequisite checking, uncomment
# the following line. This will notify the installer to continue with
# the installation and log the warnings even though the prerequisite checking
# has failed.
#
#-OPT disableNonBlockingPrereqChecking="true"
```

```
################################################################################
#
# Install Type Settings
#
# The installType option designates the type of installation that will be
# performed.
#
# The default installType option is to install a new copy of WebSphere
# Application Server.
#
# Valid Values:
# installNew - default value, installs a new copy.
# addFeature - add features to an existing installation.
# upgrade - upgrade a trial edition to a licensed version.



################################################################################
#
# Install a New Copy
#
# To install a new copy, be sure that the installLocation option is set to a
# new install location.
#

-OPT installType="installNew"

################################################################################
#
# Incremental Install
#
# If you are installing additional features on top of an existing installation,
# (e.g. incremental install), uncomment the following line.  This will notify
# the installer that you are doing an incremental install.
#
#-OPT installType="addFeature"
#
# Define the new features you want to install on top of an existing WebSphere
# Application Server.  The only additional feature available in WebSphere
# Application Server is Application Server Samples.
#
# Ensure the feature option below is set to "samplesSelected" (-OPT feature="samplesSelected")
# and the installLocation option is set to an "existing" WebSphere Application
# Server install location.
#

################################################################################
#
# Upgrade from Express Trial to Licensed version
#
# NOTE - : DO NOT Set this Option if you do not have any Express Trial installed
#          You can not do an upgrade if you do not have at least one Express Trial installed
#
# To setup an upgrade install, UNcomment the following entry
#
# -OPT installType="upgrade"
#
# Be sure the installLocation option is set to your existing Express trial install location.
#

################################################################################
#
# Create Profile for an Existing V6.1 Installation
#
# Valid values:
#    true - creates a profile for an existing installation
```

```
#    false - does not create a profile
#
# To create a profile for an existing installation, uncomment the following
# entry. Comment out the "installType" option above since "installType"
# and "createProfile" options cannot be specified at the same time.
#
# Be sure the installLocation option is set to your existing install location.
#
#-OPT createProfile="true"

###############################################################################
#
# "Application Server samples" feature
#
# The selection state of the "Application Server samples" feature.
#
# Valid options:
#
#    samplesSelected  - Indicates that the feature is selected for installation.
#    noFeature - Indicates that the feature is not selected for installation,
#                this is the default option.
#
# For example, to select "Application Server samples" for installation, use
#
#    -OPT feature="samplesSelected"
#
# Note if feature="samplesSelected" and PROF_enableAdminSecurity="true",
# you must provide a password by uncommenting and specifying a value for
# PROF_samplesPassword in Administrative Security section below
#
-OPT feature="noFeature"

###############################################################################
#
# Install Location
#
# The install location of the product. Specify a valid directory into which the
# product should be installed. If the directory contains spaces, enclose it in
# double-quotes as shown in the Windows example below. Note that spaces in the
# install location is only supported on Windows operating systems. Maximum path
# length is 60 characters for Windows 2000 and Windows XP.
#
# Below is the list of default install locations for each supported operating
# system when you're installing as a root user.  By default, in this response
# file, the Windows install location is used.  If you want to use the default
# install location for another operating system, uncomment the appropriate
# default install location entry and then comment out the
# Windows operating system entry below.
#
# AIX Default Install Location:
#
#-OPT installLocation="/usr/IBM/WebSphere/AppServer"
#
# HP-UX, Solaris or Linux Default Install Location:
#
#-OPT installLocation="/opt/IBM/WebSphere/AppServer"
#
# i5OS Default Install Location:
#
#-OPT installLocation="/QIBM/IBM/WebSphere/AppServer/V61/productOffering"
#
# Windows Default Install Location:
#

-OPT installLocation="C:\Program Files\IBM\WebSphere\AppServer"
#
# If you are installing as non-root user on Unix or non-administrator on
```

```
# Windows, the following default install locations are suggested. Be sure you
# have write permission for the install location chosen.
#
# AIX Default Install Location:
#
#  -OPT installLocation="user's home/IBM/WebSphere/AppServer"
#
# HP-UX, Solaris or Linux Default Install Location:
#
#  -OPT installLocation="user's home/IBM/WebSphere/AppServer"
#
# Windows Default Install Location:
#
# -OPT installLocation="C:\IBM\WebSphere\AppServer"

##############################################################################
#
# Profile Creation Selection
#
# A default WebSphere Application Server profile will be created automatically
# during Express install. Use this option to instruct the installer not to
# create a default profile.
# Valid options:
# none - a profile will not be created during installation.
#
# For example, to choose no profile creation for installation, uncomment the following line
#
#-OPT profileType="none"

##############################################################################
#
# Administrative Security
#
# Choose whether to enable Administrative security during the installation
# process.
#
# If profileType="custom", Administrative security should be disabled, use
#-OPT PROF_enableAdminSecurity="false"
#
# Valid Values:
# true - Administrative security is enabled, user name and
#            password required.
# false - Administrative security is not enabled.
#
-OPT PROF_enableAdminSecurity="true"

##############################################################################
#
# Security Options
#
# The following two options should only be uncommented when
# PROF_enableAdminSecurity="true".
#
# If PROF_enableAdminSecurity="false", the following entries will be
# disregarded.
#
# If PROF_enableAdminSecurity="true", the following entries are required and must
# be filled out before proceeding with silent installation.
#
# Specify the user name for administrative security
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
-OPT PROF_adminUserName=
```

```
#
# Specify the password for the user specified in PROF_adminUserName
#
# Valid Values:
# a character string
#
-OPT PROF_adminPassword=
#
# The following option should only be uncommented when feature="samplesSelected" and
# PROF_enableAdminSecurity="true"
# Specify the password for samples user
#
# Valid Values:
# a character string
#
#-OPT PROF_samplesPassword=

###############################################################################
# if createProfile="true", you may use the following profile creation options:
###############################################################################

#
# Stand-Alone Profile
#
###############################################################################
#
# Profile name
#
# Specify the name of the profile for the Application Server. The profile
# name must be unique for this WebSphere Application Server installation.
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
#-OPT PROF_profileName=

###############################################################################
#
# Profile path
#
# Specify a valid directory to contain the files that define the run-time environment,
# such as commands,configuration files, and log files.
#
# Valid Values: An empty directory, the user must have proper permissions to the directory,
# there must be adequate disk space, total path cannot be greater than 80 (windows)
#
#-OPT PROF_profilePath=

###############################################################################
#
# Default Profile
#
# To make this profile the default target of commands that do not use their profile parameter.
# Valid Values:
#     true - make this the default profile.
#     false - do not make this the default profile.
#
# -OPT PROF_isDefault="true"

###############################################################################
#
# Host name
#
# Specify the host name for the Application Server. The host name is the domain
# name system (DNS) name (short or long) or the IP address of this computer.
```

```
# Valid Values: a valid hostname or IP address
#
#-OPT PROF_hostName=

###############################################################################
#
# Application Server Node name
#
# Specify the node name for the Application Server. Node name under one cell
# has to be unique.
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
#-OPT PROF_nodeName=

###############################################################################
#
# Cell name
#
# Specify the cell name for the profile to be created.
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
# -OPT PROF_cellName=

###############################################################################
#
# Starting Port
#
# Specify the starting port number for generating all ports for the profile.
# Do not use this parameter with the PROF_portsFile or PROF_defaultPorts parameters.
#
# Valid values: a positive integer port value, within the valid port range
#
#-OPT PROF_startingPort=

###############################################################################
#
# Port File
#
# Specify the path to a property file containing the desired port values for
# the new profile. Do not use this parameter with the PROF_startingPort or
# PROF_defaultPorts parameters.
# Valid values: A fully qualified path to a valid ports property file
#
#-OPT PROF_portsFile=

###############################################################################
#
# Default Ports
#
# Specify the default ports are to be used for the new profile.
# Do not use this parameter with the PROF_portsFile or PROF_startingPort parameters.
#
# Valid values:
#     true - use WAS default ports.
#     false - do not use WAS default ports.
#
#-OPT PROF_defaultPorts="true"

###############################################################################
```

```
#
# Validate Ports
#
# Validate ports to ensure they are not reserved or in use.

# Valid values:
#     true - enables port validation
#     false - disables port validation
#
#-OPT PROF_validatePorts="true"

##############################################################################
#
# WinService Check
#
# Specify whether you want to run this server as a windows service
#
# Valid values:
#     true - run as Windows service.
#     false - do not run as Windows service.
#
#-OPT PROF_winserviceCheck="true"

##############################################################################
#
# WinService Account Type
#
# Specify the type of the owner account of the Windows service to create.
# Uncomment the following ONLY if PROF_winserviceCheck="true"
#
# Valid values: specifieduser or localsystem
#
#-OPT PROF_winserviceAccountType=

##############################################################################
#
# WinService User Name
#
# Specify the user name for the windows service. Uncomment the
# following ONLY if PROF_winserviceCheck="true"
#
# Valid values: a valid user name for the current system
#
#-OPT PROF_winserviceUserName=

##############################################################################
#
# WinService Password
#
# Specify the password for the user specified by the winserviceUserName parameter
# Uncomment the following ONLY if PROF_winserviceCheck="true"
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
#-OPT PROF_winservicePassword=

##############################################################################
#
# WinService Startup Type
#
# Specify the start up method for the windows service
# Uncomment the following ONLY if PROF_winserviceCheck="true"
#
# Valid values:
```

```
#     manual - windows service must be started manually.
#     automatic - windows service will start automatically after reboot.
#     disabled - service is disabled.
#
# -OPT PROF_winserviceStartupType="automatic"

################################################################################
#
# LinuxService Check
#
# Specify whether you want to run this server as a Linux service.
#
# Note that the root permission is required to enable Linux service.
#
# Valid values:
#     true - run as a Linux service.
#     false - do not run as a Linux service.
#
#-OPT PROF_enableService="true"

################################################################################
#
# LinuxService User Name
#
# Specify the name of the user you wish this service to be run as. Uncomment the
# following ONLY if PROF_enableService="true". Linux services can only be created
# from profile creation if the current user is the root user.
#
# Valid values: a valid Linux user name
#
#-OPT PROF_serviceUserName=

################################################################################
#
# WebServer Check
#
# Specify whether you wish to set the web server definition.
#
# Valid values:
#     true - enable the creation of a webserver definition.
#     false - do not enable the creation of a webserver definition.
#
#-OPT PROF_webServerCheck="true"


################################################################################
#
# WebServer Type
#
# Specify the type of web server you are creating.
# Uncomment the following if and ONLY if PROF_webServerCheck="true".
#
# Valid values (case sensitive): IHS | IIS | SUNJAVASYSTEM | DOMINO | APACHE | HTTPSERVER_ZOS
#
#-OPT PROF_webServerType=

################################################################################
#
# WebServer OS
#
# Specify the operating system of the system where the web server is
# installed. Uncomment the following if and ONLY if PROF_webServerCheck="true".
#
# Valid values: linux | windows | aix | hpux | solaris | os390 | os400
#
#-OPT PROF_webServerOS=
```

```
###############################################################################
#
# WebServer Name
#
# Specify the name of the web server. Uncomment the following if and ONLY if
# PROF_webServerCheck="true".
#
# Valid Values:
# a character string - do not use the following characters:
# /, \, *, , , :, ;, =, +, ?, |, <, >, &, %, ', ", ]]>, #, $, ^, {, }
# Note: a period (.) is not valid if it is the first character.
#
#-OPT PROF_webServerName=

###############################################################################
#
# WebServer Hostname
#
# Specify the hostname of the system with the web server. Uncomment the following
# if and ONLY if PROF_webServerCheck="true".
#
# Valid values: a valid hostname or IP address
#
#-OPT PROF_webServerHostname=

###############################################################################
#
# WebServer Port
#
# Specify the port from which the web server can be accessed. Uncomment the
# following if and ONLY if PROF_webServerCheck="true".
#
# Valid values: a valid port number
#
#-OPT PROF_webServerPort=

###############################################################################
#
# WebServer Install Path
#
# Specify the installation path of the web server (local or remote).
# Uncomment the following if and ONLY if PROF_webServerCheck="true".
#
# Valid values: a valid directory path
#
#-OPT PROF_webServerInstallPath=

###############################################################################
#
# WebServer Plugin Path
#
# Specify the path to the plugins that will be used by this web server.
# Uncomment the following if and ONLY if PROF_webServerCheck="true".
#
# Valid values: a valid directory path
#
#-OPT PROF_webServerPluginPath=

###############################################################################
#
# Omit Action
#
# Use this option to omit the config action specified
#
# Valid values: one of the following optional config actions
#  deployAdminConsole
#  defaultAppDeployAndConfig
```

```
#  samplesInstallAndConfig
#
#-OPT PROF_omitAction=

###############################################################################
#
# Developer Server
#
# Use this option to indicate that the default server is meant for development purposes only.
#
# Valid values:
#     true - mark this default server for development purposes only.
#     false - do not mark this default server for development purposes only.
#
#-OPT PROF_isDeveloperServer="true"

###############################################################################
#
# Tracing Control
#
# The trace output format can be controlled via the option
# -OPT traceFormat=ALL
#
# The choices for the format are 'text' and 'XML'. By default, both formats will be produced,
# in two different trace files.
#
# If only one format is required, use the traceFormat option to specify which one, as follows:
#
# Valid Options:
# text - Lines in the trace file will be in a plain text format for easy readability.
# XML - Lines in the trace file will be in the standard Java logging XML format which can
#        be viewed using any text or XML editor or using the Chainsaw tool from Apache
#        (http://logging.apache.org/log4j/docs/chainsaw.html).
#
# The amount of trace info captured can be controlled using the option:
# -OPT traceLevel=INFO
#
# Valid Options:
#
# Level    Numerical Level Description
# OFF     0  No trace file is produced
# SEVERE     1  Only severe errors are output to trace file
# WARNING    2  Messages regarding non-fatal exceptions and warnings are added to trace file
# INFO     3  Informational messages are added to the trace file (this is the default trace level)
# CONFIG     4  Configuration related messages are added to the trace file
# FINE     5  Tracing method calls for public methods
# FINER     6  Tracing method calls for non public methods except getters and setters
# FINEST     7  Trace all method calls, trace entry/exit will include parameters and return value
```

Installation type options and options for profiles: Options that you can use to install silently vary according to the installation task that you are performing:

- installNew
- addFeature
- upgrade

Options for a new installation:

```
-OPT silentInstallLicenseAcceptance=
-OPT installType="installNew"
-OPT feature=
-OPT installLocation="/QIBM/ProdData/WebSphere/AppServer/V61/<edition>"
-OPT defaultProfileLocation="/QIBM/UserData/WebSphere/AppServer/V61/<edition>"
```

Options for creating a stand-alone application server cell:

```
-OPT feature="samplesSelected"
-OPT installLocation="/QIBM/ProdData/WebSphere/AppServer/V61/<edition>"
-OPT createProfile="true"
-OPT defaultProfileLocation="/QIBM/UserData/WebSphere/AppServer/V61/<edition>"
-OPT profileType="standAlone"
-OPT silentInstallLicenseAcceptance="true"
-OPT traceFormat=ALL
-OPT traceLevel=INFO
-OPT PROF_cellName=
-OPT PROF_defaultPorts=
-OPT PROF_enableAdminSecurity="false"
-OPT PROF_hostName=
-OPT PROF_isDefault=
-OPT PROF_nodeName=
-OPT PROF_omitAction=
-OPT PROF_portsFile=
-OPT PROF_profileName=
-OPT PROF_profilePath=
-OPT PROF_serverName=
-OPT PROF_startingPort=
-OPT PROF_validatePorts=
-OPT PROF_webServerCheck=
-OPT PROF_webServerHostname=
-OPT PROF_webServerInstallPath=
-OPT PROF_webServerName=
-OPT PROF_webServerOS=
-OPT PROF_webServerPluginPath=
-OPT PROF_webServerPort=
-OPT PROF_webServerType=
-OPT PROF_winserviceAccountType=
-OPT PROF_winserviceCheck=
-OPT PROF_winservicePassword=
-OPT PROF_winserviceStartupType=
-OPT PROF_winserviceUserName=
```

More information: Use the following information as a resource list.

Chapter 11. Troubleshooting installation

This topic describes troubleshooting the installation of the WebSphere Application Server - Express product.

If you are looking for troubleshooting information for the Web server plug-ins for WebSphere Application Server, see “Troubleshooting Web server plug-ins installation and removal” on page 291. This topic does not describe the plug-ins.

Use this topic after installing your WebSphere Application Server product.

A successful installation of a WebSphere Application Server product installs the core product files and creates the server1 Application Server.

If an installation is not successful, use this troubleshooting information to correct the problems.

Use this topic to help interpret the log files and diagnose possible problems when the installation is unsuccessful.

The installer program records the following indicators of success in the logs:

- INSTCONFSUCCESS
- INSTCONFPARTIALSUCCESS
- INSTCONFFAILED

1. Use the First steps console to run the installation verification test (IVT).

   The installation wizard can start the First steps console at the end of installation. Select **Installation verification**. Check the *profile_root*/logs/ivt.log file for a summary of test results. Correct any errors and retry. If you performed a custom installation, the location of the default profile is in the profiles installation root directory that you selected during the installation.

   If you created another profile using the Profile Management tool or the **manageprofiles** command, the location of the profile and the name of the profile are different than what is displayed in the example.
2. Run the installver command to calculate and compare checksums for all installed components to the bill of materials list for the product.

   See “Verifying checksums of installed files” on page 149 for more information.

   Compare the output from the installver command to the installation log files that are described in the next step.
3. Check the installation log files for errors after installing:

   The *app_server_root*/logs/install/log.txt file, the *app_server_root*/logs/manageprofiles/*profile_name*_create.log file, and the *profile_root*/logs/pctLog.txt file record installation and profile creation status.

   If the error happens early in the installation, look for the log.txt file in the system temporary area. The installation program copies the log from the temporary area to the logs directory at the end of the installation.

   During installation, a single entry in the *app_server_root*/logs/install/log.txt file points to the temporary log file, either %TEMP%\log.txt on Windows platforms, or /tmp/log.txt on platforms such as AIX or Linux. The installation program copies the file from the temporary directory to the *app_server_root*/logs/install/log.txt location at the end of the installation.

   If the installation fails and the log.txt file has only this one pointer to the temporary directory, open the log.txt file in the temporary directory. The log might have clues to the installation failure.

   Uninstalling creates the *app_server_root*/logs/uninstall/log.txt file.

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Log more information when InstallShield MultiPlatform (ISMP) cannot start the installation wizard.

If the *profile_root* directory does not exist, the pctLog.txt file is in the USER_HOME directory and is named .$~pctLog.txt. Issue the env command to display the USER_HOME directory on operating systems such as AIX or Linux. See the environment variable settings on Windows system to display the value of the variable.

Certain events can prevent the installer from starting the installation wizard. Such an event is not enough disc space to launch the installation wizard, for example. If your installation fails and there is no information in the installation logs, use the -log parameter to record entries for events that cause the installer program to fail to start the installation wizard. The syntax of the install command for logging such events is:

```
install  -options fully_qualified_options_response_file_name
         -silent
         -log # !fully_qualified_log_file_name  @ALL
```

- AIX

```
install -options "/usr/IBM/WebSphere/silentFiles/myresponsefile.txt"
        -silent -log # !/usr/IBM/WebSphere/myOptionFiles/log.txt  @ALL
```

- Linux HP-UX Solaris

```
install -options "/opt/IBM/WebSphere/silentFiles/myresponsefile.txt"
        -silent -log # !/opt/IBM/WebSphere/myOptionFiles/log.txt  @ALL
```

- Windows

```
install.exe -options "C:\IBM\WebSphere\silentFiles\myresponsefile.txt"
            -silent -log # !C:\IBM\WebSphere\silentFiles\log.txt  @ALL
```

Log file names and locations

The following information shows the log files for all of the installable components on the product disc.

Log files for IBM HTTP Server

The following table shows the installation log locations when installing IBM HTTP Server.

Table 32. Installation log locations when installing IBM HTTP Server

Windows system log path name	Log path name on operating systems such as AIX or Linux
Windows C:\Program Files\IBM HTTP Server\log.txt	AIX /usr/IBMHttpServer/ log.txt
Windows C:\Program Files\IBM HTTP Server\ihsv61_install.log	AIX /usr/IBMHttpServer/ ihsv61_install.log
	Linux HP-UX Solaris /opt/IBMHttpServer/ log.txt
	Linux HP-UX Solaris /opt/IBMHttpServer/ ihsv61_install.log

Log files for Application Client for WebSphere Application Server

The following table shows the installation log locations when installing the Application Client.

Table 33. Installation log locations when installing the Application Client for WebSphere Application Server

Windows system log path name	Operating system log path name on systems such as AIX or Linux
Windows C:\Program Files\IBM\WebSphere\ AppClient\logs\log.txt	AIX /usr/IBM/WebSphere/AppClient/logs/log.txt
	Linux HP-UX Solaris /opt/IBM/WebSphere/ AppClient/logs/log.txt

Product Log files: The following table shows the installation logs, content, and indicators of success and failure for the product:

Table 34. Installation and profile creation log files

Log	Content	Indicators
app_server_root /logs/install/log.txt	Logs all installation events	**Return code** **Meaning** **0** Success **1** Failure **2** Partial Success
app_server_root/logs/wasprofiles/*wasprofile_create_profile_name*.log	• Traces all events that occur during the creation of the named profile • Created when using the Profile Management tool or the **manageprofiles** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.
app_server_root/logs/install/installconfig.log.gz	• Logs the activities of ANT configuration scripts that run at the end of the installation procedure • Gzip file	**Configuration action failed:** Unsuccessful ANT script configuration. **Configuration action succeeded:** Successful ANT script configuration.

Description of the *profile_name*_create.log file

The *profile_name*_create.log file is an XML file that contains a record of the events that occur during the creation of the last profile.

In addition to the date tag at the beginning of the file, other tags of interest in the log files include the sequence tag, the level tag, the method tag, and the message tag:

- The sequence tag records the sequence of events that occur during the creation of the profile.
- The level tag is an early indicator of event status:

  INFO Indicates a normal event.

  WARNING
  Indicates an event that occurred with errors that do not prevent the creation of the profile.

  ERROR
  Indicates an event that prevents the creation of the profile.
- The method tag indicates the name of the routine that recorded the event.
- The message tag describes the event and contains any data returned by the method.

The following stanza is an example of how an event is documented in each log file:

```
<record>
  <date>2004-09-08T11:51:39</date>
  <millis>1094658699225</millis>
  <sequence>0</sequence>
  <logger>com.ibm.ws.profile.WSProfile</logger>
  <level>INFO</level>
  <class>com.ibm.ws.profile.WSProfile</class>
```

```
  <method>getRegistryFile</method>
  <thread>10</thread>
  <message>Returning registry file at:
     C:\IBM\WebSphere\AppServer\properties\profileRegistry.xml
  </message>
</record>
```

Log files created during the creation of the Application Server profile

In addition to the logs created within the core product files, the following logs are created in the *profile_root*/logs directory.

Both the Profile Management tool and the **manageprofiles** command create the log when creating an application server profile:

activity.log
: Compiled activity log from various installation activities

amjrte_config.log
: Tivoli Access Manager configuration log for its Java Runtime Environment

collect_metadata.log
: Collects metadata information about managed objects in the system to evaluate and prevent potential installation conflicts

createDefaultServer.log
: A log from wsadmin recording the creation of the server1 process in the default profile

createshortcutforprofile.log
: Windows tool log for creating menu entries and shortcuts

defaultapp_config.log
: JACL script log from configuring default application resources

defaultapp_deploy.log
: Application DefaultApplication installation log

node_name **Service.log**
: Start and stop events for server1

filetransfer_config.log
: Application filetransfer installation log

ivt_config.log
: Application ivtApp installation log

mejb_config.log
: Application ManagementEJB installation log

pctLog.txt
: Log created when using the Profile Management tool to create a profile.

  This log is not created when using the **manageprofiles** command directly.

query_config.log
: Application Query installation log

samples_config.log
: Configuration log for the PlantsByWebSphere Samples application

samples_install.log
: Installation log for the SamplesGallery and PlantsByWebSphere Samples applications

scheduler.cal_config.log
: Application SchedulerCalendars installation log

SIBDefineChains.log
Creation log for service integration bus endpoints, inbound channels and channel chains, outbound thread pool, and outbound channel and channel chains

SIBDeployRA.log
Deployment log for the service integration bus function

webui_config.log
Application administrative console installation log

Windows **winservice_config.log**
Service log for the Windows service created for server1

The following logs are created in the *profile_root*/logs/server1 directory:

startServer.log
Log of start server events

stopServer.log
Log of stop server events

SystemErr.log
Record system errors

SystemOut.log
Log of all activity within the system

trace.log
Log of all traced events within the system

The following logs are created in the *profile_root*/logs/ffdc directory:

server1_exception.log
First failure data capture log for server1 errors

server1_*numeric_identifier*.**txt**
Any first failure data capture logs

Log files for Web server plug-ins for WebSphere Application Server

See “Troubleshooting Web server plug-ins installation and removal” on page 291 for a description of log files and other troubleshooting information.

4. Determine whether the installation problem is caused by a failing ANT script.

   The *app_server_root*/logs/instconfig.log file indicates ANT configuration problems that could prevent the product from working correctly. The log file is not present on systems such as AIX or Linux.

   See “Diagnosing a failing ANT configuration script” on page 302 for a description of how to manually diagnose and fix an ANT script problem.

5. Verify that no files exist in the *app_server_root*/classes directory.

   IBM Support sometimes queues work for customers and provides test or debugging fixes. A common location for the fixes is in the *app_server_root*/classes directory.

   By default, the *app_server_root*/classes directory is picked up first in the WebSphere Application Server class path to let it override other classes.

   Putting a fix in the directory lets you verify that the fix does indeed solve your problem. After verifying that the fix solves the problem, you are supposed to delete the fix from the *app_server_root*/classes directory to return the system to a working state.

   If you do not remove such fixes from the *app_server_root*/classes directory, you can experience errors.

6. Uninstall the product, if possible, and reinstall after turning on tracing if the error logs do not contain enough information to determine the cause of the problem.
   - Report the stdout and stderr logs to the console window, by adding the -is:javaconsole parameter to the install command:

– AIX HP-UX Linux Solaris

```
install -is:javaconsole
```

Capture the stream to a file with the following commands:

```
install -is:javaconsole > captureFileName.txt 2>&1
```

– Windows

```
install.exe -is:javaconsole
```

Capture the stream to a file with the following commands:

```
install -is:javaconsole > drive:\captureFileName.txt
```

- Capture additional information to a log of your choice with the -is:log *file_name* option.
- Turn on additional installation logging by passing the -W Setup.product.install.logAllEvents="true" parameter to the install command:

– AIX HP-UX Linux Solaris

```
install -W Setup.product.install.logAllEvents="true"
```

– Windows

```
install -W Setup.product.install.logAllEvents="true"
```

7. Use the First steps console or the command line method to start the application server.

Start the First steps console for a particular node:

- AIX HP-UX Linux Solaris *profile_root*/firststeps/firststeps.sh
- Windows *profile_root*\firststeps\firststeps.bat

Start the server from the command line:

a. Change directories to the *profile_root*/bin directory in the profile.

b. Start the server process.

- AIX HP-UX Linux Solaris ./startServer.sh server1
- Windows startServer server1

8. Verify whether the server starts and loads properly by looking for a running Java process and the *Open for e-business* message in the SystemOut.log and SystemErr.log files.

If no Java process exists or if the message does not appear, examine the same logs for any miscellaneous errors. Correct any errors and retry.

You can find the SystemOut.log and SystemErr.log files in the *profile_root*/logs/server1 (platforms such as AIX or Linux) or *profile_root*\logs\server1 (Windows platforms) directory in an Application Server profile.

9. Start the Snoop servlet to verify the ability of the Web server to retrieve an application from the Application Server.

Test your environment by starting your Application Server, your Web server, and using the snoop servlet with an IP address.

a. Start the Application Server.

Change directories to the *profile_root*/bin directory and run the startServer command:

- AIX HP-UX Linux Solaris ./startServer.sh server1
- Windows startServer server1

b. Start the IBM HTTP Server or the Web server that you are using.

Use a command window to change the directory to the IBM HTTP Server installed image, or to the installed image of your Web server. Issue the appropriate command to start the Web server, such as these commands for IBM HTTP Server:

To start the IBM HTTP Server from the command line:

Access the apache and apachectl commands in the IBMHttpServer/bin directory.

- AIX HP-UX Linux Solaris ./apachectl start

- Windows apache

c. Point your browser to http://localhost:9080/snoop to test the internal HTTP transport provided by the Application Server. Point your browser to http://*Host_name_of_Web_server_machine*/snoop to test the Web server plug-in.

   The HTTP Transport port is 9080 by default and must be unique for every profile. The port is associated with a virtual host named default_host, which is configured to host the installed DefaultApplication and any installed Samples. The snoop servlet is part of the DefaultApplication. Change the port to match your actual HTTP Transport port.

d. Verify that snoop is running.

   Either Web address should display the Snoop Servlet - Request/Client Information page.

e. **Remote IBM HTTP Server only:**

   Verify that the automatic propagation function can work on a remote IBM HTTP Server by using the following steps. This procedure is not necessary for local Web servers.

   1) Create a user=adminUser, password=adminPassword in the *IHS_root* /conf/admin.passwd file. For example: c:\ws\ihs60\bin\htpasswd -cb c:\ws\ihs60\conf\admin.passwd adminUser adminPassword
   2) Use the administrative console of the Application Server to enter the User ID and password information that you created for the administrative user of IBM HTTP Server. Go to **Servers > Web server > *Web_server_definition* > Remote Web server administration**. Set the following values: admin Port=8008, User Id=adminUser, Password=adminPassword.
   3) Set the correct read/write permissions for the httpd.conf file and the plugin-cfg.xml file. See the *IHS_root* /logs/admin_error.log file for more information.

   Automatic propagation of the plug-in configuration file requires the IBM HTTP administrative server to be up and running. If you are managing an IBM HTTP Server using the WebSphere Application Server administrative console, the following error might display:

   ```
   "Could not connect to IHS Administration server error"
   ```

   Perform the following procedure to correct the error:

   1) Verify that the IBM HTTP Server administration server is running.
   2) Verify that the Web server host name and the port that is defined in the WebSphere Application Server administrative console matches the IBM HTTP Server administration host name and port.
   3) Verify that the fire wall is not preventing you from accessing the IBM HTTP Server administration server from the WebSphere Application Server administrative console.
   4) Verify that the user ID and password that is specified in the WebSphere Application Server administrative console under remote managed, is created in the admin.passwd file, using the htpasswd command.
   5) If you are trying to connect securely, verify that you export the IBM HTTP Server administration server keydb personal certificate into the WebSphere Application Server key database as a signer certificate. This key database is specified by the com.ibm.ssl.trustStore directive in the sas.client.props file in the profile where your administrative console is running. This consideration is primarily for self-signed certificates.
   6) If you still have problems, check the IBM HTTP Server admin_error.log file and the WebSphere Application Server logs (trace.log file) to determine the cause of the problem.

10. Start the WebSphere Application Server administrative console.

    a. Start the Application Server.

    b. Point your browser to http://localhost:9060/ibm/console.

       The HTTP Admin port is 9060 by default and must be unique for the administrative console of each stand-alone Application Server. The port is associated with a virtual host named admin_host, which is configured to host the administrative console, which is installed by default as a system application. Change the port to match your actual HTTP Admin port.

If you have problems accessing the administrative console after installation, check the installAdminConsole.log file for a failure indication. Clean up the system temporary directory and reinstall the administrative console using the wsadmin scripting facility.

c. Type any ID and click **OK** at the administrative console window.

The server starts. The administrative console starts. You can access the administrative console through the browser. The administrative console accepts your login.

11. Resolve any IP address caching problems.

    By default, the Java 2 SDK caches the IP address for the domain name service (DNS) naming lookup. After resolving the host name successfully, the IP address stays in the cache. By default, the cache entry remains forever.

    This default IP caching mechanism can cause problems, as described in the following problem scenarios.

    Problem scenario 1

    Suppose the Application Server at host1.ibm.com has an initial IP address of 1.2.3.4. When a client at host2.ibm.com conducts a DNS lookup of host1.ibm.com, the client stores the 1.2.3.4 address in the cache. Subsequent DNS name lookups return the cached value, 1.2.3.4.

    The cached value is not a problem until the host1.ibm.com IP address changes, to 5.6.7.8, for example. The client at host2.ibm.com does not retrieve the current IP address, but always retrieves the previous address from the cache.

    If this scenario occurs, the client cannot reach host1.ibm.com unless you stop and restart the client process.

    Problem scenario 2

    Suppose the Application Server at host1.ibm.com has an initial IP address of 1.2.4.5. Although the IP address of the application server does not change, a network outage can record an exception code as the IP address in the cache, where it remains until the client is restarted on a working network.

    For example, if the client at host2.ibm.com disconnects from the network because of an unplugged cable, the disconnected lookup of the Application Server at host1.ibm.com fails. The failure causes the IBM Developer Kit to put the special exception code entry into the IP address cache.

    Subsequent DNS name lookups return the exception code, which is java.net.UnknownHostException.

    For more information about the Java 2 SDK

    The Java 2 Platform Standard Edition (J2SE) 1.4.2 Web site and the Java 2 Platform Standard Edition (J2SE) 1.5 Web site describe the private sun.net.inetaddr.ttl property, which works in both J2SE 1.4.2 (WebSphere Application Server Version 5.1 and Version 6.0) and J2SE 1.5 (WebSphere Application Server Version 6.1).

12. Linux Restore the original copy of the etc/issue file if the file is modified.

    The prereqChecker program in the installation wizard uses the file to verify the version of the operating system. If you cannot restore the original version, ignore the Operating System Level Check message about the operating system being unsupported. The installation can continue successfully despite the warning.

This procedure results in debugging errors that might occur during installation.

The “Installation problems” on page 301 contains more detailed debugging and reporting instructions. See “Installation component troubleshooting tips” on page 301 for more information about troubleshooting the installation.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering the information that you need to resolve a problem. Before opening a PMR, see the IBM Support page.

Troubleshooting Web server plug-ins installation and removal

This topic describes troubleshooting the installation and removal of the Web server plug-ins for WebSphere Application Server.

This procedure is divided into three parts:

- Troubleshooting plug-ins installation
- Troubleshooting plug-ins removal
- Miscellaneous messages, tips, and hints

Log files for Web server plug-ins for WebSphere Application Server

The following log files are in the plug-ins plugins_root/logs/install directory:

log.txt Records all of the ISMP events that occur during the installation. The log also describes whether the installation was local or remote. Messages at the end of the file indicate whether manual configuration steps are required to complete the installation.

masterConfigurationLog.txt
Records all of the configuration events that occur during the installation.

installGSKit.log
Records events that occur during the installation of the GSKit code.

install*Web_server***Plugin.log**
Records events that occur during the installation of a Web server plug-in. The name of the file varies to reflect the Web server:

- installAPACHEPlugin.log
- installIHSPlugin.log
- installIISPlugin.log
- installSUNONEPlugin.log
- installDOMINOPlugin.log

configure_*Web_server*_**webserver.log**
Records events that occur during the configuration of a Web server plug-in. The name of the file varies to reflect the Web server:

- configure_APACHE_webserver.log
- configure_IHS_webserver.log
- configure_IIS_webserver.log
- configure_SUNONE_webserver.log
- configure_DOMINO_webserver.log

- **Troubleshooting plug-ins installation**

  1. Are you reinstalling with an INSTCONFSUCCESS message but no files are being installed?

     If you do not use the Web server Plug-ins uninstaller program to uninstall the plug-ins, a reinstall can fail with an INSTCONFSUCCESS message.

     The Web server Plug-ins installer is an Install Shield for Multiplatforms (ISMP) wizard. The wizard uses the vpd.properties file or the operating system registry to determine if the plug-ins are installed. If you do not use the uninstaller program for the plug-ins, neither the vpd.properties file nor the operating system registry is updated properly. You might see a *plugins_root* /logs/install/log.txt with content similar to the following example:

     ```
     Plugin.Install, com.installshield.product.service.product.
        PureJavaProductServiceImpl$InstallProduct, msg1,
        Did not replace installed object (IBM WebSphere Application
        Server - Plugins) with object (IBM WebSphere Application
        Server - Plugins)
     ```

```
Plugin.Install, ... msg1, Did not replace installed object
   (WebServer Plugin Binaries and Configurations) with
   object (WebServer Plugin Binaries and Configurations)
Plugin.Install... Did not replace installed object (GSKit) with object (GSKit)
Plugin.Install... Did not replace installed object (LAP Component) with
   object (LAP Component)
Plugin.Install...Did not replace installed object (WebServer Plugin
   Binaries) with object (WebServer Plugin Binaries)
Plugin.Install... Did not replace installed object (Additional Bytes
   for non-HP) with object (Additional Bytes for non-HP)
Plugin.Install... Did not replace installed object (GSKit) with object (GSKit)
Plugin.Install... Did not replace installed object (Standalone JDK)
   with object (Standalone JDK)
```

Use the uninstaller program in the *plugins_root*/uninstPlugin directory to uninstall the Web server Plug-ins. For example, do not delete the *plugins_root* directory to uninstall the plug-ins without running the installer program first.

If you have this problem, follow the uninstall procedure and the manual uninstall procedure to clean up your system before reinstalling the Web server Plug-ins.

2. Does the installation image have the proper directories?

   The following directories are present on the installation image of the full product. The directories in bold are required for a successful installation of the plug-ins:

   – *parent_directory*/WAS
   – *parent_directory*/IHS
   – ***parent_directory*/plugin**
   – *parent_directory*/AppClient
   – ***parent_directory*/JDK**
   – ***parent_directory*/GSKit**

   Remember: The *parent_directory* variable is the directory where you can unpack the images. All of the directories in the list must have the same parent directory.

   If the directories are not present, or if the directories are empty, download a new installation image or discuss the product CD that you are using with someone who is knowledgeable about its creation. The IBM product discs are certified.

   Reinstall using the IBM product disc.

   Symptoms that can occur when the JDK directory is missing or is not used: If the *plugins_root*/logs/install/log.txt log file records the following errors, the installer program did not use the correct Java 2 SDK, which is in the JDK directory on the installation image:

```
Plugin.Install, com.ibm.ws.install.ni.ismp.actions.
    ISMPComponentizedFileRepositoryDeployAction, msg1,
    Processing component: prereq.jdk
Plugin.Install, com.ibm.ws.install.ni.ismp.actions.
    ISMPComponentizedFileRepositoryDeployAction, err,
    Component not found: prereq.jdk
Plugin.Install, com.ibm.ws.install.ni.ismp.actions.
    ISMPComponentizedFileRepositoryDeployAction, err,
    ComponentNotFoundException.message
```

   The installation program can pick up another Java 2 SDK 1.4 on the system when running from the command prompt in terminal window that already has set the Java 2 SDK for the environment. Another way to point the installation program to a particular SDK is with the -is:javahome option for the Install Shield for Multiplatforms (ISMP) wizard.

   In either case, the JDK directory on the installation image is not being used. When the installation attempts to install the prereq.jdk component, the wizard cannot find the JDK directory and throws the error in the *plugins_root*/logs/install/log.txt file.

   Verify the cause of the error by examining the CURRENT_WORKING_DIRECTORY value and the JAVA_INSTALL_PATH value in the log.txt file. The working directory value is typically the

CD_root/plugin directory. An erroneous Java path might be *non_CD_root*/java/jre. The correct Java path is the *CD_root*/JDK/repository/prereq.jdk/java/jre directory.

In such a case:

a. Verify that the JDK directory is on the product disc.

b. Close the current command window.

c. Open a new command window.

d. Change directories to the plugin directory on the product disc.

e. Restart the installation: ./install

Symptoms that occur when the GSKit directory is missing: If the JDK directory is present, but the GSKit directory is not present, the installation is only partially successful, as shown in the logs by the INSTCONFPARTIALSUCCESS indicator.

The *plugins_root*/logs/install/masterConfigurationLog.txt log file shows that the 99SGSKitInstall.ant script failed to run. Complete the full installation by manually installing GSKit. The *plugins_root*/logs/install/installGSKit.log file shows the command to use for the manual installation in the GSKIT 7 entry.

3. Is there any sign that the installation occurred?

   If not, look for the temporaryPluginInstallLog.txt file in the temporary directory of the user who installed the plug-ins.

   For example, the /tmp/temporaryPluginInstallLog.txt file might exist if the root user installed the plug-ins on a system such as AIX or Linux.

   This log is of particular interest after a silent installation. Suppose that the silent installation responsefile.txt file has incorrect entries. The installation cannot succeed. The cause of the problem is recorded in the temporaryPluginInstallLog.txt file.

   If the responsefile.txt does not pass validation, the failure is logged as an INSTCONFFAILED entry. The installation does not occur. Correct the failure and run the silent installation again.

   You might have to start with a new copy of the file that is on the product disc if you cannot get your copy to work.

4. Does the installation result in an INSTCONFPARTIALSUCCESS status?

   a. Look for errors in the log.txt file.

   b. Look for an entry in the log.txt file that shows the location of the masterConfigurationLog.txt file.

   c. Edit the masterConfigurationLog.txt file.

   d. Starting at the end of the file, scan towards the front of the file looking for configuration scripts that could not run.

      For example, the following stanza shows a configuration script that could not run:

```
<record>
<date>2004-10-08T10:31:43</date>
<millis>1097245903200</millis>
<sequence>189</sequence>
<logger>com.ibm.ws.install.configmanager.ConfigManager</logger>
<level>INFO</level>
<class>com.ibm.ws.install.configmanager.ConfigManager</class>
<method>dumpNonFatalFailedActionsInfoToLogFile</method>
<thread>10</thread>
<message>This action failed to execute:
  C:\Plugins\properties\version\install\plugin\6.0.0.0\
  config\full\install\99SGSKitInstall.ant</message>
</record>
```

   e. A configuration script that fails to run is likely the cause of a partially successful installation status. To debug the example, look at the installGSKit.log, which is the log file for GSKit. Look for signs of a failed installation to determine if you can correct the problem.

Configuration script log files and recovery procedures: The following configuration scripts run during the configuration of supported Web servers.

Configuration script: 98SConfigureWebserverDefinition.ant

Log file to investigate for error	Recovery
configure*Web_server_type*_webserver.log For example, the file might be named: configure_IHS_webserver.log Logs the Web server definition creation.	1. If the Web server definition partially exists, delete the Web server definition. 2. Run the Web server definition script manually. The Web server definition is referenced in the script. The script is in the plugins_root/bin directory, with a name similar to the following convention: • AIX HP-UX Linux Solaris configure*Web_server_definition_name*.sh • Windows configure*Web_server_definition_name*.bat

Configuration script: 99SBootStrapPluginsSunOne.ant

Log file to investigate for error	Recovery
installSunOnePlugin.log Investigate the log file to determine what failed: 1. If the error is due to plugin-cfg.xml not existing, investigate why this file is not present. 2. If the error is due to the Web server definition creation failing, address this as discussed under the 98SConfigureWebserverDefinition.ant description. 3. If the Web server configuration files do not update, investigate the files to verify that they exist and that the file permissions are correct.	• You can manually configure the Web server. • You can rerun the Plug-ins installation wizard. Select the existing plug-ins installation root directory. Doing so results in the Web server being configured to use the existing binaries.

Configuration script: 99SBootStrapPluginsDomino6.ant

Log file to investigate for error	Recovery
installDomino6Plugin.log Investigate the log file to determine what failed: 1. If the error is due to plugin-cfg.xml not existing, investigate why this file is not present. 2. If the error is due to the Web server definition creation failing, address this as discussed under the 98SConfigureWebserverDefinition.ant description. 3. If the Web server configuration files do not update, investigate the files to verify that they exist and that the file permissions are correct.	• You can manually configure the Web server. • You can rerun the Plug-ins installation wizard. Select the existing plug-ins installation root directory. Doing so results in the Web server being configured to use the existing binaries.

Configuration script: 99SBootStrapPluginsDomino5.ant

Log file to investigate for error	Recovery
installDomino5Plugin.log Investigate the log file to determine what failed: 1. If the error is due to plugin-cfg.xml not existing, investigate why this file is not present. 2. If the error is due to the Web server definition creation failing, address this as discussed under the 98SConfigureWebserverDefinition.ant description. 3. If the Web server configuration files do not update, investigate the files to verify that they exist and that the file permissions are correct.	• You can manually configure the Web server. • You can rerun the Plug-ins installation wizard. Select the existing plug-ins installation root directory. Doing so results in the Web server being configured to use the existing binaries.

Configuration script: 99SBootStrapPluginsIIS6.ant

Log file to investigate for error	Recovery
installIIS6Plugin.log Investigate the log file to determine what failed: 1. If the error is due to plugin-cfg.xml not existing, investigate why this file is not present. 2. If the error is due to the Web server definition creation failing, address this as discussed under the 98SConfigureWebserverDefinition.ant description. 3. Start the Internet Information Services (IIS) application and investigate the IIS configuration.	• You can manually configure the Web server. • You can rerun the Plug-ins installation wizard. Select the existing plug-ins installation root directory. Doing so results in the Web server being configured to use the existing binaries.

Configuration script: 99SBootStrapPluginsIIS5.ant

Log file to investigate for error	Recovery
installIIS5Plugin.log Investigate the log file to determine what failed: 1. If the error is due to plugin-cfg.xml not existing, investigate why this file is not present. 2. If the error is due to the Web server definition creation failing, address this as discussed under the 98SConfigureWebserverDefinition.ant description. 3. Start the IIS application and investigate the IIS configuration.	• You can manually configure the Web server. • You can rerun the Plug-ins installation wizard. Select the existing plug-ins installation root directory. Doing so results in the Web server being configured to use the existing binaries.

Configuration script: 99SBootStrapPluginsApache.ant

Log file to investigate for error	Recovery
installApachePlugin.log Investigate the log file to determine what failed: 1. If the error is due to plugin-cfg.xml not existing, investigate why this file is not present. 2. If the error is due to the Web server definition creation failing, address this as discussed under the 98SConfigureWebserverDefinition.ant description. 3. If the Web server configuration files do not update, investigate the files to verify that they exist and that the file permissions are correct.	• You can manually configure the Web server. • You can rerun the Plug-ins installation wizard. Select the existing plug-ins installation root directory. Doing so results in the Web server being configured to use the existing binaries.

Configuration script: 99SBootStrapPluginsIHS.ant

Log file to investigate for error	Recovery
installIHSPlugin.log Investigate the log file to determine what failed: 1. If the error is due to plugin-cfg.xml not existing, investigate why this file is not present. 2. If the error is due to the Web server definition creation failing, address this as discussed under the 98SConfigureWebserverDefinition.ant description. 3. If the Web server configuration files do not update, investigate the files to verify that they exist and that the file permissions are correct.	• You can manually configure the Web server. • You can rerun the Plug-ins installation wizard. Select the existing plug-ins installation root directory. Doing so results in the Web server being configured to use the existing binaries.

Configuration script: 99SGSKitInstall.ant

Log file to investigate for error	Recovery
installGSKit.log Investigate the log file to determine what failed: 1. In cases where the CD layout is not correct, then the gskit installer program cannot be found. GSKit fails to install. 2. In cases where GSKit is already installed, the installation might incorrectly report a failure. If the logs show that an installation already existed, you can safely ignore the error.	Manually install GSKit by running the installer program. The installGSKit.log file shows the installer program that runs to install GSKit. AIX HP-UX Linux Solaris Run the following command from the /cdrom/GSKit directory: • /cdrom/GSKit/gskit.sh Windows Run the following command from the ″E:\GSKit\ directory, assuming the E drive is the CD-ROM drive: • ″E:\GSKit\Setup.exe″ WASPLUGIN60_041008085014 ″C:\Program Files″ -s -z -f1″E:\GSKit\setup.iss″

Solaris **Configuration script:** 99SSolarisGSKitInstall4.ant

Log file to investigate for error	Recovery
On Solaris, the installation is logged to the installGSKit.log file. Investigate the log file to determine what failed: 1. In cases where the CD layout is not correct, then the gskit installer program cannot be found. GSKit fails to install. 2. In cases where GSKit is already installed, the installation might incorrectly report a failure. If the logs show that an installation already existed, you can safely ignore the error.	Manually install GSKit by running the installer program. Solaris Run the following command from the /cdrom/GSKit directory: • /cdrom/GSKit/gskit4.sh

Windows **Configuration script:** 90SCreateWinRegPlugin.ant

Log file to investigate for error	Recovery
This script does not have an associated log file. The script creates the Windows registry entry for the Web server plug-ins for WebSphere Application Server. HKEY_LOCAL_MACHINE > Software > IBM > Web server Plug-ins for IBM WebSphere Application Server > 6.0.0.0	Add the HKEY_LOCAL_MACHINE > Software > IBM > Web server Plug-ins for IBM WebSphere Application Server > 6.0.0.0 key manually with the actual value of the installation location. Set the following registry values under this key: • Name: *plugins_root* • Type: REG_SZ • Data: *plugins_root*

Configuration script: 99SModifySetupCmdLine.ant

Log file to investigate for error	Recovery
This script does not have an associated log file. Investigate the *plugins_root*/bin/setupCmdLine.sh script to verify that the PLUGIN_HOME variable is set to the Web server plug-ins installation root directory. Verify that file permissions are 755 (rwxr-xr-x) on systems such as AIX or Linux.	• You can edit the setupCmdLine file, replacing $(PLUGIN_HOME) with the location to the plug-ins installation root directory. • Change the file permissions to 755. Issue the following command from the *plugins_root*/bin directory: `chmod 755 setupCmdLine.sh`

If you do not find the cause of the problem, open the *plugins_root*/logs/*web_server_name* directory. The directory is empty until the Web server loads the plug-in and errors occur. The plug-in then creates the http_plugin.log file to record the errors. If no errors occur, the directory is empty. Examine any relevant files for error entries. Correct any errors and reinstall.

5. Does the installation result in a INSTCONFFAILED status?
   a. This is a serious failure of the installation.
   b. Analyze the log files to determine the problem.
   c. Uninstall the plug-ins.
   d. Delete the plug-ins installation root directory.
   e. Install the plug-ins again.
6. Do errors occur when you start the snoop application?
   See ″Start the Snoop servlet″ in the installation troubleshooting file.
   If errors occur, look at the *plugins_root*/logs/*web_server_name*/http_plugin.log file for causes.

Also investigate the WebSphere Application Server installation logs and the logs for your supported Web server.

7. AIX HP-UX Linux Solaris Do you have the correct file permissions for the configure*Web_server_definition_name* script?

   On operating systems such as AIX or Linux, copying the configure*Web_server_definition_name*.sh script from one operating system, such as AIX, to another, such as HP-UX, can cause the file permissions of the script to be invalid for running the script.

   Verify that file permissions are 755 (rwxr-xr-x) on systems such as AIX or Linux.

8. AIX HP-UX Linux Solaris Are you using the configure*Web_server_definition_name* script when the Web server machine is running dynamic host configuration protocol (DHCP)?

   The configure*web_server_name*.sh script can contain null values for the name of the host machine of the Web server when using DHCP. Examine the script to see if the last few parameters include the word null. If so, you have this problem.

   The plugins.install log file might also have an entry for the problem:

   ```
   (MMM DD, YYYY HH:MM:SS AM|PM),
   Plugin.Install,
   com.ibm.ws.install.ni.ismp.actions.ISMPLogFileAction,
   msg1, WEB_SERVER_HOSTNAME : null
   ```

   Some systems such as AIX or Linux create an association between the host name of the machine and the loopback address -- 127.0.0.1. Red Hat Linux and other Linux systems set the association by default, for example.

   In addition, the /etc/nsswitch.conf file uses the /etc/hosts path before looking up a server using a DNS name server. This setup can cause failures when installing the Web server plug-ins for WebSphere Application Server.

   Perform the following steps to successfully create the configuration script for creating and configuring the Web server definition in the application server node:

   a. Uninstall the Web server plug-ins.
   b. Remove the 127.0.0.1 mapping to the local host in the /etc/hosts file.
   c. Edit the /etc/nsswitch.conf file so that the hosts line reads:

      ```
      hosts:  files [NOTFOUND=return] nis [NOTFOUND=return] dns
      ```

   d. Install the Web server plug-ins again.

- **Troubleshooting plug-ins removal**

  1. Does the *plugins_root*/logs/uninstall directory have any log files?

     If log files exist, examine them, correct the errors, and reinstall.

  2. Is there any sign that the removal occurred?

     If not, look for the temporaryPluginUnInstallLog.txt file in the temporary directory of the user who installed the plug-ins.

     For example, the /tmp/temporaryPluginUnInstallLog.txt file might exist if the root user uninstalled the plug-ins on a system such as AIX or Linux.

  3. Does the installation result in a INSTCONFPARTIALSUCCESS status?

     a. Look for errors in the log.txt file.
     b. Look for an entry in the log.txt file that shows the location of the masterConfigurationLog.txt file.
     c. Edit the masterConfigurationLog.txt file.
     d. Starting at the end of the file, scan towards the front of the file looking for configuration scripts that could not run.

        For example, the following stanza shows a configuration script that could not run:

        ```
        <record>
        <date>2004-10-08T10:31:43</date>
        <millis>1097245903200</millis>
        <sequence>189</sequence>
        ```

```
<logger>com.ibm.ws.install.configmanager.ConfigManager</logger>
<level>INFO</level>
<class>com.ibm.ws.install.configmanager.ConfigManager</class>
<method>dumpNonFatalFailedActionsInfoToLogFile</method>
<thread>10</thread>
<message>This action failed to execute:
  C:\Plugins\properties\version\install\plugin\6.0.0.0\
  config\full\uninstall\99SGSKitUnInstall.ant</message>
</record>
```

e. A script that fails to run is likely the cause of a partially successful installation status. To debug our example, look at the installGSKit.log, which is the log file for GSKit. Look for signs of a failed removal to determine if you can correct the problem.

Configuration script	Log file to investigate for error
99SBootStrapPluginsSunOneUninstall*uniqueID*.ant 99SBootStrapPluginsDomino6Uninstall*uniqueID*.ant 99SBootStrapPluginsDomino5Uninstall*uniqueID*.ant 99SBootStrapPluginsIIS6Uninstall*uniqueID*.ant 99SBootStrapPluginsIIS5Uninstall*uniqueID*.ant 99SBootStrapPluginsApacheUninstall*uniqueID*.ant 99SBootStrapPluginsIHSUninstall*uniqueID*.ant	uninstall*Web_server_type*Plugin.log For example, the file might be named: uninstallIHSPlugin.log Logs the Web server deconfiguration events for the Web server.
99SGSKitUnInstall.ant	uninstallGSKit.log On Windows only, the Web server plugins GSKit key will be unregistered. GSKit is uninstalled if no other product is registered to use GSKit. On operating systems such as AIX or Linux, it is your responsibility to uninstall GSKit when no other products are using it.
90SDeleteWinRegPlugin.ant	This script does not have an associated log file. The script deletes the Windows registry entry for the Web server plug-ins for WebSphere Application Server. HKEY_LOCAL_MACHINE > Software > IBM > Web server Plug-ins for IBM WebSphere Application Server > 6.0.0.0

4. Did the uninstall procedure fail?

   If the uninstall failed in any way, follow the manual uninstall steps to verify the system is clean and if necessary, remove Web server plug-in entries.

- **Miscellaneous messages, tips and hints**

Option	Description
Unable to load mod_was_ap20_http...	This error means that the following actions have occurred: • You have the 32-bit version of the Apache Web Server installed on a 64-bit platform. • You used the 64-bit platform CD to install the plug-in for the 32-bit Apache Web Server • You started the Apache Web Server and it could not load the 64-bit plug-in because it requires the 32-bit plug-in. To fix the problem, install the 32-bit plug-in from the CD for the 32-bit platform. Or manually configure the Apache Web server by changing the httpd.conf file to refer to the correct plug-in. Change the 64bit folder name in the directive to 32bit to fix the reference. For example, change /opt/IBM/WebSphere/Plugins/bin/64bit/mod_was_ap20_http.so to /opt/IBM/WebSphere/Plugins/bin/32bit/mod_was_ap20_http.so on a Linux system.
SAFE_BROWSER_EXCEPTION_CAUGHT	This SAFE_BROWSER_EXCEPTION_CAUGHT error means that: • If you do not have a browser, this error is thrown and the roadmap is not launched when it is selected during the installation of the plug-ins. • AIX HP-UX Linux Solaris If you have a supported browser that is not the Konqueror browser, the roadmap is launched. This message is thrown with the supported browser when it is not the Konqueror browser. You can safely ignore this exception and open the roadmap in a supported browser.
Solaris ***number*.tmp.sorted**	Solaris A limitation in ISMP does not remove temporary working files in the / root directory on Solaris operating systems. You can safely ignore or delete the files that follow this naming convention.
AIX HP-UX Linux Solaris **WASX7303I: ?????????????**	Shell scripts on some operating systems cannot contain double-byte characters or single-byte characters with pronunciation keys. If the file path to the Web server includes double-byte characters or single-byte characters with pronunciation keys, such as o-umlaut (a diacritic mark over the o), c-cedilla (a mark is under the c), or characters with other keys, the script might not run correctly. Copy the content of such a script to the command line and run the wsadmin command directly.

This procedure results in troubleshooting the installation or removal of the Web server plug-ins for WebSphere Application Server.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering the information that you need to resolve a problem. Before opening a PMR, see the IBM Support page.

Installation component troubleshooting tips

If you are having problems installing the Web server plug-ins for WebSphere Application Server, go to "Troubleshooting Web server plug-ins installation and removal" on page 291 to resolve the problem.

If you are having problems installing your WebSphere Application Server product, follow these steps to resolve the problem:

- Follow the steps that are outlined in Chapter 11, "Troubleshooting installation," on page 283.
- Browse the relevant log files for clues:
  - The main installation log file: *app_server_root*/logs/log.txt.
  - The profile creation log for creating the profile: *app_server_root*/logs/manageprofiles/*profile_name*_create.log.
  - IBM HTTP Server log: *IHS_root*/log.txt and *IHS_root*/ihsv61_install.log.
  - The log files produced when the default application .ear file is installed are: *app_server_root*/profiles/*profile_name*/logs/defaultapp_config.log and *app_server_root*/profiles/*profile_name*/logs/defaultapp_deploy.log.
  - Other logs for other applications for a profile in the *app_server_root*/profiles/*profile_name*/logs directory.
- Verify that you have installed the correct level of dependent software, such as operating system version and revision level, by reviewing the Supported hardware and software Web page.

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Installation problems

Select the problem that you are having with the WebSphere Application Server installation:

- I need information about "Troubleshooting Web server plug-ins installation and removal" on page 291.
- "Installation either completes with errors or warnings, or hangs."
- The installation process completes, but the server process does not start or starts with errors.
- There are "Messages issued during installation and profile creation" on page 305.
- The installation completes but the administrative console does not start.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see Chapter 11, "Troubleshooting installation," on page 283.

IBM Support has documents and tools that can save you time gathering information needed to resolve problems. If you detect a problem, before opening a problem report see if the problem is a known problem by checking the Support page:

- http://www.ibm.com/software/webservers/appserv/was/support/

Installation either completes with errors or warnings, or hangs

Errors while installing the product

If the WebSphere Application Server installation program indicates that errors were encountered while installing the product:

- Browse the log files in the *app_server_root*/logs directory and in the *app_server_root*/profiles/*profile_name*/logs directory for clues. Pay particular attention to the main installation log file, log.txt.
- Check the command prompt from which the installation panel was launched for error messages.
- Look up any error or warning messages in the message reference table by selecting the ″Reference″ view in the information center navigation and expanding the ″Messages″ heading.
- Review Chapter 11, “Troubleshooting installation,” on page 283.

Diagnosing a failing ANT configuration script

This topic helps you determine whether a product installation problem on an operating system such as AIX or Linux is caused by a failing ANT configuration script.

Start diagnosing installation problems by looking at the troubleshooting procedure. See Chapter 11, “Troubleshooting installation,” on page 283. After the installation completes successfully, several ANT scripts configure the product. This topic describes what to do when an ANT script fails.

If you are looking for troubleshooting information for the Web server plug-ins for WebSphere Application Server, see “Troubleshooting Web server plug-ins installation and removal” on page 291. This topic does not describe the plug-ins.

Use this topic when the installation log does not indicate a failure, to correct any problems with failing ANT configuration scripts.

The *app_server_root*/logs/instconfig.log file contains information about ANT scripts. The file is not created on systems such as AIX or Linux. The installation utility known as the ConfigManager runs the ANT scripts.

The *app_server_root*/logs/instconfig.log file, when present, describes any failure of an ANT script.

Use this topic to determine if any of the following configuration scripts failed. If so, use the configuration script recovery procedures. Use the investigative action to manually verify that the following configuration scripts ran successfully during the configuration of the WebSphere Application Server product. If any script failed, use the recovery action to complete the function of the script.

- **Configuration script 1: 90SCloudscapeModifyPermission.ant**

  This script changes the permission of the following directory to 766: *app_server_root*/cloudscape/databases

  Log file to investigate for a possible error: *app_server_root*/logs/ModifyCloudscapePermission.log

  Investigative action: Verify that the permissions of the following directory are 766: *app_server_root*/cloudscape/databases

  Recovery action: Issue the following command to change the permission: chmod -R 766 *app_server_root*/cloudscape/databases
- **Configuration script 2: 90SConfigMigrationScript.ant**

  This script changes the permissions of the following script to 755: *app_server_root*/bin/migration.sh

  This script also replaces the following tokens in the *app_server_root*/bin/migration.sh script:

From:	To the value that you selected during installation:
${JAVAROOT}	*app_server_root*/java/jre/bin/java
${MIGRATIONJAR}	*app_server_root*/bin/migration/migrationGUI/migrationGUI.jar
${WASROOT}	*app_server_root*
${PRODUCTID}	${WS_CMT_PRODUCT_TYPE}

  Log file to investigate for a possible error: No log file exists for this script.

Investigative action:

1. Verify that the permissions of the *app_server_root*/bin/migration.sh script are 755.
2. Open the *app_server_root*/bin/migration.sh script in an editor. Verify that real values exist instead of the following values:
   – ${JAVAROOT}
   – ${MIGRATIONJAR}
   – ${WASROOT}
   – ${PRODUCTID}

Recovery actions:

1. Issue the following command: chmod 755 *app_server_root*/bin/migration.sh
2. Change the following tokens to actual values in the *app_server_root*/bin/migration.sh script.
   – ${JAVAROOT}
   – ${MIGRATIONJAR}
   – ${WASROOT}
   – ${PRODUCTID}

- **Configuration script 3: 90SConfigNoProfileFirstStepsND.ant**

  This script copies all files from the *app_server_root* /properties/version/install/firststeps directory to the *app_server_root* /firststeps/html/noprofile directory.

  This script also replaces the following tokens in the *app_server_root* /firststeps/firststeps.sh script:

From:	To the value that you selected during installation:
${JAVAROOT}	*app_server_root*/java/jre/bin/java
${PROFILEROOT}	*app_server_root*
${HTMLSHELLJAR}	*app_server_root*/lib/htmlshell.jar
${CELLNAME}	${WS_CMT_CELL_NAME}

  Log file to investigate for a possible error: No log file exists for this script.

  Investigative actions:

  1. Verify that all files are copied from the *app_server_root* /properties/version/install/firststeps directory to the *app_server_root* /firststeps/html/noprofile directory.
  2. Open the *app_server_root*/bin/migration.sh script in an editor. Verify that real values exist instead of the following values:
     – ${JAVAROOT}
     – ${PROFILEROOT}
     – ${HTMLSHELLJAR}
     – ${CELLNAME}

  Recovery actions:

  1. Copy all of the files from the *app_server_root* /properties/version/install/firststeps directory to the *app_server_root* /firststeps/html/noprofile directory.
  2. Change the following tokens to actual values in the *app_server_root*/bin/migration.sh script.
     – ${JAVAROOT}
     – ${PROFILEROOT}
     – ${HTMLSHELLJAR}
     – ${CELLNAME}

- **Configuration script 4: 90SModifyDirectoryPermission.ant**

  This script modifies the permissions of the following directories to 755:

– *app_server_root*/uninstall
– *app_server_root*/logs
– *app_server_root*/properties

Log file to investigate for a possible error: *app_server_root*/logs/ModifyPermission.log

Investigative action: Verify that the permissions of the following directories are 755:

– *app_server_root*/uninstall
– *app_server_root*/logs
– *app_server_root*/properties

Recovery action: Issue the following commands:

1. chmod -R 755 *app_server_root*/uninstall
2. chmod -R 755 *app_server_root*/logs
3. chmod -R 755 *app_server_root*/properties

- **Configuration script 5: 99SCreateEmptyDirs.ant**

  This script creates the following empty directories:

  – *app_server_root*/classes
  – *app_server_root*/lib/ext
  – *app_server_root*/properties/version/history

  Log file to investigate for a possible error: No log file exists for this script.

  Investigative action: Verify that the empty directories exist.

  Recovery action: Create the directories.

After you correct any installation errors and any ANT script configuration errors by performing the corrective actions in this procedure, the installation is complete.

Use the firststeps script to start the First steps console. See “firststeps command” on page 143 for more information.

Web server installation and startup problems

The following topics might help you determine the solution for a problem you experience while installing or starting Apache servers or IBM HTTP Servers.

If you do not see a problem that resembles yours, or if the information provided does not solve your problem, see the *Troubleshooting and support* PDF for further assistance.

″Failed to initialize GSK environment″ error appears when trying to start the Apache server

The following messages may appear in Apache’s error log file when you attempt to start Apache:

```
[Wed Jan 27 19:21:59 2006] [error] lib_security: initializeSecurity: Failed to initialize GSK
     environment
[Wed Jan 27 19:21:59 2006] [error] ws_transport: transportInitializeSecurity: Failed to initialize
     security
[Wed Jan 27 19:21:59 2006] [error] ws_server: serverAddTransport: Failed to initialize security
```

These messages are most common after building the Apache server from the downloadable source code and installing the Apache server separately from WebSphere Application Server.

If a secure transport is defined in the plugin-cfg.xml file, the plug-in will try to load the Global Security Kit (GSKit) library file, libgsk7ssl.so. The error messages appear in the error log file if the level 7 GSKit library file is not installed on your system. To correct these errors, try one of the following:

- Remove the transport section that has ″https″ in the plugin-cfg.xml file

- Install the level 7 GSKit

  Note: The GSKit installs automatically if you install either the IBM HTTP Server product or the Web server plug-in for either the IBM HTTP Server or the Apache server.

For details and help on the Apache Web server, visit the Apache Web site http://httpd.apache.org/.

IBM HTTP Server on Windows operating system does not start, error `WSADuplicateSocket failed for socket` appears in error.log Windows

If your installation of IBM HTTP Server on a Windows operating system does not start, you might find a message similar to the following in the log\error.log file of your IBM HTTP Server installation:

```
"[crit] (10045) The attempted operation is not supported for the type of object referenced:
      Parent: WSADuplicateSocket failed for socket nnnn
```

This problem occurs when an IBM HTTP Server is run on an operating system with a Virtual Private Networking client such as Aventail Connect. Aventail Connect is a Layered Service Provider (LSP) that intercepts calls between the Winsock 2 API and Window's native Winsock 2 implementation. The failure occurs because Aventail Connect does not implement WASDuplicateSocket(). The interception still takes place when Aventail Connect is shut down.

To correct the problem try one of the following:

- Reboot the machine, or
- Uninstall the LSP product

For current information available from IBM Support on known problems and their resolution, see the IBM Support page.

IBM Support has documents that can save you time gathering information needed to resolve this problem. Before opening a PMR, see the IBM Support page.

Messages issued during installation and profile creation

What kind of problem are you having?

- "Error: The input line is too long"
- "Note: The following file systems will be expanded during the installation" on page 307
- "The disk space is nn Mbyte less than required. The installation cannot continue." on page 307
- "Specify a different directory or perform a manual uninstall" on page 307
- "Error: /usr/opt/ibm/gskta/bin/gsk7ikm: not found" on page 307
- "Error writing file = There may not be enough temporary disk space." on page 307
- "Error: localhost is not a valid host name for remote access" on page 308
- "INFO: Created system preferences directory in java.home" on page 308
- "The installer could not successfully add the product information into the RPM database." on page 308
- "Error: java.io.IOException: konqueror: not found" on page 308

Error: The input line is too long

Windows This is a profile creation error.

It can occur during installation or when using the Profile Management tool.

Installation problem

The following error within a log in the *app_server_root*\profiles\default\logs directory indicates that a wsadmin action has failed to create a profile. The failure is because the length of the file path, the profile name, and the node name on the command string has caused the entire command to exceed the operating system limit for command length.

```
The input line is too long.
```

Windows The installation directory path must be no longer than 60 characters.

- **Option 1:** If the installation failed, reinstall the WebSphere Application Server product using a shorter directory path and a shorter node name.

  The node name field is available during a custom installation. The length of the default node name is usually short enough. Avoid using a node name that is longer than 10 characters if possible.
- **Option 2:** If the installation was successful but the ISMPWSProfileLaunchAction failed, use the Profile Management tool to create the profile. Use a shorter profile directory path, a shorter profile name, and a shorter node name when creating the profile.

  You can select your own profiles path, which could be C:\profiles, for example.

  You can select your own profile name.

  Verify from the <install location>/logs/install/log.txt file that the ISMPConfigManagerLaunchAction is successful.

  Examine the following messages in the log.txt file to determine whether the installation was successful. If so, you can run the Profile Management tool to create the default profile.

```
(date time), Install,
     com.ibm.ws.install.ni.ismp.actions.ISMPConfigManagerLaunchAction,
     msg1, INSTCONFSUCCESS: Post-installation configuration is successful.

(date time), Install,
     com.ibm.ws.install.ni.ismp.actions.ISMPWSProfileLaunchAction,
     err, INSTCONFFAILED: Cannot complete required configuration actions
     after the installation. The configuration failed. The installation is
     not successful.
Refer to
     C:\Program Files\IBM\WebSphere\AppServer1234567890\logs\manageprofiles\
        default_create.log for more details.
(date time), Install,
     com.ibm.ws.install.ni.ismp.actions.ISMPLogSuccessMessageAction,
     msg1, INSTCONFFAILED
```

Profile Management tool problem

The following error within a log in the *app_server_root*\profiles\default\logs directory indicates that a wsadmin action has failed to create a profile. The failure is because the length of the file path, the cell name, and the node name on the command string has caused the entire command to exceed the operating system limit for command length.

```
The input line is too long.
```

Windows The number of characters in the *profile_root* must be no more than 80 characters.

If your *profiles_directory_path**profile_name* string is 80 characters or less and you still have a problem, edit the *app_server_root*\bin\setupCmdLine.bat file to make it use the Windows subst command. The subst command maps an entire path to a virtual drive. After editing the file, run the Profile Management tool again. If changing the setupCmdLine.bat file does not fix the problem, you can install the WebSphere Application Server product using a shorter installation path, such as C:\WAS.

Note: The following file systems will be expanded during the installation

AIX You can allocate expansion space for directories on AIX. If the Installation wizard does not have enough space, InstallShield MultiPlatform (ISMP) issues a system call for more space that increases the space allocation dynamically. The message you might see when this occurs for the /usr directory is similar to the following example:

```
NOTE: The following file systems will be expanded during the installation:
      /usr
```

The disk space is nn Mbyte less than required. The installation cannot continue.

Linux Solaris AIX HP-UX If the file system is not dynamically expandable, an insufficient amount of disk space results in a message that is similar to the following example:

```
The disk space is 33 Mbyte less than required. The installation cannot continue.
```

Specify a different directory or perform a manual uninstall

This error indicates that you deleted the installation root directory before using the uninstaller program to remove the product. Now you are attempting to reinstall into the same directory.

To correct the problem, perform a manual uninstall. See “Uninstalling manually” on page 200 for an introduction to manually uninstalling. The topic has a link to the manual uninstall procedure for your operating system.

The warning entry in the $TMP/log.txt file is:

```
(Month day, year time), Install,
   com.ibm.ws.install.ni.ismp.actions.ISMPWarningDialogAction,
   wrn, Specify a different directory or perform a manual uninstall
   to remove all packages before reinstalling to the same directory.
```

Error: /usr/opt/ibm/gskta/bin/gsk7ikm: not found

This error indicates that the xlC.rte 6.0 runtime code has not been installed. You must install the xlC.rte 6.0 runtime code before you install Global Security Kit 7 (GSKit7).

To correct this problem, download the runtime code from the AIX Support site at https://techsupport.services.ibm.com/server/aix.fdc.

AIX If you have AIX 5.2, you can install the xlC.rte 6.0 runtime code from the AIX 5.2 CD.

For a complete list of installation prerequisites, see the Supported hardware and software Web page.

Error writing file = There may not be enough temporary disk space.

```
Searching for Java(tm) Virtual Machine...
A suitable JVM could not be found.
Please run the program again using the option
 -is:javahome <JAVA HOME DIR>
Error writing file =  There may not be enough temporary disk space.
Try using -is:tempdir to use a temporary directory on a partition with more disk space.
```

This error can occur when you have not provided enough temporary space to create a profile. Verify that you have a minimum of 40 MB of temporary space available before creating a profile.

Note: The product installation cannot use the InstallShield -is:tempdir parameter to redirect the location of the temporary directory. You must free up space in the temporary directory of the system for the installation to proceed.

Error: localhost is not a valid host name for remote access

This error occurs when you enter localhost as the value for the Host name field in the Profile Management tool.

The error can also occur during product installation if you enter localhost as the value of the host name field.

See “Host name values” on page 141 for more information.

Warning: Cannot convert string ″<type_name>″to type FontStruct

If you install the Web server plug-ins for WebSphere Application Server, you also install the ikeyman utility. The ikeyman utility is part of the Global Services Kit 7 (GSKit7).

If you issue the ikeyman.sh script on a Linux system, you might see the following message:

```
Warning: Cannot convert string
   "-monotype-arial-regular-r-normal--*-140-*-*-p-*-iso8859-1"
   to type FontStruct
```

You can safely ignore the warning and use the ikeyman utility.

INFO: Created system preferences directory in java.home

The Key Man Utility (ikeyman) on Linux Redhat Enterprise 3.0 displays the following message after your first use of the utility.

```
[root@bensonl2 bin]# ./ikeyman.sh
Oct 19, 2004 10:47:26 AM java.util.prefs.FileSystemPreferences$3 run
INFO: Created system preferences directory in java.home.
```

The utility is logging preferences. The message does not display when you use the utility again.

You can safely ignore the message.

The installer could not successfully add the product information into the RPM database.

If the last line in the log.txt file is something similar to the following example, the problem might be a corrupt RedHat Package Manager (RPM) database:

```
(Oct 17, 2004 4:02:16 PM),
Plugin.Install,
com.ibm.wizard.platform.linux.LinuxProductServiceImpl,
wrn, The installer could not successfully add the product
information into the RPM database. Installation will continue
as this is not critical to the installation of the product.
```

Run the following command to verify that the problem is a corrupt RPM database:

```
rpm -q --all
```

If the command hangs, the problem is a corrupt RPM database.

Error: java.io.IOException: konqueror: not found

The ISMP Launch Browser action of the Installation wizard or the Update Installer wizard throws the following exception on operating systems such as AIX or Linux:

```
com.installshield.wizardx.actions.LaunchBrowserAction, err, java.io.IOException:
konqueror: not found
STACK_TRACE: 11
java.io.IOException: konqueror: not found
       at java.lang.UNIXProcess.forkAndExec(Native Method)
       at java.lang.UNIXProcess.<init>(UNIXProcess.java:72)
       at java.lang.Runtime.execInternal(Native Method)
       at java.lang.Runtime.exec(Runtime.java:602)
       at java.lang.Runtime.exec(Runtime.java:524)
       at java.lang.Runtime.exec(Runtime.java:490)
       at com.installshield.util.BrowserLauncher.openURL(BrowserLauncher.java:578)
       at com.installshield.wizardx.actions.LaunchBrowserAction.execute(LaunchBrowserAction
.java:62)
       at com.installshield.wizard.RunnableWizardBeanContext.run(RunnableWizardBeanContext.
java:21)
```

This action searches for a Netscape, Mozilla, or Konqueror browser for displaying an HTML page or a Web site. In the case of the Web server plug-ins for WebSphere Application Server, the target page is the Plug-ins roadmap. Even though the ISMP Launch Browser action might find Mozilla or Netscape, the exception is thrown and a log entry occurs.

You can safely ignore this error.

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