WebSphere® Application Server Network Deployment for i5/OS, Version 6.1

IBM

Installing your application serving environment

Compilation date: April 28, 2006

Contents

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. 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, "Installation checklist," on page 23
This topic provides an overview of installation tasks.

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.

Now you can install the product more than once on your system to a location of your choosing. Previous versions of the product installed the product to a fixed location and did not allow multiple installations of the product.

Platform support is described on the Detailed system requirements page. A quick summary of new platform support is provided in the Support announcement.

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 installation," on page 25 and "iSeries prerequisites" on page 27.
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.
Better indicators of installation status	Improved logging and status indicators let you easily determine the success or failure of an installation.
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 "Updating the Update Installer for WebSphere Software" on page 75.
Improved installation documentation	New installation documentation helps you retrieve relevant information.

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.
	See "Installing WebSphere Application Server from your iSeries server" on page 34.
Launchpad for remote installation	**New in Version 6.1!** A launchpad now is available when installing remotely onto an iSeries server from a Windows workstation. The launchpad does not run locally on an iSeries server.
Multiple installations are possible on the same iSeries server	**New in Version 6.1!** You can install more than one copy of the product on an iSeries server. Previously, you could install only one copy because the installation location was fixed. This version allows more than one copy and supports user-specified installation locations.
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
- Web Server plug-ins
- Application clients
- Update Installer

Separate installation procedures let you install only what you need on a particular partition. For your convenience, the Web server plug-ins also are still included with the Application Server product. If you are running your application server and Web server on the same iSeries server, you do not need to install the Web server plug-ins.

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.
	Support is expanded to i5/OS, although only in command line mode.
	See "Installation Factory overview" on page 78.
Changed product installation root	Additional directory structure changes are introduced.
	Multiple installations are supported now. The installer enables you to specify the installation location and the user data location when installing.
	See "Directory conventions" on page 15.

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.

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.
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:
	• Command based migration on the same machine using the migration scripts
	• Command based application migration for client resources
Incremental cell upgrade	You can incrementally upgrade nodes in a cell.
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 "Installing the WebSphere Application Server group PTF" on page 58.
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 12, "Uninstalling WebSphere Application Server for i5/OS," on page 147.

Web serving capability

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!** You can use the configureOS400WebServerDefinition script and the manageprofiles script to configure multiple IBM HTTP Server for iSeries or Domino Web Server for iSeries instances for use with WebSphere Application Server.

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 now supported by i5/OS Version 5 Release 4.

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

See also the following Web pages:
- Security evaluations for IBM products
- IPv6 enablement at IBM - Overview
- IPv6 enablement at IBM - Products

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.

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 for i5/OS
- WebSphere Application Server Network Deployment for i5/OS

WebSphere Application Server for i5/OS
This product offering addresses the basic programming and run-time needs of desktop developers and single-server production scenarios. The run-time 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 the Rational Application Developer product. Both tools run on Windows and Linux workstations. The Rational Application Developer is an enhanced version of the WebSphere Studio Application Developer in Version 5.

WebSphere Application Server Network Deployment for i5/OS

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 in the same 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 stand-alone 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.

Launchpad console

The launchpad is the focal point for installing from the product compact disc, 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 CD.

The launchpad works on installable components in the primary packet of compact 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:

- `launchpad.bat` for a Windows workstation installation

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 name of the component varies per product offering:
		- WebSphere Application Server for i5/OS
		- WebSphere Application Server Network Deployment for i5/OS

`plugin/install`	`plugin/readme/readme_en.html`
	
	`plugin/docs/InstallGuide_en.html`
		Web server plug-ins for WebSphere Application Server

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

Launch command	Documentation	Name of installable component

`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

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.

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.

Package descriptions for i5/OS

Each product package contains several compact discs, or CDs. You can also order Digital Versatile Discs, or DVDs. DVDs hold more information, which allows the product package to have fewer discs. Some of the ancillary products in the DVD package are still on CDs.

The product discs are always in the primary disc packet.

Each product package contains several discs. Use the following link to view packaging information for each available product: Packaging Information for IBM WebSphere Application Server for i5/OS.

Each product package and its installable components are described in detail in the following sections:
-
- Packaging information for IBM WebSphere Application Server for i5/OS
- Packaging information for IBM WebSphere Application Server Network Deployment for i5/OS

Figure 1. Installation images in WebSphere Application Server packages

Packaging information for IBM WebSphere Application Server for i5/OS

The WebSphere Application Server for i5/OS package contains the following sets of discs:
- Discs in the primary Application Server packet
- Discs in the supplemental packet

The product disc for WebSphere Application Server for i5/OS is in the primary package.

Discs in the primary Application Server packet: The primary Application Server packet contains the compact discs in the following table:

Disc label	Versions of the disc	Comments
WebSphere Application Server (32-bit)	CDs are available for the following 32-bit platforms: (Platform specific DVDs are also available. Each DVD contains the product and supplements disc content for 32-bit and 64-bit architectures.) • AIX • HP-UX • Linux/Intel • Linux (PowerPC 32-bit kernel) • Linux on iSeries and pSeries • Linux on zSeries • Solaris on Sparc • Windows 2000 Server and Windows Server 2003	Each 32-bit platform-specific image contains the following installable components: • WebSphere Application Server in the WAS directory. Use the launchpad application in the root directory to install and view information about any of the installable components in the primary packet.
WebSphere Application Server (64-bit)	CDs are available for the following 64-bit platforms: (Platform specific DVDs are also available. Each DVD contains the product and supplements disc content for 32-bit and 64-bit architectures.) • AIX 5L (i5, p4, and p5 64-bit kernel) • HP-UX (Itanium 64-bit kernel) • Linux (Opteron / EM64T 64-bit kernel) • Linux (PowerPC 64-bit kernel) • Linux for zSeries (64-bit kernel) • Windows (Opteron / EM64T 64-bit kernel)	Each 64-bit platform-specific image contains the following installable components: • WebSphere Application Server in the WAS directory. Use the launchpad application in the root directory to install and view information about any of the installable components in the primary packet.

Disc label	Versions of the disc	Comments
WebSphere Application Server Supplements (32-bit)	CDs are available for the following 32-bit platforms: (Platform specific DVDs are also available. Each DVD contains the product and supplements disc content for 32-bit and 64-bit architectures.) • AIX • HP-UX • Linux/Intel • Linux (PowerPC 32-bit kernel) • Linux on iSeries and pSeries • Linux on zSeries • Solaris on Sparc • Windows 2000 Server and Windows Server 2003	Each platform-specific image contains the following installable components: • Update Installer • Installation Factory • Migration tools • IBM Support Assistant • IBM HTTP Server in the IHS directory. • Web server plug-ins in the plugin directory. • Application Client in the AppClient directory. (32-bit only) In the CD package, the Application Server Toolkit is on separate CDs in the primary packet. The Application Server Toolkit is also available on a separate DVD. 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 - Express product.
WebSphere Application Server Supplements (64-bit)	Several 64-bit platform-specific CDs are available, or one DVD with platform-specific directories: • AIX 5L (i5, p4, and p5 64-bit kernel) • HP-UX (Itanium 64-bit kernel) • Linux (Opteron / EM64T 64-bit kernel) • Linux (PowerPC 64-bit kernel) • Linux for zSeries (64-bit kernel) • Solaris (Opteron / EM64T 64-bit kernel) • Windows (Opteron / EM64T 64-bit kernel)	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 fonts mentioned below are on available on their own CD. They are also available on the Linux DVDs 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. The launchpad application in the root directory of the disc lets you install and view information about the components on the disc.
WebSphere Application Server Application Server Toolkit	Two different 32-bit platform versions of this CD are available, or one DVD with platform specific directories: • Linux (Intel) • Windows	The Application Server Toolkit is an Eclipse-based tool for deploying and debugging applications on WebSphere Application Server. Application Server Toolkit contains a subset of the function provided in the Rational Application Developer tool that is included with this product. The difference is that the license for the Application Server Toolkit is an unlimited use license whereas the Rational Application Developer is a trial license for a single user.

Discs in the supplemental packet: The supplemental Application Server packets contain the compact discs in the following table:

Disc label	Versions of the disc	Comments
IBM Business Solutions for i5/OS	One CD or DVD for i5/OS	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 for use by the applications on the CD.
DB2 Universal Database Express Edition V8.2 (32-bit) Developer use only Other operating systems	Three 32-bit platform-specific CDs are available: • Linux (Intel) • Linux (PowerPC) • Windows Server 2003	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, Linux or Windows platform choices, and support for transparent installation with business partner applications.
DB2 Universal Database Express Edition V8.2 (64-bit) Other operating systems	Two 64-bit platform-specific CDs are available: • Linux (PowerPC) • Windows Server 2003	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.
Rational Application Developer Trial for WebSphere Application Server Other operating systems	Eight 32-bit platform CDs are available for two operating system platforms: • Linux (Intel - 4 CDs) • Windows (4 CDs)	Rational Application Developer is the next generation of the award-winning IBM WebSphere Studio Application Developer. Rational Application Developer is a comprehensive integrated development environment for visually designing, constructing, testing, and deploying Web services, portals, and Java 2 Platform Enterprise Edition (J2EE) applications. Rational Application Developer accelerates J2EE development with a complete set of high-productivity tools, templates, and wizards. See the Application Server Toolkit in the primary package for an integrated development environment that includes an unlimited use license.

Disc label	Versions of the disc	Comments
Rational Agent Controller	One CD that provides support for each of the following 32-bit operating system platforms: • AIX • HP-UX • Linux (Intel) • Linux on pSeries • 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.

Packaging information for IBM WebSphere Application Server Network Deployment for i5/OS

The Network Deployment for i5/OS package contains the following sets of discs:

• Discs in the primary Network Deployment packet
• Discs in the supplemental packet

The product disc for WebSphere Application Server Network Deployment for i5/OS is in the primary package.

Discs in the primary Network Deployment packet: The primary Network Deployment packet contains the discs in the following table:

Disc label	Versions of the disc	Comments
WebSphere Application Server (32-bit)	CDs are available for the following 32-bit platforms: (Platform specific DVDs are also available. Each DVD contains the product and supplements disc content for 32-bit and 64-bit architectures.) • AIX • HP-UX • Linux/Intel • Linux (PowerPC 32-bit kernel) • Linux on iSeries and pSeries • Linux on zSeries • Solaris on Sparc • Windows 2000 Server and Windows Server 2003	Each 32-bit platform-specific image contains the following installable components: • WebSphere Application Server in the WAS directory. Use the launchpad application in the root directory to install and view information about any of the installable components in the primary packet.

Disc label	Versions of the disc	Comments
WebSphere Application Server (64-bit)	CDs are available for the following 64-bit platforms: (Platform specific DVDs are also available. Each DVD contains the product and supplements disc content for 32-bit and 64-bit architectures.) • AIX 5L (i5, p4, and p5 64-bit kernel) • HP-UX (Itanium 64-bit kernel) • Linux (Opteron / EM64T 64-bit kernel) • Linux (PowerPC 64-bit kernel) • Linux for zSeries (64-bit kernel) • Windows (Opteron / EM64T 64-bit kernel)	Each 64-bit platform-specific image contains the following installable components: • WebSphere Application Server in the WAS directory. Use the launchpad application in the root directory to install and view information about any of the installable components in the primary packet.

Disc label	Versions of the disc	Comments
WebSphere Application Server Supplements (32-bit)	CDs are available for the following 32-bit platforms: (Platform specific DVDs are also available. Each DVD contains the product and supplements disc content for 32-bit and 64-bit architectures.) • AIX • HP-UX • Linux/Intel • Linux (PowerPC 32-bit kernel) • Linux on iSeries and pSeries • Linux on zSeries • Solaris on Sparc • Windows 2000 Server and Windows Server 2003	Each platform-specific image contains the following installable components: • Update Installer • Installation Factory • Migration tools • IBM Support Assistant • IBM HTTP Server in the IHS directory. • Web server plug-ins in the plugin directory. • Application Client in the AppClient directory. (32-bit only) In the CD package, the Application Server Toolkit is on separate CDs in the primary packet. The Application Server Toolkit is also available on a separate DVD. 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 - Express product.
WebSphere Application Server Supplements (64-bit)	Several 64-bit platform-specific CDs are available, or one DVD with platform-specific directories: • AIX 5L (i5, p4, and p5 64-bit kernel) • HP-UX (Itanium 64-bit kernel) • Linux (Opteron / EM64T 64-bit kernel) • Linux (PowerPC 64-bit kernel) • Linux for zSeries (64-bit kernel) • Solaris (Opteron / EM64T 64-bit kernel) • Windows (Opteron / EM64T 64-bit kernel)	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 fonts mentioned below are on available on their own CD. They are also available on the Linux DVDs 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. The launchpad application in the root directory of the disc lets you install and view information about the components on the disc.
WebSphere Application Server Application Server Toolkit	Two different 32-bit platform versions of this CD are available, or one DVD with platform specific directories: • Linux (Intel) • Windows	The Application Server Toolkit is an Eclipse-based tool for deploying and debugging applications on WebSphere Application Server. Application Server Toolkit contains a subset of the function provided in the Rational Application Developer tool that is included with this product. The difference is that the license for the Application Server Toolkit is an unlimited use license whereas the Rational Application Developer is a trial license for a single user.

Discs in the supplemental packet: The supplemental Network Deployment packet contains the discs in the following table:

Disc label	Versions of the disc	Comments
IBM Business Solutions for i5/OS	One CD or DVD for i5/OS	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 for use by the applications on the CD.
WebSphere Application Server Network Deployment Edge Components Other operating systems	Seven different operating system platforms on 22 CDs are available: • AIX • HP-UX • Linux (Intel) • Linux on pSeries • Linux on zSeries • Solaris on Sparc • Windows	Network Deployment addresses the needs of highly available, high-volume environments with the Edge components. The Edge components include sophisticated load balancing, caching, and centralized security capabilities. See WebSphere Application Server Network Deployment Edge components for more information.
Rational Application Developer Trial for WebSphere Application Server Other operating systems	Eight 32-bit platform CDs are available for two operating system platforms: • Linux (Intel - 4 CDs) • Windows (4 CDs)	Rational Application Developer is the next generation of the award-winning IBM WebSphere Studio Application Developer. Rational Application Developer is a comprehensive integrated development environment for visually designing, constructing, testing, and deploying Web services, portals, and Java 2 Platform Enterprise Edition (J2EE) applications. Rational Application Developer accelerates J2EE development with a complete set of high-productivity tools, templates, and wizards. See the Application Server Toolkit in the primary package for an integrated development environment that includes an unlimited use license.
Rational Agent Controller	One CD that provides support for each of the following 32-bit operating system platforms: • AIX • HP-UX • Linux (Intel) • Linux on pSeries • Linux on zSeries • 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.

Disc label	Versions of the disc	Comments
DB2 Universal Database Enterprise Server Edition V8.2 (32-bit) for WebSphere Application Server Network Deployment Other operating systems	Nine different platform versions of this CD are available for these operating systems: • AIX • AIX for DBCS platforms • HP-UX • Linux (Intel) • Linux on pSeries • Linux on zSeries • Solaris on Sparc • Windows	DB2 Universal Database V8.2 has numerous innovative enhancements. Improved integration with WebSphere Application Server Network Deployment, key development tools, and platforms help make programmers more efficient than ever. A broad array of autonomic or self-managing capabilities can free more administrator time to focus on driving business value. The ease of use in DB2 V8.2 and the self-managing characteristics might even eliminate the need for dedicated administrators in smaller implementations.
DB2 Universal Database Enterprise Server Edition V8.2 (64-bit) for WebSphere Application Server Network Deployment Other operating systems	Nine different platform versions of this CD are available for these operating systems: • AIX • AIX for DBCS platforms • HP-UX • Linux (Intel) • Linux on pSeries • Linux on zSeries • Solaris on Sparc • Windows	
IBM Tivoli Directory Server for WebSphere Application Server Other operating systems	Seven different platform versions of this CD are available: • AIX • HP-UX • Linux (Intel) • Linux on pSeries • Linux on zSeries • Solaris on Sparc • Windows	The IBM Tivoli Directory Server product is a powerful Lightweight Directory Access Protocol (LDAP) infrastructure. Tivoli Directory Server provides a foundation for deploying comprehensive identity management applications and advanced software architectures. See IBM Tivoli Directory Server for more information.
IBM Tivoli Access Manager for WebSphere Application Server Other operating systems	Six different platform versions of this CD are available: • AIX • HP-UX • Linux (Intel) • Linux on zSeries • Solaris on Sparc • Windows	IBM Tivoli Access Manager for e-business integrates with e-business applications right out of the box, to deliver a secure, unified, and personalized e-business experience. By providing authentication and authorization APIs and integration, Tivoli Access Manager for e-business helps you secure access to business-critical applications and data that might be spread across the extended enterprise. See IBM Tivoli Access Manager for e-business for more information.

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 Network Deployment.

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 Network Deployment products or components, of course, require multiple locations.

app_server_root - the install_root for WebSphere Application Server
> The default installation root directory for WebSphere Application Server Network Deployment is the /QIBM/ProdData/WebSphere/AppServer/V61/ND directory.

profile_root
> The default directory for a profile named *profile_name* for WebSphere Application Server Network Deployment is the /QIBM/UserData/WebSphere/AppServer/V61/ND/profiles/*profile_name* directory.

app_server_user_data_root - the user_data_root for WebSphere Application Server
> The default user data directory for WebSphere Application Server Network Deployment is the /QIBM/UserData/WebSphere/AppServer/V61/ND directory.

plugins_root
> The default installation root directory for Web server plug-ins is the /QIBM/ProdData/WebSphere/Plugins/V61/webserver directory.

plugins_user_data_root
> The default Web server plug-ins user data root is the /QIBM/UserData/WebSphere/Plugins/V61/webserver directory.

plugins_profile_root
> The default Web server plug-ins profile root is the /QIBM/UserData/WebSphere/Plugins/V61/webserver/profiles/*profile_name* directory.

app_client_root
> The default installation root directory for the J2EE WebSphere Application Client is the /QIBM/ProdData/WebSphere/AppClient/V61/client directory.

app_client_user_data_root
> The default J2EE WebSphere Application Client user data root is the /QIBM/UserData/WebSphere/AppClient/V61/client directory.

app_client_profile_root
> The default J2EE WebSphere Application Client profile root is the /QIBM/UserData/WebSphere/AppClient/V61/client/profiles/*profile_name* directory.

web_server_root
> The default web server path is /www/*web_server_name*.

shared_product_library
> The shared product library, which contains all of the objects shared by all Version 6.1 installations on the system, is QWAS61. This library contains objects such as the product definition, the subsystem description, the job description, and the job queue.

product_library
> The product library, which contains program and service program objects (similar to .exe, .dll, .so objects for Windows, Linux, and UNIX operating system platforms), is: QWAS61*x* where *x* is A, B, C, ... For the default installation, the value is QWAS61A.

product_lib
> The product library that contains the service program objects for the web server plugins. For the default Web Server Plugins install, this is QWAS61A. If you install the Web Server Plugins multiple times, the product_lib is QWAS61c, where *c* is B, C, D, ... The plugins_install_root/properties/product.properties contains the value for the product library..

cip_app_server_root
> The default installation root directory is the /QIBM/ProdData/WebSphere/AppServer/V61/ND/cip/*cip_uid* directory for a customized installation package (CIP) produced by the Installation Factory.

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

cip_user_data_root

The default user data root directory is the /QIBM/UserData/WebSphere/AppServer/V61/ND/cip/ *cip_uid* directory for a customized installation package (CIP) produced by the Installation Factory.

cip_profile_root

The default profile root directory is the /QIBM/UserData/WebSphere/AppServer/V61/ND/cip/*cip_uid*/ profiles/*profile_name* directory for a customized installation package (CIP) produced by the Installation Factory.

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 according to the hardware platform. See Chapter 5, "Preparing the operating system for installation," on page 25 for information about required disk space and how to prepare your operating system for installation:

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

Chapter 2. How do I install an application serving environment?

Plan your installation of WebSphere Application Server	Documentation
Review the Release Notes	Documentation
Review the software and hardware prerequisites	Detailed system requirements page
Choose a product edition	Documentation
Review the Release Notes	Documentation
Review the software and hardware prerequisites	Documentation
Installing the product	Documentation
Install IBM HTTP Server as your Web server	
Plan the Web server plug-ins in your application serving environment	
Install plug-ins for communicating with Web servers	
Configure communication with the Web server	
Configure the HTTP channel within the application server	
Enable your Web server to use HTTPS in addition to HTTP	
Establish virtual hosts	

Configure Edge Side Include (ESI) for performance	
Troubleshoot Web server plug-in configurations	
Apply maintenance	Documentation
Uninstall the product	Documentation
Troubleshoot installation problems	Documentation
Review the software and hardware prerequisites	Documentation

Chapter 3. Release notes

The Release Notes summarize late-breaking news and product limitations. Ideally, review them prior to installing the product, as addendums to the installation and configuration instructions.

IBM WebSphere Application Server release notes

Links are provided to the product support Web site, to product documentation, and to last minute updates, limitations, and known problems for the WebSphere® Application Server Version 6.x products.

transition: Release notes for the Version 6.1 beta program can be found in the beta package.
- "Accessing last-minute updates, limitations, and known problems"
- "Accessing hardware and software requirements"
- "Accessing product documentation"
- "Accessing the product support Web site" on page 22
- "Contacting IBM Software Support" on page 22

Accessing last-minute updates, limitations, and known problems

Release notes are available on the product support Web site.
- Version 6.1 for i5/OS™

Accessing hardware and software requirements
- The hardware and software requirements for the WebSphere Application Server products are provided on the Detailed system requirements page.

Accessing product documentation

The following documentation is installed with this product.

The readme file.

Several readme files are provided:
- The readme_en.html file in the root directory of the product CD-ROM is a shadow of the Launchpad application. It provides links to the installation procedures and documentation for all of the installable components on the product CD. Translated versions of the file are in the launchpad directory.
- The readme.html file in the WAS directory points to this more detailed readme in the WAS directory and to the Getting Started Guide in the WAS/docs directory. This file is not translated.
- The readme_en.html in the readme directory of each installable component, such as this file. The Launchpad links to this file for a description of installing the WebSphere Application Server - Express product. This file is also available from the readme directory in the root directory of the product CD-ROM.

Getting Started Guide

The InstallGuide_en.pdf and InstallGuide_en.html files in the WAS/docs directory provide detailed instructions for installing the product. The information in the guide is derived from information in the online information center. The guide is not translated on the product CD; however, translated versions of the information center are available online.

Help files

The help files provide detailed instructions for completing tasks and for specifying settings in the graphical systems management tools. Use the help menus, links, or buttons provided in the tool interfaces to access the help files.

Documentation on the Web

For the entire documentation set for all WebSphere Application Server products, including the information center and Adobe Acrobat PDF versions of the information, go to the WebSphere Application Server library page. All product documentation is in the information center, including versions of the installed help files.

Accessing the product support Web site

- To search for the latest troubleshooting tips, downloads, fixes, and other support-related information, go to the WebSphere Application Server support page.

Contacting IBM® Software Support

If you encounter a problem with this product, first try the following actions:

- Following the steps described in the product documentation
- Looking for related documentation in the online help
- Looking up error messages in the message reference

If you cannot resolve your problem by any of the preceding methods, contact IBM Technical Support.

Purchase of IBM WebSphere Application Server entitles you to one year of telephone support under the Passport Advantage® program. For details about Passport Advantage, visit the Passport Advantage page.

The number for Passport Advantage members to call for WebSphere Application Server support is 1-800-426-7378. Have the following information available when you call:

- Your contract or Passport Advantage number.
- Your WebSphere Application Server version and revision level, plus any installed fixes.
- Your operating system name and version.
- Your database type and version.
- Basic topology data: how many machines are running, how many application servers, and so on.
- Any error or warning messages that are related to your problem.

Chapter 4. Installation checklist

Print this topic and use it as a checklist of steps for installing WebSphere Application Server products on the i5/OS platform.

1. **Step 1: Preparing for the installation**
   a. _____ Determine if WebSphere Application Server Version 6.1 for i5/OS is already installed on your server. Note that you are looking for Version 6.1 only, not previous versions of the product.

      See Chapter 5, "Preparing the operating system for installation," on page 25 for more information.
   b. _____ Read the Overview of WebSphere Application Server Version 6.1 for i5/OS.
   c. _____ Read the product Release Notes for the WebSphere Application Server product.

      See "IBM WebSphere Application Server release notes" on page 21 for more information.
   d. _____ Schedule enough time for each step of the process.

      See "Time requirements for installing" on page 26 for more information.
   e. _____ Verify that your system meets all hardware and software prerequisites, and install prerequisite software if necessary.

      - _____ iSeries server hardware requirements
      - _____ iSeries server software requirements

      See "iSeries prerequisites" on page 27 for more information.
   f. _____ Verify that your workstation meets all hardware and software prerequisites, and install prerequisite software if necessary.

      See "Workstation prerequisites" on page 29 for more information.
   g. _____ Obtain and install the correct i5/OS cumulative PTF package.

      See "Cumulative PTFs for iSeries" on page 31 for more information.
   h. _____ Obtain the WebSphere Application Server product and current fixes.

      - _____ WebSphere Application Server
      - _____ WebSphere Application Server Group PTF

      See "Product ordering information" on page 31 for more information.

2. **Step 2: Installing WebSphere Application Server**
   a. _____ Install WebSphere Application Server on your iSeries server.

      See "Installing WebSphere Application Server for i5/OS" on page 33 for more information.
   b. _____ Install the WebSphere Application Server group PTF.

      See "Installing the WebSphere Application Server group PTF" on page 58 for more information.

3. **Step 3: Configuring WebSphere Application Server**
   a. _____ Configure software license information.

      See "Configuring software license information" on page 63 for more information.
   b. _____ Set SQL server jobs.

      See "Configuring SQL jobs" on page 64 for more information.
   c. _____ Configure TCP/IP.

      See "Configuring TCP/IP" on page 64 for more information.
   d. _____ Configure an HTTP server instance.

      See "Configuring an HTTP server instance" on page 66 for more information.

4. **Step 4: Starting WebSphere Application Server**
   a. _____ Start WebSphere Application Server.

      See Chapter 10, "Starting WebSphere Application Server," on page 117 for more information.
   b. _____ Verify that WebSphere Application Server is running.

See "Verifying that the application server is running" on page 118 for more information.

  c. _____ Start the administrative console.

  See "Starting the administrative console" on page 119 for more information.

  d. _____ Configure the virtual host.

  See "Configuring the virtual host" on page 124 for more information.

  e. _____ Start the HTTP server.

  See "Starting the HTTP server instance" on page 125 for more information.

5. **Step 5: Verifying the installation**

  a. _____ Verify the installation.

  See Chapter 11, "Verifying the installation," on page 127 for more information.

Chapter 5. Preparing the operating system for installation

Select the product components that you intend to install and verify that the product prerequisites are met. Also, plan for the amount of time required to perform each step of the installation.

Use this procedure to help verify that you are ready to install. Complete the following procedure before you begin to install WebSphere Application Server on your iSeries system.

1. Determine if WebSphere Application Server is already installed on your server.
   a. Enter the Display Software Resources (DSPSFWRSC) command on a CL command line.
   b. Look for an entry with the product Resource ID 5733W61.
      - If you do not find the product Resources ID, then this product has not been installed on your iSeries server.
      - If a previous version of WebSphere Application Server is installed on your server, read the coexistence instructions before you install the new version.
2. Print the Chapter 4, "Installation checklist," on page 23 to use as a checklist during the installation process.
3. Determine time requirements for installation

   Plan to set aside enough time for each step of the process. Depending on your server specifications, the process may take more or less time than the estimates provided in this documentation.

   Important: The installation process might require at least one initial program load (IPL or restart) of the server, if you need to install a cumulative PTF package.

   See "Time requirements for installing" on page 26 for more information.
4. Read the product Release Notes for important information about the product.

   See the WebSphere Application Server documentation page for iSeries (http://www.ibm.com/eserver/iseries/software/websphere/wsappserver/docs/docws61.html) for links to the Release Notes.
5. Verify that your system meets all hardware and software prerequisites, and install prerequisite software if necessary.

   Verify that the iSeries prerequisites are satisfied. Install prerequisite software if necessary.

   If you are running an iSeries server that does not meet the minimum recommended hardware requirements for WebSphere Application Server, you can still install and run the product. However, the WebSphere Application Server environment might run slowly, and your applications might not run successfully.

   See "iSeries prerequisites" on page 27 for more information.
6. Verify that your workstation meets all hardware and software prerequisites, and install prerequisite software if necessary.

   See "Workstation prerequisites" on page 29 for more information.
7. Obtain and install the correct i5/OS cumulative PTF package.

   See "Cumulative PTFs for iSeries" on page 31 for more information.
8. Obtain the WebSphere Application Server product and current fixes.

   Before you install WebSphere Application Server Version 6.1 for i5/OS, you need to obtain the WebSphere Application Server V6.1 product and current fixes. It can take up to two weeks to receive the product.
   - WebSphere Application Server
   - WebSphere Application Server Group PTF

   See "Product ordering information" on page 31 for more information.

Go to "Time requirements for installing" on page 26.

Installable components

Components that you can select during the installation of WebSphere Application Server for iSeries include the core product files, Web server plug-ins, and the Application Client.

New, more granular installation procedures simplify installation and improve installation reliability. Installation routines exist for the following components on the product disc. Separate installation procedures let you install only what you need on a particular machine:

WebSphere Application Server
> This component installs the application server run time and Samples feature.
>
> See "Installing WebSphere Application Server for i5/OS" on page 33 for more information.
>
> **Samples feature**
>> If you do not want to use the WebSphere Application Server samples, you can clear the check box for this optional feature.
>>
>> See "Installing and accessing the Samples Gallery" on page 128 for more information.

Web server plug-ins
> This component provides the necessary files and Web server plug-ins for running remote HTTP servers to access WebSphere Application Server.

Application client
> This component provides the client application development and runtime portion of the WebSphere Application Server product. This component allows you to compile your client application code and run both Java 2 Enterprise Edition (J2EE) client applications and thin applications. .

Next: Go to "Time requirements for installing."

Time requirements for installing

This topic describes time estimates for various tasks during the installation of WebSphere Application Server products for iSeries.

Before you install WebSphere Application Server, use this time table to plan enough time for each step of the process.

Attention: The installation process might require at least one initial program load (IPL or restart) of the server, if you need to install an i5/OS cumulative PTF package.

Task	Estimated time
Preparing for the installation	
Reading Release Notes and migration instructions, and verifying hardware and software prerequisites.	1-2 hours[1]
Obtaining the product and current fixes.	Up to 2 weeks
Installing any additional products and OS/400 cumulative PTF package.	1-2 hours
Installing WebSphere Application Server	
Installing WebSphere Application Server on your iSeries server[2]	45-120 minutes
Installing WebSphere Application Server Group PTF (depends on your system)	Up to 2 hours
Creating an initial configuration	30 minutes
Starting WebSphere Application Server for the first time	1-20 minutes
Verifying the installation	10 minutes

[1] This estimate applies if all product prerequisites are met. It does not take into account the time required to install additional prerequisite software.

[2] Actual time requirement depends on the method used. Installing the product from the CD-ROM drive of your iSeries server takes less time than installing it from a remote workstation.

Next: Go to "iSeries prerequisites" to continue the installation.

iSeries prerequisites

Before you install WebSphere Application Server for iSeries, verify that your hardware and software meet the minimum requirements.

iSeries hardware requirements

Use the IBM Workload Estimator for iSeries at http://www.ibm.com/eserver/iseries/support/estimator for help with estimating all system configurations.

Systems that do not meet the recommended minimums may be used in environments that support a limited number of users and where longer server initialization times are acceptable. The recommended hardware minimum requirements follow:
* Server requirements for servlets and JavaServer Pages (JSP) files
* Server requirements for enterprise beans
* Disk requirements

Minimum server requirements if your applications consist solely of servlets and JSP files

* Recommended minimum server models:
  - iSeries Model 270 with processor feature 2250
  - iSeries Model 820 with processor feature 2395

* 750 MB of memory for your WebSphere Application Server environment (recommended minimum). This memory requirement is in addition to memory required for any other applications running on your iSeries server.

These requirements are based on a single WebSphere Application Server profile. Additional profiles running concurrently require additional resources.

These requirements represent the recommended minimum requirements. Deployments that must support many users or require shorter response times might require additional resources.

Minimum server requirements if your applications contain enterprise beans

* Recommended minimum server models:
  - AS/400e server 170 with processor feature 2385
  - AS/400e server 720 with processor feature 2062
  - iSeries Model 270 with processor feature 2250
  - iSeries Model 820 with processor feature 2395

* 750 MB of memory for your WebSphere Application Server environment (recommended minimum). This memory requirement is in addition to memory required for any other applications running on your iSeries server.

These requirements are based on a single WebSphere Application Server profile. Additional profiles running concurrently require additional resources.

These requirements represent the recommended minimum requirements. Deployments that must support many users or require shorter response times might require additional resources.

Disk requirements

Table 2. WebSphere Application Server Version 6.1 for i5/OS disk requirements

Installation option	Description	Disk space after installation
WebSphere Application Server	WebSphere Application Server run time	900 MB
Application Server Samples	Sample applications	80 MB
Application Client	Client development and run time	160 MB
Web Server Plug-ins	Web server plug-ins	100 MB

iSeries software requirements

The software required is as follows:

i5/OS Version X Release Y (VXRY)
> WebSphere Application Server is supported on i5/OS Version 5 Release 3 (V5R3) or Version 5 Release 4 (V5R4). The iSeries server must be in an unrestricted state, and your user profile must have *ALLOBJ and *SECADM special authorities.

IBM Developer Kit for Java(TM) (5722-JV1), Version 1.5 (option 7)
> Required to use WebSphere Application Server.

i5/OS Qshell (5722-SS1 option 30)
> Required to run installation scripts and to use other scripts in WebSphere Application Server.

i5/OS Host Servers (5722-SS1 option 12)
> Required for installation.

Cryptographic Access Provider 128-bit for iSeries (5722-AC3)
> Required by the application server runtime.

All necessary fixes
> For a list of current fixes, see http://www.ibm.com/eserver/iseries/software/websphere/wsappserver/ and click **PTFs**.

iSeries optional software

The optional software is as follows:

HTTP server
> An HTTP server is not required for installation, but recommended for production environments that use servlets and JSP files. If you plan to deploy only enterprise beans, you do not need an HTTP server instance. WebSphere Application Server supports these HTTP server products:
> - IBM HTTP Server (powered by Apache) (5722-DG1)
> - Lotus Domino for AS/400 R5 (5769-LNT)
> - Lotus Domino for iSeries 6.0 (5733-LD6)
> - Lotus Domino for iSeries 6.5 (5733-L65)

i5/OS Digital Certificate Manager (5722-SS1 option 34)
> The i5/OS Digital Certificate Manager is not required for installation, but required if you plan to use Secure Sockets Layer (SSL) protocol.

DB2 Query Manager and SQL Development Kit for iSeries (5722-ST1)
> The DB2 Query Manager and SQL Development Kit for iSeries help you develop client applications.

Next: See "Workstation prerequisites" on page 29.

Workstation prerequisites

Before you install WebSphere Application Server workstation components, verify that your hardware and software meet the minimum requirements.

Workstation hardware requirements

If you only plan to use your workstation to administer WebSphere Application Server, you can use any workstation running a supported Web browser.

The workstation hardware requirements for application development and assembly components follow:

Capable workstations
- An Intel-based personal computer capable of running any of these operating systems:
    – Microsoft Windows(R) XP Professional Service Pack 1A (or later)
    – Microsoft Windows 2000 Server or Advanced Server Service Pack 4 (or later)
    – Microsoft Windows 2003 Standard or Enterprise Edition
    – RedHat Advanced Server for Intel (x86) 2.1
    – SuSE Linux SLES for Intel (x86) V8.0 Service Pack 2A
    – TurboLinux Enterprise Server for Intel V8.0 Service Pack 2A
    – UnitedLinux for Intel V1.0 Service Pack 2A
    – Conectiva Linux Enterprise Edition for Intel V1.0
- A workstation that is capable of running Solaris V8 or V9.
- A pSeries(TM) server that is capable of running any of these operating systems:
    – AIX(R) V5.1 or V5.2
    – SuSE Linux SLES for PowerPC V8.0
    – TurboLinux Enterprise Server for PowerPC V8.0
    – UnitedLinux for PowerPC(R) V1.0

Communications adapter or network interface
    Your workstation must support a communications adapter or an appropriate network interface.

Free disk space
    Your workstation must have a minimum of 120 MB of free disk space.

Memory
    Your workstation must have a minimum of 256 MB of memory.

CD-ROM drive
    Your workstation must have a CD-ROM drive.

Workstation software requirements

If you only plan to use your workstation to administer WebSphere Application Server, you can use any operating system with a supported Web browser.

The following workstation software requirements apply to the application development and assembly component:

Any of these operating systems
- Microsoft Windows XP Professional Service Pack 1A (or later)
- Microsoft Windows 2000 Server or Advanced Server Service Pack 4 (or later)
- Microsoft Windows 2003 Standard or Enterprise Edition
- RedHat Advanced Server for Intel (x86) 2.1
- SuSE Linux SLES for Intel (x86) V8.0 Service Pack 2A
- TurboLinux Enterprise Server for Intel V8.0 Service Pack 2A
- UnitedLinux for Intel V1.0 Service Pack 2A
- Conectiva Linux Enterprise Edition for Intel V1.0

- AIX V5.1 or V5.2 Sun Solaris V8 (at the latest available maintenance level)
- SuSE Linux SLES for PowerPC V8.0
- TurboLinux Enterprise Server for PowerPC V8.0
- UnitedLinux for PowerPC V1.0

Any of these IBM development kits for Java
- Windows IBM Enhanced Java Development Kit, Version 1.5 (Release 5.0)
- HP-UX IBM Software Development Kit for the Java Platform, Version 1.5 (Release 5.0)
- IBM Developer Kit for Linux, Java 2 Technology Edition, Version 1.5 (Release 5.0)
- Solaris IBM Java Development Kit, Version 1.5 (Release 5.0)
- IBM Developer Kit for AIX, Java 2 Technology Edition, Version 1.5 (Release 5.0)

These IBM development kits for Java are included on the WebSphere Application Server workstation CD-ROM. The appropriate development kit is automatically installed when you install any of the workstation components of WebSphere Application Server.

TCP/IP
TCP/IP must be installed and running.

Any of the following Web browsers
- Microsoft Internet Explorer Version 5.5 Service Pack 2 (or higher)
- Microsoft Internet Explorer Version 6.0
- Mozilla 1.X browser

Next: See "Determining the proper cumulative PTF level."

Determining the proper cumulative PTF level

WebSphere Application Server for i5/OS was tested with a specific cumulative PTF package. Ensure that you have the same cumulative PTF package or newer applied to your system before using WebSphere Application Server for i5/OS.

Check the cumulative PTF package level applied to your system. If it is not at the minimum required level, order and apply the currently available cumulative PTF package.

Perform this task to gather the needed information about the cumulative PTF level applied to your system.

1. Determine the prerequisite cumulative PTF package level for the version of WebSphere Application Server that you plan to install.

   a. Go to the PTF pages of the WebSphere Application Server product Web site.

   b. In the WebSphere Application Server row, click the link for your operating system release level.

   c. Click the Cumulative PTF Package link to see the minimum cumulative PTF package that is required.

2. Determine if the correct operating system cumulative PTF package is installed on your server.

   a. Sign onto your server.

   b. Enter the Display PTF Status (DSPPTF) command on a CL command line. The Display PTF Status screen is displayed. This screen lists the PTFs that are applied to the server.

   The following example shows the Display PTF status screen:

```
                    Display PTF Status
                                                System: your.server
Product ID  . . . . . . . . . . . . . :    5722999
IPL source  . . . . . . . . . . . . . :    ##MACH#B
Release of base option  . . . . . . . :    V5R2M0 L00

Type options, press Enter.
  5=Display PTF details   6=Print cover letter   8=Display cover letter


     PTF                                        IPL
Opt  ID       Status                            Action
     TL02036  Temporarily applied               None
     TL01302  Superseded                        None
     TL01254  Superseded                        None
     TL01226  Superseded                        None
     TL01163  Superseded                        None
     TL01114  Superseded                        None
     TL01086  Superseded                        None
     RE01148  Permanently applied               None
     RE01089  Permanently applied               None
                                                    More...
 F3=Exit   F11=Display alternate view   F17=Position to   F12=Cancel
```

Next: Continue with one of the following steps:

- Install the correct cumulative PTF if it is not already installed on your server. See "Cumulative PTFs for iSeries" for more information.
- Obtain WebSphere Application Server Version 6.1 for i5/OS if the correct cumulative PTF is installed. See "Product ordering information."

Cumulative PTFs for iSeries

WebSphere Application Server requires a minimum cumulative PTF package level for the operating system on your iSeries server. If the correct cumulative PTF package is not installed on your iSeries server, you must install the cumulative PTF before you install WebSphere Application Server.

To install the cumulative PTF, follow your normal PTF installation procedures.

For more information about installing cumulative PTFs, see Installing cumulative PTF packages in the iSeries information center.

Installing the cumulative PTF package requires you to restart your iSeries server. If it is not convenient to restart your server at the time that you apply the new PTF package, you can load and apply the PTFs and then specify that any PTFs that require an IPL be applied at the next normal IPL of the server. However, do not install the WebSphere Application Server product until all of the PTFs have been successfully applied.

If the correct cumulative PTF is already installed, skip this step and continue to "Product ordering information."

Next: Go to "Product ordering information."

Product ordering information

Before you can install WebSphere Application Server, you must obtain the product and the current fixes.

The following links provide information about how to obtain the product and the required fixes.

- **WebSphere Application Server Version 6.1 for i5/OS** For information about how to order the product, see the **Ordering information** section of the WebSphere Application Server packaging information page.
- **Cumulative PTFs**

  WebSphere Application Server Version 6.1 for i5/OS was tested on a specific i5/OS cumulative PTF package level.

  To view the cumulative PTF package tested, see WebSphere Application Server PTFs.

  From the PTFs page, select the link for your operating system release level. On the resulting page, click the **Cumulative Package** link.

  You can install and run WebSphere Application Server Version 6.1 for i5/OS successfully on earlier or later cumulative PTF packages.

  See "Determining the proper cumulative PTF level" on page 30 for more information about determining the cumulative PTF package level for your server.
- **PTFs**

  The WebSphere Application Server Version 6.1 for i5/OS group PTF includes fixes for WebSphere Application Server and other i5/OS products such as IBM DB2 Universal Database, IBM Developer Kit for Java, and the IBM HTTP Server.

  Installing the group PTF requires an IPL of your server, so plan accordingly.

  To determine which i5/OS group PTF you must order and install, see WebSphere Application Server for i5/OS PTFs Web page. Group PTF numbers differ by WebSphere Application Server product and i5/OS release level.

You have completed step 1 of 5.

Chapter 6. Task overview: installing

Installing WebSphere Application Server involves installing the product and installing the group PTF.

Prepare for the installation before using this procedure. See Chapter 5, "Preparing the operating system for installation," on page 25 for more information.

Use this procedure to install WebSphere Application Server Version 6.1 for i5/OS.

1. Install WebSphere Application Server on your iSeries server.

   Install the product on your iSeries server locally from the optical drive of your iSeries server, or remotely from a supported workstation platform.

   See "Installing WebSphere Application Server for i5/OS."

2. Install the WebSphere Application Server group PTF.

   Apply the most recent WebSphere Application Server Version 6.1 for i5/OS group PTF before you start WebSphere Application Server for the first time.

   The group PTF includes the most recent WebSphere Application Server PTFs and recent PTFs for other products that are required for WebSphere Application Server.

   See "Installing the WebSphere Application Server group PTF" on page 58.

If any part of the installation results in problems, see "Troubleshooting an iSeries installation" on page 158.

Go to "Installing WebSphere Application Server for i5/OS" to continue the installation.

Installing WebSphere Application Server for i5/OS

Installation methods for installing the WebSphere Application Server product include installing from the server, installing from a Windows workstation command line, or installing from the Windows workstation graphical user interface.

Prepare for the installation before using this procedure. See Chapter 5, "Preparing the operating system for installation," on page 25 for more information.

Use any of the following installation methods to install WebSphere Application Server on your iSeries server.

- Install WebSphere Application Server from your iSeries server.

  Installing the product from the CD-ROM drive of your iSeries server requires direct physical access to the server. The local installation requires less time to complete than a remote installation. The local installation reads installation options from a response file.

  See "Installing WebSphere Application Server from your iSeries server" on page 34.

- Install WebSphere Application Server from a Windows workstation command line.

  The install.exe command invokes the installation wizard. The wizard reads installation options from a response file. Installing the product from a Windows workstation does not require direct physical access to the iSeries server, but it typically requires more time to complete than a local installation.

  See "Installing from a Windows workstation command line" on page 35.

- Run the GUI installation tool from a Windows workstation

  The interactive GUI uses an InstallShield interface to prompt you for installation options. Installing the product from a Windows workstation does not require direct physical access to the iSeries server, but typically requires more time to complete than a local installation.

  See "Installing using a Windows workstation GUI" on page 36.

Selecting one of the methods results in performing an installation that can take up to 120 minutes to complete.

Go to "Installing WebSphere Application Server from your iSeries server" to continue the installation.

Installing WebSphere Application Server from your iSeries server

Install WebSphere Application Server directly from your iSeries server.

Prepare for the installation before using this procedure. See Chapter 5, "Preparing the operating system for installation," on page 25 for more information.

Before you install WebSphere Application Server, ensure that your user profile has *ALLOBJ and *SECADM special authorities.

You can install WebSphere Application Server from Qshell using the **INSTALL** command. You can also use the **RUNJVA** command to invoke the installation wizard.

1. Sign on the iSeries system with a user profile that has *ALLOBJ and *SECADM special authorities.
2. Verify that the host server jobs have started on your iSeries server.

   The host server jobs allow the installation code to run on iSeries. On a CL command line, enter the following command:

   `STRHOSTSVR SERVER(*ALL)`
3. Place the WebSphere Application Server Network Deployment for i5/OS disc in the disc drive of your iSeries server.

   Do not use the WebSphere Application Server Network Deployment, Version 6.1 for Windows disc or any other operating system disc other than the disc for i5/OS.
4. Use the Copy (CPY) command to create a copy of the `responsefile.nd.txt` file from the CD-ROM directory.

   For example:

   `CPY OBJ('/QOPT/WEBSPHERE/WAS/responsefile.nd.txt') TODIR('/MYDIR')`

   QOPT is the disc mount point.

   WEBSPHERE is the disc volume label.

   /WAS is the product directory on the disc.
5. If you have not already done so, read the IBM International Program License Agreement located in /QOPT/WEBSPHERE/WAS/lafiles.

   If you agree to the terms of the agreement, continue with the installation process.
6. Edit the `/MYDIR/responsefile.nd.txt` file.
   a. Change the value for -OPT silentInstallLicenseAcceptance from false to true. A value of true indicates that you have read and accept the terms of the license agreement. This change is required to run the installation.
   b. **Optional:** To enable administrative security for the default profile, change the value for -OPT PROF_enableAdminSecurity from false to true and specify a user ID and password for the -OPT PROF_adminUserName and -OPT PROF_adminPassword properties.

      The user ID and password do not need to be a system user ID and password or an LDAP user ID and password. The ID-and-password pair specified are stored in the user registry and used for administrative security for the default profile.

      Write down the user ID and password.
   c. **Optional:** Change the installation options to suit your installation requirements.

      For information about the installation options and values, see "responsefile.nd.txt" on page 38.
7. Invoke the installation program for WebSphere Application Server Network Deployment for i5/OS.

To invoke the installation program for WebSphere Application Server Network Deployment for i5/OS, run the **INSTALL** command from Qshell or use the **RUNJVA** command from the CL command line.

In the following example commands, *path*/*responsefile* represents the fully-qualified path of the "responsefile.nd.txt" on page 38 file that you edited.

- Run the **INSTALL** command from Qshell.
    a. On a CL command line, issue the STRQSH command to start the Qshell command shell.
    b. Issue the INSTALL command to start the installation program.

      ```
      cd /QOPT/WEBSPHERE/WAS
      INSTALL -options path/responsefile
      ```

      Important: Do not exit the Qshell session (PF3) until the installation has completed. Doing so might cause the installation to stop prematurely.

- Issue the **RUNJVA** command from the CL command line:

   At the CL command line, change directories before issuing the following commands. Enter the RUNJVA command on one line. The command is shown on more lines for formatting clarity.

   ```
   CHGCURDIR '/QOPT/WEBSPHERE/WAS'
   RUNJVA
     CLASS(run) PARM('-options' 'path/responsefile')
     CLASSPATH('setup.jar')
     PROP(
       ('Xbootclasspath/p' '../JDK/jre.pak/repository/package.java.jre/java/jre/lib/xml.jar')
       (java.version 1.5)
       (is.debug 1)
      )
   ```

After you invoke the installation, messages are displayed that indicate the progress of the installation process. When the setup program completes, press **F3** to exit.

For security purposes, if the host servers were not running prior to installation, it is recommended that you run the End Host Server (ENDHOSTSVR) command after the installation is complete.

Next: Go to "Installing the WebSphere Application Server group PTF" on page 58 to continue the installation.

Installing from a Windows workstation command line

One installation alternative is to install WebSphere Application Server for iSeries from a Windows workstation command line.

Prepare for the installation before using this procedure. See Chapter 5, "Preparing the operating system for installation," on page 25 for more information.

The remote silent mode allows you to install the product with a single command from a remote Windows workstation. Installation options must be specified in a response file. During the installation, you are unable to change the installation options. The parameters and default values are described in "responsefile.nd.txt" on page 38 for command-line installation.

1. If TCP/IP is not started or if you don't know if TCP/IP is started, enter the Start TCP/IP (STRTCP) command on the Control Language (CL) command line.
2. Verify that the host server jobs are started on your iSeries server. The host server jobs allow the installation code to run on iSeries.

   Enter this command on a CL command line:

   ```
   STRHOSTSVR SERVER(*ALL)
   ```
3. Verify that your user profile has the *ALLOBJ and *SECADM special authorities.
4. Place the WebSphere Application Server Network Deployment for i5/OS disc in the disc drive of your Windows workstation. The autorun feature brings up the GUI. Click **Cancel** to exit the GUI.

Do not use the WebSphere Application Server Network Deployment, Version 6.1 for Windows disc or any other operating system disc other than the disc for i5/OS.

5. On your Windows workstation, open a command prompt.

6. Access the disc drive of your Windows workstation by switching to the disc drive. For example, enter e: where e: is the letter assigned to your CD-ROM or DVD drive.

7. Copy the response file from the disc directory to a directory on your Windows workstation, such as the C:\temp directory.

   For example:

   ```
   copy responsefile.nd.txt C:\temp\RESPONSEFILE
   ```

8. If you have not already done so, read the IBM International Program License Agreement located in the /QOPT/WEBSPHERE/WAS/DOCS/lafiles directory. If you agree to the terms of the agreement, continue with the installation process.

9. Edit the RESPONSEFILE file:

   a. Change the value for -OPT silentInstallLicenseAcceptance from false to true. A value of true indicates that you have read and accept the terms of the license agreement. This change is required to run the installation.

   b. **Optional:** To enable administrative security for the default profile, change the value for -OPT PROF_enableAdminSecurity from false to true and specify a user ID and password for the -OPT PROF_adminUserName and -OPT PROF_adminPassword properties.

      The user ID and password do not need to be a system user ID and password or an LDAP user ID and password. The ID-and-password pair specified are stored in the WIM user registry and used for administrative security for the default profile.

      Write down the user ID and password.

   c. **Optional:** Change the installation options to suit your installation requirements. For information about the installation options and values, see "responsefile.nd.txt" on page 38.

10. Run the **install.exe** command. Specify the response file to use during the installation. Specify the system name and a valid user profile and password when you run this command.

    Your user profile must have *ALLOBJ and *SECADM special authorities for this step.

    ```
    install.exe system_name user_name password -options response_file
    ```

    The *system_name* variable is the name of your iSeries server. The *user_name* variable and the *password* variable are your user profile login credentials, and the *response_file* variable is the name of your response file.

    The password used in this command is displayed in clear text on the command line. For example:

    ```
    install.exe MYISERIES myUserName myPassword -options C:\temp\RESPONSEFILE
    ```

    After you issue the command, control returns to the command prompt while the installation process runs.

11. Check the *app_server_root*/logs/install/log.txt log file to verify that the installation is complete.

This procedure results in installing WebSphere Application Server Network Deployment from a Windows workstation command line, which can take up to 120 minutes to complete.

Go to "Installing the WebSphere Application Server group PTF" on page 58 to continue the installation.

Installing using a Windows workstation GUI

One installation alternative is to install WebSphere Application Server Network Deployment for i5/OS from a Windows workstation graphical user interface (GUI).

Prepare for the installation before using this procedure. See Chapter 5, "Preparing the operating system for installation," on page 25 for more information.

When you run the GUI installation tool, you specify installation options interactively during the installation process.

Use this procedure to install WebSphere Application Server Network Deployment for i5/OS with the GUI installation program:

1. If TCP/IP is not started or if you don't know if TCP/IP is started, enter the Start TCP/IP (STRTCP) command on the Control Language (CL) command line.

2. Verify that the host server jobs are started on your iSeries server. The host server jobs allow the installation code to run on iSeries.

   Enter this command on a CL command line:

   `STRHOSTSVR SERVER(*ALL)`

3. Verify that your user profile has the *ALLOBJ and *SECADM special authorities.

4. Place the WebSphere Application Server Network Deployment for i5/OS disc in the disc drive of your Windows workstation. The autorun feature brings up the GUI.

   Do not use the IBM WebSphere Application Server Network Deployment Windows disc or any other operating system platform disc from the product package.

   The InstallShield program should automatically start. If it does not, open Windows Explorer and select your disc drive. Double-click the WAS\install.exe file to start the InstallShield for Multiplatforms (ISMP) program.

5. Enter the name of the iSeries server where you are installing WebSphere Application Server Network Deployment for i5/OS and your corresponding i5/OS login information, then click **OK**.

   You also must enter a valid user ID and password for the server. Your profile must have *ALLOBJ and *SECADM special authorities for this step.

6. On the Welcome panel, click **Next**.

7. On the next panel, if you accept the terms of the license agreement, select **I accept the terms in the license agreement**, then click **Next**. If you do not accept the terms of the license agreement, you cannot continue with the installation.

8. The system prerequisites check verifies that your server meets the minimum requirements to install the product. If the prerequisites are met, click **Next**. If the prerequisites are not met, you can continue the installation. However, it is recommended that you exit the Installation wizard and make the required changes.

9. On the next panel, select the optional feature provided by WebSphere Application Server Network Deployment for i5/OS, then click **Next**.

   Select the Samples feature to install sample applications.

10. The next panel displays the product installation root directory, the default profile location, and the product library name. Accept or change these values, then click **Next**.

    The product installation root directory for WebSphere Application Server Network Deployment for i5/OS contains the core product files. It is referred to in many information center examples as the *app_server_root*.

    The default profile location for WebSphere Application Server Network Deployment for i5/OS contains the configurable files for the profile. This directory is referred to in many information center examples as the *app_server_user_data_root*. The default profile location is the directory under which the profile registry and profiles directory are created. The default profile is created under *app_server_user_data_root*/profiles/default. The profile registry is created under *app_server_user_data_root*/profileRegistry.

    The product library is often spelled out in information center examples, but it might also be referred to as the *product_library*

11. On the next panel, select the type of WebSphere Application Server Network Deployment for i5/OS profile to create after the installation of the core product files, then click **Next**.

    Choose one of the following profile types:

    - Cell

The cell includes a deployment manager and a federated application server on one machine or partition.

- Deployment manager

  The deployment manager provides a single administrative interface to a logical group of application servers on one or more machines.

- Application server

  An application server profile has a default server (which is server1), the default application that includes the snoop servlet and the hitcount servlet, and application Samples. You can federate the application server or use it as a stand-alone application server.

- Custom

  A custom profile is an empty node that you must customize to include application servers, clusters, or other Java processes such as a messaging server.

12. On the next panel, choose whether to enable administrative security. If enabled, specify a user name and password to access the administrative tools. Click **Next** to continue.

    The user ID and password do not need to be a system user ID and password or an LDAP user ID and password. The ID-and-password pair specified are stored in the user registry and used for administrative security for the default profile.

13. On the next panel, verify that the summary information is correct. If not, click **Back** to change your specifications. If the summary information is correct, click **Next** to install WebSphere Application Server Network Deployment for i5/OS.

    The InstallShield program displays messages that indicate the status of the installation and a status bar to show the progress of the installation.

    After the installation runs, the Configuration Manager progress panel is displayed. The configuration manager performs post-installation tasks and creates the default profile.

    After the installation process is complete, the summary panel displays the results of the installation process and links to additional information about the product.

14. Click **Finish** to close the InstallShield program.

15. For security purposes, if the host servers were not running prior to installation, it is recommended that you run the End Host Server (ENDHOSTSVR) command after the installation is complete

This procedure results in installing WebSphere Application Server Network Deployment for i5/OS from a Windows workstation GUI, which can take up to 120 minutes to complete.

Go to "Installing the WebSphere Application Server group PTF" on page 58 to continue the installation.

responsefile.nd.txt

Installing WebSphere Application Server Network Deployment 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 "iSeries prerequisites" on page 27 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.nd`. The file is in the WAS directory on the product disk, the customized installation package (CIP), or the downloaded installation image.

Creating an operational environment

Installing a new installation of WebSphere Application Server Network Deployment 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 **manageprofiles** command.
   - Install with the response file with the createProfile=″true″ option and select a cell profile, a deployment manager profile, a custom profile, or a stand-alone application server profile with the -OPT profileType=″*profile_type*″ option.

   Note: The only other way to create a profile is when installing with the Installation wizard GUI. The wizard installs the product files and creates the selected profile.

Installing with a response file

1. Copy the `responsefile.nd.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:

   `install -options /MYDATA/myresponsefile.txt`

5. After the installation, examine the logs for success.

Example of the default file for i5/OS

Here is the format of the response file that is shipped on the disk:

```
###############################################################################
#
# 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.
#
# A common use of an options file is to run the wizard in silent mode. This lets
# the options file's author to 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 "/<responsefile.path>/responsefile.nd"
#
###############################################################################

###############################################################################
#
# Invoke the install wizard in silent mode for both local and remote install
# whenever the response file is used.
#

-silent

###############################################################################
#
# License Acceptance
#
# Valid options:
# 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
# /tmp/InstallShield/niflogs 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/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"

###############################################################################
# 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"

###############################################################################
#
# 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.

#

###############################################################################
#
# 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.
#
```

```
###############################################################################
#
# Create Profile for an Existing V6.1 Installation
#
# Valid values: true or false
#
# To create a profile for an ***existing installation***, UNcomment the following entry (by removing '#')
# and set the value to "true", and then comment out (by adding '#') "installType" option above
#
#-OPT createProfile="false"
#
# Be sure the installLocation option is set to your existing install location.
#

###############################################################################
#
# "Application Server samples" feature
#
# The selection state of the "Application Server samples" feature.
#
# Valid values:
#    samplesSelected  - Indicates that the feature is selected for installation
#    noFeature - Indicates that the feature is not selected for installation
#
# For example, to select "Application Server samples" for installation, use
#
#    -OPT feature="samplesSelected"
#

-OPT feature="samplesSelected"

###############################################################################
#
# Install Location
#
# The desired install location of the product. Specify a valid directory into which
# the product should be installed.  For new installs, this directory must be
# either empty or not exist.  Otherwise, this directory must be the product install
# location for the product to be modified.
#
# Below is the default WebSphere Application Server install location for the i5
# operating system.
#
# i50S Default Install Location:
#
#   -OPT installLocation="/QIBM/ProdData/WebSphere/AppServer/V61/ND"
#

-OPT installLocation="/QIBM/ProdData/WebSphere/AppServer/V61/ND"

###############################################################################
#
# Profile Location
#
# The desired install location of profiles.  For new installs, Specify a valid
# directory into which the profiles should be installed.  This directory must be
# either empty or not exist.
#
# Below is the default profile install location for the i5 operating system.
#
# i50S Default Profile Install Location:
#
#   -OPT defaultProfileLocation="/QIBM/UserData/WebSphere/AppServer/V61/ND"
#

-OPT defaultProfileLocation="/QIBM/UserData/WebSphere/AppServer/V61/ND"
```

```
################################################################################
#
# Allow Profile Location Override
#
# This option allows users to overrule the empty default profile location requirement.
#
# Valid values:
# true - Allow profile location override
# false - Do not allow profile location override
#
# If desired, uncomment the following entry
#
# -OPT allowOverrideProfileLocation="true"
#


################################################################################
#
# Profile Creation Selection
#
# Valid values:
# standAlone - a profile will be created with a stand alone Application server.
# deploymentManager - a profile will be created with a deployment manager.
# cell - two profiles will be created, one with a deployment manager and
#  and another with a managed node that is pre-federated into the cell.
# custom - a profile will be created with an empty node.
# none - a profile will not be created during installation.
#
# For example, to select "cell" profile creation for installation, use
#

-OPT profileType="cell"

################################################################################
# Administrative security
#
# Choose to enable Administrative Security for the selected profile/s which
# will be created during install.
#
# *** If profileType="custom" or profileType="none", Administrative Security should
# be disabled.  Use -OPT PROF_enableAdminSecurity="false" to disable security.
#
# Valid Values:
# true - Administrative security is enabled, user name and password required
# false - Administrative security is not enabled
#

-OPT PROF_enableAdminSecurity="false"

# The following two options should only be uncommented when PROF_enableAdminSecurity="true"
# *** If PROF_enableAdminSecurity="false", the following entries will be disregarded.
#
# Replace ADMIN_USER_NAME with the user name for administrative security
# Replace ADMIN_PASSWORD with the password for the user specified under PROF_adminUserName for adminstrative security
#
#-OPT PROF_adminUserName="ADMIN_USER_NAME"
#-OPT PROF_adminPassword="ADMIN_PASSWORD"
#


################################################################################################
# There following options are related to creating profiles and are dependent on the profileType option
# specified in the previous section.
################################################################################
# if profileType="standAlone", you may use the following profile creation options:
################################################################################
################################################################################
```

```
#
# 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 string with valid characters
#
#-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. If the directory contains
# spaces, enclose it in double-quotes as shown in the Windows example below.
#
# Valid Values: a valid path
# Note that spaces in the install location is only supported on Windows
# operating systems.
#
#-OPT PROF_profilePath=

################################################################################
# Uncomment the following to make the profile a default profile.
# Valid Values: No value is required for this option.
# -OPT PROF_isDefault=

################################################################################
#
# 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
#
#-OPT PROF_hostName=

################################################################################
#
# Node name
#
# Please specify the node name for the Application Server. Node name under one cell
# has to be unique.
# Valid Values: a string with valid characters
#
#-OPT PROF_nodeName=
################################################################################
#
# Cell name
#
# Please specify the cell name for the profile to be created
# Valid Values: a string with valid characters
#
# -OPT PROF_cellName=
################################################################################
#
# Server name
#
# Please UNcomment the following and specify the server name for the Application Server.
# Server name under one node has to be unique.
# Valid Values: a string with valid characters
#
#-OPT PROF_serverName=

################################################################################
# Starting Port
#
```

```
# Please specify the number to start with when assigning port values
# Valid values: integer port value
#-OPT PROF_startingPort=

##############################################################################
# Port File
#
# Please specify the path to a property file containing the desired port values
# Valid values: valid file path
#-OPT PROF_portsFile=

##############################################################################
# Default ports
#
# Uncomment the following to use the WAS base ports
# Valid values: No value is required for this option
#-OPT PROF_defaultPorts=

##############################################################################
# Validate Ports
#
# Uncomment the following to validates selected ports are not in use
# Valid values: No value is required for this option
#-OPT PROF_validatePorts=

##############################################################################
# WebServer Check
#
# Please specify whether you wish to set the web server definition
# Valid values: true or false
#-OPT PROF_webServerCheck=

##############################################################################
# WebServer Type
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the type of web server you are creating
# Valid values: IHS | IIS | SUNJAVASYSTEM | DOMINO | APACHE | HTTPSERVER_ZOS
#-OPT PROF_webServerType=

##############################################################################
# WebServer OS
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the operating system of the system where the web server is
# Valid values: linux | windows | aix | hp | solaris | os390 | os400
#-OPT PROF_webServerOS=

##############################################################################
# WebServer Name
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the name of the web server
# Valid values: a string with valid characters
#-OPT PROF_webServerName=

##############################################################################
# WebServer Hostname
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the host name of the system with the web server
# Valid values: a valid hostname
#-OPT PROF_webServerHostname=

##############################################################################
# WebServer Port
#
```

```
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the port that the web server can be accessed from
# Valid values: a valid port number
#-OPT PROF_webServerPort=

############################################################################
# WebServer Install Path
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the installation path of the web server (local or remote)
# Valid values: a valid directory path
#-OPT PROF_webServerInstallPath=

############################################################################
# WebServer Plugin Path
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the path to the plugins that will be used by this web server
# Valid values: a valid directory path
#-OPT PROF_webServerPluginPath=

############################################################################
# Omit Action
#
# Use this option to omit the config action specified
# Valid values: name of a config action
#-OPT PROF_omitAction=


############################################################################
# if profileType="deploymentManager", you may use the following profile creation options:
############################################################################
############################################################################
#
# Profile name
#
# Specify the name of the profile for the Deployment Manager. The profile
# name must be unique for this WebSphere Application Server installation.
# Valid Values: a string with valid characters
#
#-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. If the directory contains
# spaces, enclose it in double-quotes as shown in the Windows example below.
#
# Valid Values: a valid path
# Note that spaces in the install location is only supported on Windows
# operating systems.
#
#-OPT PROF_profilePath=

############################################################################
# Uncomment the following to make the profile a default profile.
# Valid Values: No value is required for this option.
# -OPT PROF_isDefault=

############################################################################
#
# Host name
#
# Specify the host name for the Deployment Manager. 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
```

```
#
#-OPT PROF_hostName=

################################################################################
#
# Node name
#
# Please specify the node name for the Deployment Manager. Node name under one cell
# has to be unique.
# Valid Values: a string with valid characters
#
#-OPT PROF_nodeName=
################################################################################
#
# Cell name
#
# Please specify the cell name for the profile to be created.
# Valid Values: a string with valid characters
#
# -OPT PROF_cellName=
################################################################################
#
# Server name
#
# Please UNcomment the following and specify the server name for the Deployment Manager.
# Server name under one node has to be unique.
# Valid Values: a string with valid characters
#
#-OPT PROF_serverName=

################################################################################
# Starting Port
#
# Please specify the number to start with when assigning port values
# Valid values: integer port value
#-OPT PROF_startingPort=

################################################################################
# Port File
#
# Please specify the path to a property file containing the desired port values
# Valid values: valid file path
#-OPT PROF_portsFile=

################################################################################
# Default ports
#
# Uncomment the following to use the WAS base ports
# Valid values: No value is required for this option
#-OPT PROF_defaultPorts=

################################################################################
# Validate Ports
#
# Uncomment the following to validates selected ports are not in use
# Valid values: No value is required for this option
#-OPT PROF_validatePorts=

################################################################################
# Omit Action
#
# Use this option to omit the config action specified
# Valid values: name of a config action
#-OPT PROF_omitAction=


################################################################################
```

```
# if profileType="custom", you may use the following profile creation options:
###############################################################################
###############################################################################
#
# 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 string with valid characters
#
#-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. If the directory contains
# spaces, enclose it in double-quotes as shown in the Windows example below.
#
# Valid Values: a valid path
# Note that spaces in the install location is only supported on Windows
# operating systems.
#
#-OPT PROF_profilePath=

###############################################################################
# Uncomment the following to make the profile a default profile.
# Valid Values: No value is required for this option.
# -OPT PROF_isDefault=

###############################################################################
# Deployment Manager Host
#
# Please specify the hostname or address of the machine where the deployment manager is running.
# Valid values: a valid dmgr hostname
#-OPT PROF_dmgrHost=

###############################################################################
# Deployment Manager Port
#
# Please specify the SOAP port of the deployment manager.
# Valid values: a valid port number
#-OPT PROF_dmgrPort=


###############################################################################
# Deployment Manager Admin User Name
#
# Please specify an administrative user name that can be authenticated, if the administrative security on the
# deployment manager is enabled.
# Valid values: a valid deployment manager admin userName
#-OPT PROF_dmgrAdminUserName=

###############################################################################
# Deployment Manager Admin Password
#
# Please specify an password that can be authenticated, if the administrative security on the
# deployment manager is enabled.
# Valid values: a valid deployment manager password
#-OPT PROF_dmgrAdminPassword=

###############################################################################
#
# 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
#
#-OPT PROF_hostName=

################################################################################
#
# Node name
#
# Please specify the node name for the Application Server. Node name under one cell
# has to be unique.
# Valid Values: a string with valid characters
#
#-OPT PROF_nodeName=
################################################################################
#
# Cell name
#
# Please specify the cell name for the profile to be created.
# Valid Values: a string with valid characters
#
# -OPT PROF_cellName=
################################################################################
#
# Server name
#
# Please UNcomment the following and specify the server name for the Application Server.
# Server name under one node has to be unique.
# Valid Values: a string with valid characters
#
#-OPT PROF_serverName=

################################################################################
# Omit Action
#
# Use this option to omit the config action specified
# Valid values: name of a config action
#-OPT PROF_omitAction=

################################################################################
# if profileType="cell", you may use the following profile creation options:
################################################################################
################################################################################
#
# Deployment Manager Profile name
#
# Specify the name of the profile for the deployment manager. The profile
# name must be unique for this WebSphere Application Server installation.
# Valid Values: a string with valid characters
#
#-OPT PROF_dmgrProfileName=
################################################################################
#
# Application Server 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 string with valid characters
#
#-OPT PROF_appServerProfileName=

################################################################################
#
# Profile path
#
# Specify a valid directory to contain the files that define the run-time environment,
# such as commands,configuration files, and log files. If the directory contains
# spaces, enclose it in double-quotes as shown in the Windows example below.
```

```
#
# Valid Values: a valid path
# Note that spaces in the install location is only supported on Windows
# operating systems.
#
#-OPT PROF_profilePath=

###############################################################################
# Uncomment the following to make the profile a default profile.
# Valid Values: No value is required for this option.
# -OPT PROF_isDefault=

###############################################################################
#
# 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
#
#-OPT PROF_hostName=

###############################################################################
#
# Node name
#
# Please specify the node name for the deployment manager. Node name under one cell
# has to be unique.
# Valid Values: a string with valid characters
#
#-OPT PROF_nodeName=

###############################################################################
#
# Application Server Node name
#
# Please specify the node name for the Application Server. Node name under one cell
# has to be unique.
# Valid Values: a string with valid characters
#
#-OPT PROF_appServerNodeName=
###############################################################################
#
# Cell name
#
# Please specify the cell name for the profile to be created
# Valid Values: a string with valid characters
#
# -OPT PROF_cellName=
###############################################################################
#
# Server name
#
# Please UNcomment the following and specify the server name for the Application Server.
# Server name under one node has to be unique.
# Valid Values: a string with valid characters
#
#-OPT PROF_serverName=

###############################################################################
# Starting Port
#
# Please specify the number to start with when assigning port values
# Valid values: integer port value
#-OPT PROF_startingPort=

###############################################################################
```

```
# Port File
#
# Please specify the path to a property file containing the desired port values
# Valid values: valid file path
#-OPT PROF_portsFile=

################################################################################
# Default ports
#
# Uncomment the following to use the WAS base ports
# Valid values: No value is required for this option
#-OPT PROF_defaultPorts=

################################################################################
# Validate Ports
#
# Uncomment the following to validates selected ports are not in use
# Valid values: No value is required for this option
#-OPT PROF_validatePorts=

################################################################################
# WebServer Check
#
# Please specify whether you wish to set the web server definition
# Valid values: true or false
#-OPT PROF_webServerCheck=

################################################################################
# WebServer Type
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the type of web server you are creating
# Valid values: IHS | IIS | SUNJAVASYSTEM | DOMINO | APACHE | HTTPSERVER_ZOS
#-OPT PROF_webServerType=

################################################################################
# WebServer OS
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the operating system of the system where the web server is
# Valid values: linux | windows | aix | hp | solaris | os390 | os400
#-OPT PROF_webServerOS=

################################################################################
# WebServer Name
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the name of the web server
# Valid values: a string with valid characters
#-OPT PROF_webServerName=

################################################################################
# WebServer Hostname
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the host name of the system with the web server
# Valid values: a valid hostname
#-OPT PROF_webServerHostname=

################################################################################
# WebServer Port
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the port that the web server can be accessed from
# Valid values: a valid port number
#-OPT PROF_webServerPort=
```

```
###########################################################################
# WebServer Install Path
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the installation path of the web server (local or remote)
# Valid values: a valid directory path
#-OPT PROF_webServerInstallPath=

###########################################################################
# WebServer Plugin Path
#
# *Uncomment the following ONLY if PROF_webServerCheck="true"
# Please specify the path to the plugins that will be used by this web server
# Valid values: a valid directory path
#-OPT PROF_webServerPluginPath=

###########################################################################
# Omit Action
#
# Use this option to omit the config action specified
# Valid values: name of a config action
#-OPT PROF_omitAction=

###########################################################################
# Node Omit Action
#
# Use this option to omit the config action for the cell node
# Valid values: name of a config action
#-OPT PROF_nodeOmitAction=


###########################################################################
# 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 fil
#
# 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
#
#
#
# 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
#      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 va
```

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

Options for creating profiles vary according to the profile that you are creating:

- Cell
- Deployment manager
- Stand-alone application server
- Custom
- None

Option descriptions

- The response file is in English and is intended to be copied and edited.
- Edit this file directly with your flat file editor of choice.
- All lines preceded by a hash mark (#) are comments.
- The file must exist to perform a silent installation. The installation program reads this file to determine installation option values when you install silently.
- Save the file in a location that you can identify when you specify the fully qualified path as part of the installation command.
- If you do not specify a value for a property, the default value is used. Note that for the silentInstallLicenseAcceptance option, the default value of false prevents the installation from running.
- Avoid using the following reserved folder names as values:

   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

Parameter	Valid values	Default value	Description
silentInstallLicenseAcceptance	true, false	false	Specifies whether you accept the terms of the license agreement.
disableOSPrereqChecking	true, false	commented is false	Disables operating system prerequisite checking. If a prerequisites check problem occurs, the installation stops when prerequisite checking is on.
installType	installNew, addFeature	installNew	Specifies the type of installation to perform
createProfile	true, false	false	Specifies whether to create a profile
feature	samplesSelected, noFeature	samplesSelected	Specifies whether to install application server samples
installLocation	A valid absolute file path	/QIBM/ProdData/ WebSphere/AppServer/ V61/ND	Specifies the desired install location of the product
defaultProfileLocation	A valid absolute file path	/QIBM/UserData/ WebSphere/AppServer/ V61/ND	Specifies the desired profile install location
allowOverrideProfileLocation	true, false	commented, which means false	Specifies whether to allow a user to override the default location for installing a profile.

Parameter	Valid values	Default value	Description
profileType	none, standAlone, cell, dmgr, custom	cell	Specifies whether to create a profile
PROF_enableAdminSecurity	true, false	false	Specifies whether to enable administrative security
PROF_adminUserName	A valid user name	ADMIN_USER_NAME	Specifies the login user name if security is enabled
PROF_adminPassword	A valid password	ADMIN_PASSWORD	Specifies the login password if security is enabled

Next: Go to "Installing the WebSphere Application Server group PTF" on page 58 to continue the installation.

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 Network Deployment.

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 Network Deployment products or components, of course, require multiple locations.

app_server_root - the install_root for WebSphere Application Server
> The default installation root directory for WebSphere Application Server Network Deployment is the /QIBM/ProdData/WebSphere/AppServer/V61/ND directory.

profile_root
> The default directory for a profile named *profile_name* for WebSphere Application Server Network Deployment is the /QIBM/UserData/WebSphere/AppServer/V61/ND/profiles/*profile_name* directory.

app_server_user_data_root - the user_data_root for WebSphere Application Server
> The default user data directory for WebSphere Application Server Network Deployment is the /QIBM/UserData/WebSphere/AppServer/V61/ND directory.

plugins_root
> The default installation root directory for Web server plug-ins is the /QIBM/ProdData/WebSphere/Plugins/V61/webserver directory.

plugins_user_data_root
> The default Web server plug-ins user data root is the /QIBM/UserData/WebSphere/Plugins/V61/webserver directory.

plugins_profile_root
> The default Web server plug-ins profile root is the /QIBM/UserData/WebSphere/Plugins/V61/webserver/profiles/*profile_name* directory.

app_client_root
> The default installation root directory for the J2EE WebSphere Application Client is the /QIBM/ProdData/WebSphere/AppClient/V61/client directory.

app_client_user_data_root
> The default J2EE WebSphere Application Client user data root is the /QIBM/UserData/WebSphere/AppClient/V61/client directory.

app_client_profile_root

The default J2EE WebSphere Application Client profile root is the /QIBM/UserData/WebSphere/ AppClient/V61/client/profiles/*profile_name* directory.

web_server_root

The default web server path is /www/*web_server_name*.

shared_product_library

The shared product library, which contains all of the objects shared by all Version 6.1 installations on the system, is QWAS61. This library contains objects such as the product definition, the subsystem description, the job description, and the job queue.

product_library

The product library, which contains program and service program objects (similar to .exe, .dll, .so objects for Windows, Linux, and UNIX operating system platforms), is: QWAS61*x* where *x* is A, B, C, ... For the default installation, the value is QWAS61A.

product_lib

The product library that contains the service program objects for the web server plugins. For the default Web Server Plugins install, this is QWAS61A. If you install the Web Server Plugins multiple times, the product_lib is QWAS61c, where *c* is B, C, D, ... The plugins_install_root/properties/ product.properties contains the value for the product library..

cip_app_server_root

The default installation root directory is the /QIBM/ProdData/WebSphere/AppServer/V61/ND/cip/ *cip_uid* directory for a customized installation package (CIP) produced by the Installation Factory.

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

cip_user_data_root

The default user data root directory is the /QIBM/UserData/WebSphere/AppServer/V61/ND/cip/ *cip_uid* directory for a customized installation package (CIP) produced by the Installation Factory.

cip_profile_root

The default profile root directory is the /QIBM/UserData/WebSphere/AppServer/V61/ND/cip/*cip_uid*/ profiles/*profile_name* directory for a customized installation package (CIP) produced by the Installation Factory.

Updating ports in an existing profile

Use the updatePorts.ant script to change ports in an installed profile.

Each profile template has its own updatePorts.ant script.

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.

- Assign nonconflicting ports to profile *myprofile*.

  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 CCSID 819 (ASCII), to assign nonconflicting port values to the application server profile.

For this example, assume that you create the following /TMP/was_props/appserver.props properties file.

```
WAS_HOME=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>
was.install.root=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>
profileName=myprofile
profilePath=/QIBM/UserData/WebSphere/AppServer/V61/<edition>/profiles/myprofile
templatePath=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>/profileTemplates/default
nodeName=MYISERIES_myprofile
cellName=MYISERIES_myprofile
hostName=MYISERIES.mycompany.com
```

2. Start a Qshell session

   STRQSH

3. Change directories to the /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/bin directory.

   cd /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/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 -propertyfile /TMP/was_props/appserver.props -file
   /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/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.

- 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 CCSID 819 (ASCII), to assign default port values to the application server profile.

     For this example, assume that you create the following /TMP/was_props/appserver.props properties file.

     ```
     WAS_HOME=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>
     was.install.root=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>
     profileName=AppSrv02
     profilePath=/QIBM/UserData/WebSphere/AppServer/V61/<edition>/profiles/AppSvr02
     templatePath=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>/profileTemplates/default
     nodeName=MYISERIES_AppSvr02
     cellName=MYISERIES_AppSvr02
     hostName=MYISERIES.mycompany.com
     defaultPorts=true
     ```

  2. Start a Qshell session

     STRQSH

  3. Change directories to the /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/bin directory.

     cd /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/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 -propertyfile /TMP/was_props/appserver.props -file
/QIBM/ProdData/WebSphere/AppServer/V61/<edition>/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 \serverindex.xml file. for your profile. Issue the netstat *cnn command from the i5/OS command line to see all ports in use on the machine.

- Assign ports starting at 20050 to the AppSrv03 profile.

  On i5/OS, the ANT script assigns ports starting at 20050 and does not attempt to determine port conflicts. The startingPort=20050 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 CCSID 819 (ASCII), to assign default port values to the application server profile.

     For this example, assume that you create the following /TMP/was_props/appserver.props properties file.

     ```
     WAS_HOME=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>
     was.install.root=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>
     profileName=AppSrv03
     profilePath=/QIBM/UserData/WebSphere/AppServer/V61/<edition>/profiles/AppSvr03
     templatePath=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>/profileTemplates/default
     nodeName=MYISERIES_AppSvr03
     cellName=MYISERIES_AppSvr03
     hostName=MYISERIES.mycompany.com
     startingPort=20050
     ```

  2. Start a Qshell session

     ```
     STRQSH
     ```

  3. Change directories to the /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/bin directory.

     ```
     cd /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/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 -propertyfile /TMP/was_props/appserver.props -file
     /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/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 port values are the same each time because the ANT script assigns port values starting from the startingPort number (port 20050 in this case).

- Use a port definition property file to assign ports to the AppSrv04 profile.

  The portsFile=/opt/was/portdefs.our_appsrv_ex.props special argument allows you to assign specific ports for your profile. Port conflict resolution is not done for the specified ports. 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 CCSID 819 (ASCII), to assign nonconflicting port values to the application server profile.

     Assume that you create the following /TMP/was_props/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=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>
was.install.root=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>
profileName=AppSrv04
profilePath=/QIBM/UserData/WebSphere/AppServer/V61/<edition>/profiles/AppSvr04
templatePath=/QIBM/ProdData/WebSphere/AppServer/V61/<edition>/profileTemplates/default
nodeName=MYISERIES_AppSvr04
cellName=MYISERIES_AppSvr04
hostName=MYISERIES.mycompany.com
portsFile=/TMP/was_props/portdefs.our_appsrv_ex.props
```

2. Start a Qshell session

   `STRQSH`

3. Change directories to the /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/bin directory.

   `cd /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/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 -propertyfile /TMP/was_props/appserver.props -file
   /QIBM/ProdData/WebSphere/AppServer/V61/<edition>/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.

Start or restart your server to use the new ports.

Related information

Installing WebSphere Application Server Network Deployment 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.

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 according to the hardware platform. See Chapter 5, "Preparing the operating system for installation," on page 25 for information about required disk space and how to prepare your operating system for installation:

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

Installing the WebSphere Application Server group PTF

Install the WebSphere Application Server group PTF to install the current fix level of the product.

Install the WebSphere Application Server product before using this procedure. See Chapter 6, "Task overview: installing," on page 33 for more information.

Fixes for the WebSphere Application Server product are shipped as group PTFs for iSeries.

Use this procedure to load and apply the latest WebSphere Application Server Version 6.1 for i5/OS group PTF before starting WebSphere Application Server for the first time.

The group PTF includes WebSphere Application Server PTFs that bring the product up to the latest service level for WebSphere Application Server Version 6.1 for i5/OS, as well as the latest IBM DB2 Universal Database, IBM Developer Kit for Java, and IBM HTTP Server group PTFs.

This group PTF also contains miscellaneous PTFs for IBM Developer Kit for Java, DB2 Universal Database for iSeries, and IBM HTTP Server that are not included in other group PTFs or cumulative PTF packages but must be installed.

See the PTFs page on the WebSphere Application Server Web site to determine the group PTF that you must order and install for your WebSphere Application Server edition and for your OS/400 or i5/OS release level.

Install all product prerequisites before you install the group PTF package. Otherwise, WebSphere Application Server might fail as it starts.

These instructions describe how to install the WebSphere Application Server Version 6.1 for i5/OS group PTF.

These instructions assume that you are ready to load and apply all PTFs included in the group PTF. Because some of these PTFs might require a restart of your iSeries server, the instructions include steps for placing the server in a restricted state and doing the IPL of the server.

If it is not convenient to restart your server, specify that the PTFs that require an IPL be applied at the next normal IPL of the server. However, do not attempt to start or use WebSphere Application Server until all of the PTFs have been successfully loaded and applied and the system has performed an IPL.

1. Verify that all of the prerequisite software is installed.
2. Place the WebSphere for iSeries group PTF CD-ROM into the CD-ROM drive on your iSeries server.
3. Sign on to your server and verify that your user profile has the *ALLOBJ and *SECADM special authorities.
4. Enter this command to bring your system into a restricted state:

   ENDSBS SBS(*ALL)

5. Enter the following command from the CL command line when the system is in a restricted state:

   GO PTF

6. Select option 8 (Install program temporary fix package) from the menu.
7. Specify the following parameter values and press **Enter**:
   - **Device:** Specify the device name of your CD-ROM drive, for example, OPT01.
   - **Automatic IPL:** Y
   - **PTF type:** 1 (All PTFs)

   If it is not convenient to restart your server, specify **No** for **Automatic IPL**. Any PTFs that require an IPL are applied at the next normal IPL of the server. However, do not attempt to start or use WebSphere Application Server until all of the PTFs have been successfully loaded and applied.

   After all of the PTFs are installed, your iSeries server restarts unless you specify **No** for **Automatic IPL**.

```
                Install Options for Program Temporary Fixes
                                                System: your.server
 Type choices, press Enter.

 Device . . . . . . . . . . . . .     OPT01    Name, *SERVICE
 Automatic IPL . . . . . . . . . .    Y        Y=Yes
                                               N=No
 Restart type . . . . . . . . . .     *SYS     *SYS, *FULL
 PTF type . . . . . . . . . . . .     1            1=All PTFs
                                               2=HIPER PTFs and HIPER
                                                   LIC fixes only
                                               3=HIPER LIC fixes only
                                               4=Refreshed Licensed Internal Code
 Other options . . . . . . . . . .    N        Y=Yes
                                               N=No

 F3=Exit              F12=Cancel
```

8. After you have installed the group PTF, see the product release notes for information about the release, including a description of known problems and workarounds. See "IBM WebSphere Application Server release notes" on page 21.

Installing the WebSphere Application Server group PTF results in a fully updated installation. At that point, you can set up the initial product configuration.

You have completed step 2 of 5.

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.
- IBM e-server Support: Fix Central

  A Web facility for downloading fixes for hardware and operating systems, including z/OS and i5/OS.
- Adobe Acrobat Web site

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

Chapter 7. Configuring the product after installation

Configure your iSeries server, WebSphere Application Server Network Deployment, and your HTTP server so that WebSphere Application Server runs correctly.

Creating the initial configuration for WebSphere Application Server involves configuring the iSeries server, the WebSphere Application Server product, and the HTTP server.

1. Configure software license information, as described in "Configuring software license information."

   Set the usage limit from the Proof of Entitlement (POE) or invoice.

2. Configure SQL jobs, as described in "Configuring SQL jobs" on page 64.

   Set the maximum number of jobs that are allowed for the SQL server jobs.

3. Configure TCP/IP, as described in "Configuring TCP/IP" on page 64.

   Configure TCP/IP for WebSphere Application Server.

4. Configure an HTTP server instance, as described in "Configuring an HTTP server instance" on page 66.

   Create an HTTP server instance and configure it to use WebSphere Application Server to serve JavaServer Pages (JSP) files and servlets.

The result of performing each of the procedures listed in this topic is an initial configuration for WebSphere Application Server.

Go to "Configuring software license information" to continue the installation.

Configuring software license information

Set the usage limit from the Proof of Entitlement (POE) or invoice before you start WebSphere Application Server for the first time.

This topic assumes that you have installed the WebSphere Application Server for iSeries product and that you have installed the WebSphere Application Server group PTF.

See Chapter 6, "Task overview: installing," on page 33 to install the product and the group PTF.

Before you set the usage limit from a POE or invoice, verify that your user profile has the *ALLOBJ and *SECADM special authorities.

Use the Work with License Information menu to set the usage limit from a POE or invoice.

1. Access the Work with License Information menu.

   On a Control Language (CL) command line, enter the Work with License Information (WRKLICINF) command.

2. On the Work with License Information menu, press **F11 (Display Usage Information)**.

3. Move the cursor to the line that contains the product 5733W61 and the feature code for the product that you installed.

   The feature code is 5103 for WebSphere Application Server Network Deployment V6.1.

4. Select option **2 (Change)**, then press **Enter**.

   The Change License Information display is shown.

5. Specify the usage limit shown on the POE or invoice for the Usage limit prompt (USGLMT).

   Do not specify a number that exceeds the purchased limit because doing so violates the IBM purchase agreement.

6. On the Change License Information display, press **F9 (All parameters)**.

7. Specify ***USGLMT** for the Threshold (THRESHOLD) prompt, then press **Enter**.

    Do not leave the threshold set to zero.

The usage limit changes to the value that you specified.

If the following message is displayed, type **G**.

```
CPA9E1B: Usage limit increase must be authorized.
   Press help before replying (C G)
```

After you respond to the CPA9E1B message, you must respond to the same message on the QSYSOPR message queue. Run the DSPMSG QSYSOPR command to see the message in the QSYSOPR message queue. When the message is displayed, type **G**.

Go to "Configuring SQL jobs" to continue the installation.

Configuring SQL jobs

Choose either of two methods to change the maximum number of SQL server jobs allowed. Each Java Database Connector (JDBC) connection object requires one SQL server job.

If you are using the JDBC driver in the IBM Developer Kit for Java to access the OS/400 or i5/OS database from your applications, you might need to change the maximum number of jobs allowed.

This procedure describes two methods for setting the number of SQL server jobs allowed to an adequate amount to handle the workload.

- Set the maximum number of jobs to ***NOMAX**.

    Generally, it is easier to account for the number of jobs you need by setting the maximum number of jobs to ***NOMAX**. Use the Change Prestart Job Entry (CHGPJE) command to change the prestart job entry for the SQL server jobs.

    ```
    CHGPJE SBSD(QSYSWRK) PGM(QSQSRVR) MAXJOBS(*NOMAX)
    ```

- Set MAXJOBS to a large enough integer value for your applications to handle SQL server jobs.

    If *NOMAX is not an appropriate setting for your iSeries environment, specify a large enough integer value for the MAXJOBS parameter so that your applications have enough SQL server jobs to handle the maximum number of JDBC connections required at any given time by your applications.

After the maximum number of jobs is successfully changed, the following message is displayed:

```
Program QSQSRVR found in library QSYS.
Active subsystem description QSYSWRK in QSYS changed.
```

Go to "Configuring TCP/IP" to continue the installation.

Configuring TCP/IP

Configure TCP/IP to run WebSphere Application Server on iSeries.

Before you configure TCP/IP settings, ensure that your user profile has *ALLOBJ and *SECADM special authorities.

Use the Configure TCP/IP menu to access options that enable you to configure TCP/IP.

1. On a Control Language (CL) command line, enter the Configure TCP/IP (CFGTCP) command.
2. Verify that your TCP/IP address and LOOPBACK interface are active.
    a. On the Configure TCP/IP menu, select option **1 (Work with TCP/IP interfaces)**.
    b. Press **F11** to display the interface status.

c. Verify that the TCP/IP address is active. If it is not active, specify option **9 (Start)**.

d. Verify that the LOOPBACK interface at IP address 127.0.0.1 is active.

If 127.0.0.1 is not active, specify option **9 (Start)** next to the entry with IP address 127.0.0.1, then press **Enter**.

e. Press **F3** to return to the Configure TCP/IP menu.

3. Verify your TCP/IP host name.

a. On the Configure TCP/IP menu, select option **12 (Change TCP/IP domain information)**.

b. Verify that the TCP/IP host name is correct.

If the host name is not correct, type the correct host name in the Host name field, then press **Enter**. If the host name is correct, press **F3** to return to the Configure TCP/IP menu.

The host name cannot be *NONE.

c. Press **F3** to return to the command line.

4. Start TCP/IP.

If TCP/IP is not started or if you do not know if TCP/IP is started, enter the Start TCP/IP (STRTCP) command on the CL command line.

5. Verify that the server IP address is associated with the host name.

Issue the following command on the CL command line:

```
ping host_name
```

The following sample output is from a successful ping command:

```
Verifying connection to host system MYSYSTEM.MYCOMPANY.COM at address
   1.2.3.4.
  PING reply 1 from 1.2.3.4 took 0 ms. 256 bytes. TTL 64.
  PING reply 2 from 1.2.3.4 took 0 ms. 256 bytes. TTL 64.
  PING reply 3 from 1.2.3.4 took 0 ms. 256 bytes. TTL 64.
  PING reply 4 from 1.2.3.4 took 0 ms. 256 bytes. TTL 64.
  PING reply 5 from 1.2.3.4 took 0 ms. 256 bytes. TTL 64.
  Round-trip (in milliseconds) min/avg/max = 0/0/0
  Connection verification statistics: 5 of 5 successful (100 %).
```

If the ping fails, follow these steps:

a. Enter the Configure TCP/IP (CFGTCP) command on the CL command line.

b. On the Configure TCP/IP menu, select Option **10 (Work with TCP/IP host table entries)**.

c. Configure the iSeries system short name to the active IP address that was listed in step 2:

  1) Select Option **2 (Change)** and type your IP address in the Internet address field, then press **Enter**.

  2) In the Change TCP/IP Host Table Entry (CHGTCPHTE) menu, edit the **Hostnames: Name** field to match the short name of your iSeries server, then press **Enter**.

  Important: The *ADMIN instance of the HTTP server does not start without a host name.

6. Verify your system configuration.

The IPTest Java utility is shipped with the WebSphere Application Server product and can be used to debug TCP/IP configuration problems. To run this utility, run the IPTest command from the QShell command line.

The command file is in the *app_server_root*/bin directory:

```
app_server_root/bin/IPTest
```

If TCP/IP has been configured successfully, the IPTest command output resembles the following example:

```
Local Address: 12.34.56.78
Local Name: MYSYSTEM.MYCOMPANY.COM
All addresses for MYSYSTEM.MYCOMPANY.COM:
12.34.56.78
```

The *Local Address* is the IP address for your iSeries server. This value must not be blank and must match the IP address verified in step 2. The *Local Name* is the domain-qualified host name for your iSeries server. If this value is blank, see the instructions in step 2. Press **F3** to exit.

If a host name has not been configured for your iSeries server, you receive an UnknownHostException message.

Go to "Configuring an HTTP server instance" to continue the installation.

Configuring an HTTP server instance

Configure your IBM HTTP Server or Lotus Notes Domino HTTP Server to use either Web server with WebSphere Application Server for iSeries.

Decide which HTTP Server you want to use to serve requests to WebSphere Application Server. The IBM HTTP Server (original) is not supported for WebSphere Application Server. However, you can use the i5/OS IBM HTTP Server (Powered by Apache) with your Application Server. Or, you can configure a remote HTTP server residing on a supported platform to route requests to WebSphere Application Server running on the iSeries server.

An HTTP server instance is not required to install WebSphere Application Server. However, it is recommended to support requests for servlets and JavaServer Pages (JSP) resources managed by WebSphere Application Server.

The following topics describe how to configure HTTP servers for the iSeries server.
- Configure IBM HTTP Server for iSeries, as described in "Configuring IBM HTTP Server for iSeries."
- Configure Lotus Domino HTTP Server, as described in "Configuring Lotus Domino HTTP Server" on page 68.

Select the HTTP Server you want to use to serve requests to WebSphere Application Server:
- Go to "Configuring IBM HTTP Server for iSeries" if you plan to use IBM HTTP Server.
- Go to "Configuring Lotus Domino HTTP Server" on page 68 if you plan to use Lotus Domino HTTP Server.

Configuring IBM HTTP Server for iSeries

You must configure IBM HTTP Server for iSeries before using the Web server with WebSphere Application Server for iSeries.

An HTTP server instance is not required to install WebSphere Application Server. However, it is recommended to support requests for servlets and JavaServer Pages (JSP) resources managed by WebSphere Application Server.

Before you can use the IBM HTTP Server for iSeries, you must configure a new instance of IBM HTTP Server to communicate with WebSphere Application Server.
- Start the *ADMIN server instance of IBM HTTP Server to use the IBM HTTP Server for iSeries configuration and administration forms.

  See "Starting the *ADMIN instance of IBM HTTP Server" on page 67 for more information.
- Create an HTTP server instance and configure it to work with WebSphere Application Server.

  See "Creating and configuring an HTTP server instance" on page 67 for more information.

Go to "Starting the *ADMIN instance of IBM HTTP Server" on page 67 to continue the installation.

Starting the *ADMIN instance of IBM HTTP Server

This topic describes how to start the *Admin instance of IBM HTTP Server.

This article assumes that you have decided to use the IBM HTTP Server for iSeries to serve requests to WebSphere Application Server.

Start the *ADMIN server instance of IBM HTTP Server to create, change, or display an IBM HTTP Server instance configuration by using the IBM HTTP Server for iSeries Configuration and Administration forms.

You can start the *ADMIN server instance from a Control Language (CL) command line or from iSeries Navigator.

- Start the *ADMIN server instance from a CL command line.

  Type the following command and press **Enter** to start the *ADMIN instance from the CL command line:

  ```
  STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
  ```

- Start the *ADMIN server instance from the iSeries Navigator.

  The iSeries Navigator is the graphical interface to the iSeries server. The iSeries Navigator is part of the iSeries Access for Windows product.

  For more information about iSeries Access for Windows and iSeries Navigator, see the iSeries Access Family Web site.

  To start the *ADMIN instance from iSeries Navigator:

  1. Start iSeries Navigator.
  2. Double-click your iSeries server.
  3. Click **Network > Servers > TCP/IP**.
  4. Right-click **HTTP Administration** in the right frame.
  5. Click **Start**.

  Do not select the **Start Instance** action from the menu. If the server is already started, the **Start** action is disabled on the menu.

Go to "Creating and configuring an HTTP server instance" to continue the installation.

Creating and configuring an HTTP server instance

This topic describes how to create and configure an IBM HTTP Server instance.

This article assumes that you have started the *Admin instance of IBM HTTP Server. See "Starting the *ADMIN instance of IBM HTTP Server" for more information.

Use this procedure to create and configure an instance of IBM HTTP Server.

If you have an existing instance that you want to use with WebSphere Application Server, skip directly to the configuration step.

1. Create a new instance of IBM HTTP Server.

   To create a new instance of the IBM HTTP Server (powered by Apache) with a basic configuration, use the IBM HTTP Server for iSeries Configuration and Administration forms.

   Perform the following steps:

   a. Using a Web browser, go to the IBM HTTP Server Configuration and Administration forms.

      1) Open this URL in your browser:

         ```
         http://your.server.name:2001/
         ```

         The *your.server.name* variable is the name of your iSeries server.

      2) Enter a valid user ID and password for your iSeries server.

      3) Select **IBM HTTP Server for iSeries** at the iSeries Tasks page.

    b. The HTTP Server for iSeries page is displayed.

       1) To create a new HTTP server, click the **Setup** tab.

       2) Expand **Common Tasks and Wizards**.

       3) Click **Create New HTTP Server**.

    c. Select **HTTP server (powered by Apache)**, then click **Next**.

    d. In the right frame, type a name for the HTTP server instance and an optional description, then click **Next**.

       The name appears in the HTTPSVR subsystem when the job is running.

       Write down the HTTP server instance name for use in later steps.

    e. Type the server root, then click **Next**.

       You can use default values or you can specify another server root or document root directory.

    f.   Set the document root in the next panel, then click **Next**.

    g. Select the IP address and port.

       1) Select **All addresses** in the **IP address** field.

       2) Accept the default port, 80, for the port number that the HTTP Server instance uses to process requests or type a unique port number, then click **Next**.

       If you specify a port other than the default port, you must configure your virtual host Domain Name System (DNS) aliases in the administrative console to reflect your port number.

       Write down the internal HTTP port number for use in later steps.

    h. Select a logging option.

       It is recommended that you select **Yes**. Logs are stored in the /*server_root*/logs directory, where *server_root* is the server root that you set earlier.

    i.   Specify how long you want to keep the error and access log files, then click **Next**.

    j.   Review your settings. To create the HTTP server instance, click **Finish**. To make changes, click **Back**.

    k. After you click **Finish**, the configuration is created. The Manage Apache Server page is displayed.

2. Configure the HTTP server instance

   After you create the HTTP server instance, configure the instance so that it works with WebSphere Application Server.

    a. Click the **Manage** tab. In the Server list, select the HTTP server instance that you want to manage.

    b. With your HTTP server selected, expand **Server Properties** in the left frame. Click **WebSphere Application Server**. Select the version of WebSphere Application Server to configure, and select the default WebSphere Application Server profile.

    c. Click **OK** to write the changes to the configuration file and return to the main configuration page.

You have completed step 3 of 5.

Configuring Lotus Domino HTTP Server

You must update the Lotus Domino Web server configuration before you can use the Web server with WebSphere Application Server.

Lotus Domino for iSeries, Version 6.5.1, is supported for WebSphere Application Server.

Refer to the Administration Help for your version of Domino for information about installing and setting up Domino servers on i5/OS.

The help database is shipped with Lotus Domino and is also available in the Notes.net Documentation Library.

Configure each instance of a Domino server on your iSeries server.
1. Define your Web server in the application server configuration.
   a. Start Qshell. On the CL command line, enter STRQSH.
   b. Move to the directory where the configuration resides.

      At the Qshell prompt, run the command:

      ```
      cd app_server_root/bin
      ```
   c. Specify a name and a port for your Domino Server.

      At the Qshell prompt, run the command:

      ```
      configureOs400WebServerDefinition -webserver.name yourDominoServer -webserver.type DOMINO -webserver.port
      port
      ```

      The *yourDominoServer* variable is the name of your Domino server. The *port* variable is the HTTP port for your Domino Server.

      To use a non-default WebSphere Application Server profile, specify the -profileName *myProfile* parameter when you run the configureOs400WebserverDefinition script.
   d. Generate the plugin-cfg.xml file. From the Qshell prompt, run this command:

      ```
      GenPluginCfg -webserver.name yourDominoServer
      ```

      If you specified a profile name in the previous step, specify the -profileName *myProfile* parameter when you run the GenPluginCfg script.
   e. Write down the location of the plugin-cfg.xml file. You need this information in the next step.
2. Update the Domino server notes.ini file.
   a. Enter the Work with Domino Servers (WRKDOMSVR) command on the CL command line.
   b. For the appropriate Domino server instance, specify option 13 (**Edit NOTES.INI**) to edit the server notes.ini file.
   c. Add this line to the end of the notes.ini file:

      ```
      WebSphereInit=plugin-file
      ```

      The *plugin-file* variable is the fully-qualified path of the plugin-cfg.xml file that you generated in the previous step.
   d. Press **F3** twice to save and exit the notes.ini file
3. Start the Domino server.
   a. Verify that your user profile has *JOBCTL special authority.
   b. On the CL command line, enter the strdomsvr command.
   c. Press **F4** to have the system prompt you for the server name.
   d. Type the server name in the field provided.

      If you are not sure of the name, press **F4** to display a list of Domino servers on your iSeries server.
   e. Press **Enter**.

   While the system is starting the Domino server, you see a message indicating that the server is starting. If the message appears for more than 1 or 2 minutes, the server might be waiting for you to enter a password. To determine if the server is waiting for a password, use the WRKDOMCSL command to start a server console session for the server. You can enter the password in this console session.
4. Enable the WebSphere Application Server DSAPI filter.
   a. From a Lotus Notes client connected to the appropriate Domino server, edit the Domino document. The document is in the Domino server Domino Directory. The name of the file is names.nsf. For example, open your browser to http://*your.server.name*:*port*/names.nsf, where the *your.server.name* variable is the name of your iSeries server and the *port* variable is your Web server port.

Enter your Domino administrator user name and password. For additional techniques used to edit the Domino document, refer to the Domino documentation.

b. Within the server document, select the **Internet Protocols** tab and then the **HTTP** tab.

c. For **DSAPI filter file names**, type:

```
/QSYS.LIB/QWAS61.LIB/QSVTDOMINO.SRVPGM
```

Verify that you do not have a space before or after this command or the filter fails.

d. Save and exit the Domino server document.

To use the Lotus Domino Web server with WebSphere Application Server, you do not need to change the **Java servlet support** field in the Domino server document.

5. Stop and restart the Domino server HTTP task.

a. Enter the Work with Domino Servers (WRKDOMSVR) command on the CL command line.

b. For your Domino server instance, specify option 8 (**Work console**) to select the Domino server console.

c. From the Domino server console, enter the following command to stop the Domino server HTTP task.

```
tell http quit
```

d. From the Domino server console, enter the following command to start the Domino server HTTP task.

```
load http
```

You have completed step 3 of 5.

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 Network Deployment, for example, you must supply the administrative user ID and password before you can update the files.

Use the Update Installer program from a user profile with *ALLOBJ special authority.

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.
- 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 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.

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:

- JAR files in the lib directory
- Scripts in the bin directory
- Profile templates

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.

Updating cluster members

Apply the same maintenance packages to all of the WebSphere Application Server installations in a cluster. When all of the cluster members are not at the same service level, the following exception can occur:

```
DRSCacheApp    E DRSW0008E:
   Exception is: com.ibm.disthub.impl.jms.JMSWrappedException:
   {-1361012295|unknown|java.io.OptionalDataException|}
```

This error can cause memory replication to not function properly.

Important: See the release notes for your product for the latest information about the Update Installer.

The following procedure describes how to install a maintenance package.

1. Log on as a user profile with *ALLOBJ special authority.
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.

   Tip: Do not attempt to unzip or unpack the *.pak file.
5. Stop all processes that use the WebSphere Application Server product.

   Before installing or uninstalling interim fixes, fix packs, and refresh packs on a machine, stop all Java processes on the machine that use the WebSphere Application Server product.

   WebSphere Application Server processes include:
   - Application server processes
   - The nodeagent process on an application server node when the node is federated into a deployment manager cell
   - The dmgr process for the deployment manager server
6. 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 user has *ALLOBJ special authority.
7. Use the Update Installer to install the maintenance package.

   Install the maintenance package on the deployment manager installation before installing the maintenance package on each application server installation that you intend to update.

   Issue the following command to use the silent interface:

Table 3. Update installer command for installing in silent mode

Command example	Type of installation	Description
update -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.

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 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.

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.

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 following command uses a copy of the options file named myresponsefile.txt to provide installation option responses during a silent installation:

```
update -options responsefiles/myresponsefile.txt
```

There is no need to specify the -silent parameter as it is already defined in the update script.

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

Although applying maintenance to another product is possible, always use the Update installer wizard within 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
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:
- 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"
```

Updating the Update Installer for WebSphere Software

To get updates for the Update Installer for WebSphere Software, download the most current version from the support site and reinstall it.

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 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.

   Run the **uninstall** command in the *app_server_root*/bin directory.

2. Download the updated Update Installer files from the product Support site.

   For example, see Recommended Updates for WebSphere Application Server to locate the Update Installer download page.

3. Unpack the downloaded file to reveal the install program.

4. Install the new Update Installer.

   - For remote GUI installation, do the following:

     a. Open Windows Explorer and select your disc drive.

     b. Click the *downloaded_path*\UpdateInstaller\install.exe file to start the InstallShield for Multiplatforms (ISMP) program.

   - For local silent QSH installation, run the **INSTALL** command from Qshell.

     a. On a CL command line, run the **STRQSH** command to start the Qshell command shell.

     b. Issue the **INSTALL** command to start the installation program.

     ```
     cd downloaded_path/UpdateInstaller
     INSTALL -options path/responsefile
     ```

The Update Installer is installed under the root directory that you specified during installation.

See Chapter 8, "Installing maintenance packages," on page 71 for information about using the Update Installer to install maintenance packages.

Chapter 9. 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 Linux or UNIX system, cancel the installation, make the required changes, and restart the installation.

Restriction: Remote installation from a Windows workstation using a CIP is only supported when performing a scratch installation of a CIP with no interim fixes. In all other cases, you will need to apply the CIP locally on the iSeries machine.

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 79 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. Download and use the Installation Factory to create a customized installation package.

   See "Getting started with the Installation Factory" on page 79 for more information.

2. Prepare your operating platform for installation.

   See Chapter 5, "Preparing the operating system for installation," on page 25.

3. Install the Network Deployment product using the CIP.

   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.

   - Prompts you to create a cell profile, a deployment manager profile, an application server profile, or a custom profile.

     The *cell* profile is new for Version 6.1. A cell profile contains a deployment manager profile and a federated application server profile on the same machine or partition.

   Choose one of the following installation scenarios to continue the installation:

   - Perform a custom installation with the CIP Installation wizard.

     The custom installation lets you select features to install.

- Install maintenance packages and additional features with the CIP Installation wizard to increment an existing installation.

  The CIP Installation wizard can install maintenance to an existing product without installing features.
- Perform a silent installation with the CIP Installation wizard .

  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 installer program does not support the ISMP-console installation method at this time.

You can use a CIP to install IBM WebSphere Application Server Network Deployment 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 refresh pack.
3. Install the current fix pack.
4. Install a Java 2 Software Development Kit (SDK) fix pack.
5. Install one or more interim fixes as needed.
6. Create and configure application servers and other artifacts.
7. Deploy applications.

The Installation Factory simplifies the process by creating a single installation image, the customized installation package (CIP).
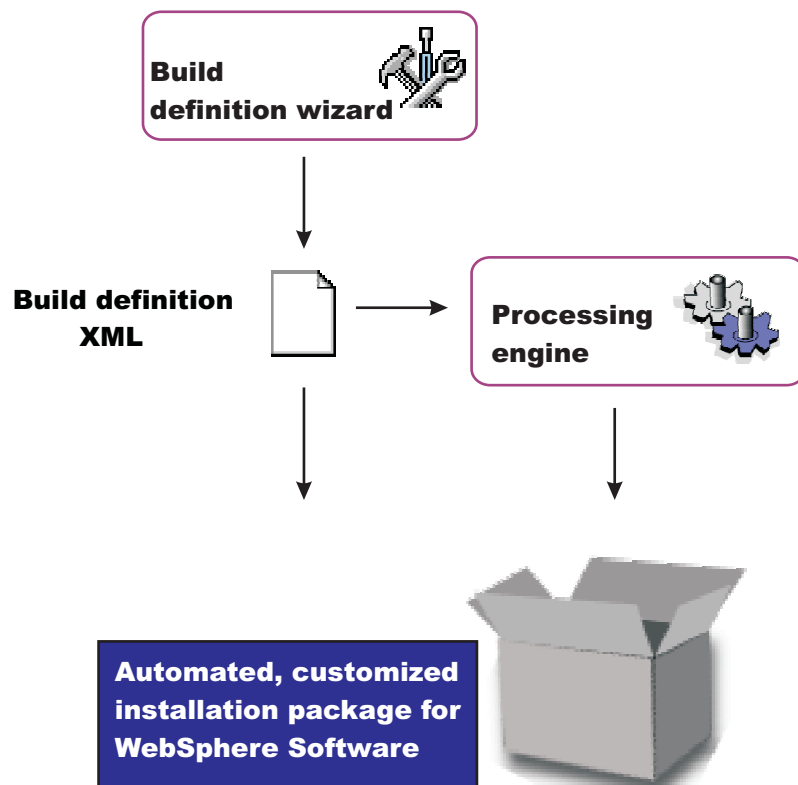
After creating the customized installation package, installing and configuring a WebSphere software product is a one-step process: install the customized installation package.

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, copy the Installation Factory code from the Supplements disc to your operating system.

  The setupif tool will help you to do this.

- 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 89 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 104 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.

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

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:

- `ifgui`

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.

Parameters

Supported arguments include:

-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 104 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 80) 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 108 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.

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 Refresh Pack -->
        <sourceMaintenanceInstallPackages installOrder="1" maintenanceType="refreshPack">
            <rootFolder>
                <whichFolderToUse>literalRootProvided</whichFolderToUse>
                <rootFolder>C:\WASImage\Maintenance\Windows\MaintPacks</rootFolder>
            </rootFolder>
            <relativeFolder>.</relativeFolder>
            <fileNamePattern isRegEx="false">6.1-WS-WAS-WinX32-RP0000001.pak</fileNamePattern>
        </sourceMaintenanceInstallPackages>

        <!-- 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>
```

```xml
        <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>
```

```xml
                    <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:

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.

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.
>
> 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.

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.

WebSphere Application Server products also provides 64-bit compatibility support for installing on 64-bit Linux kernels on zSeries platforms.

Sun Sparc

The Installation Factory ifcli tool runs on 32-bit Solaris 8 , 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 8, 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.

The processing engine reads the CIP location from the build definition file to determine where to store the CIP.

Build definition wizard

Build definition XML

Processing engine

Automated, customized installation package for WebSphere Software

Custom install package build location

/opt/ifactory/wasimages
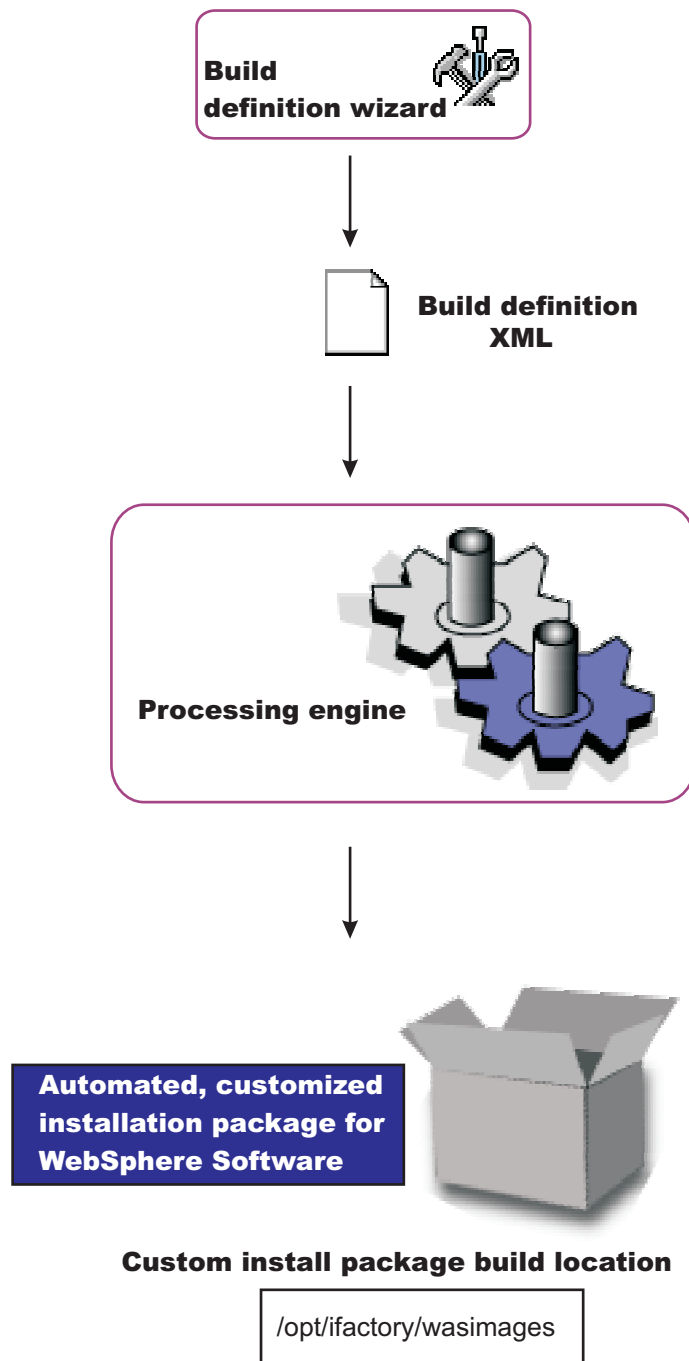
Browse button

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:
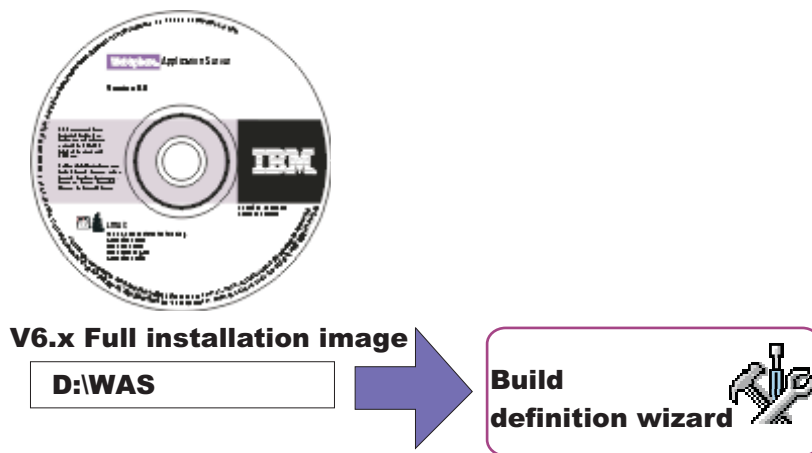
You can also specify the parent directory, such as /tmp if the image is in the /tmp/WAS directory, for example.

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 refresh packs and fix packs and install an interim fix. Or you can install one refresh pack, one fix pack, and five interim fixes.

Refresh pack compressed files and 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 `app_server_root\` `updateinstaller\maintenance\6.1-WS-WAS-WinX32-RP0000001.pak` file.

You can select only one refresh pack, fix pack, and SDK fix pack. Refresh packs and 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 refresh packs, fix packs, and interim fixes.

Refresh pack: A refresh pack includes fixes and minor new features, such as V6.1.1.

Refresh packs are cumulative, so V6.1.2 includes features and fixes that are contained in V6.1.2, as well as fix packs and interim fixes that are published for V6.1.1.

Check the list of delivered fixes in the refresh pack to determine which interim fixes must be reinstalled. If an interim fix is deleted, but the fix is not in the refresh pack, reinstall the interim fix.

Fix pack: A fix pack is a cumulative package of fixes, such as V6.1.2.1.

Fix packs install on top of a specific refresh pack, such as applying V6.1.2.2 to V6.1.2. Fix packs also install on top of a previous fix pack, such as applying V6.1.2.2 to V6.1.2.1. Fix packs are cumulative, so V6.1.2.2 includes all fixes in V6.1.2.1.

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, refresh pack, or fix pack where applicable. Interim fixes are validated by at least one customer prior to publish.
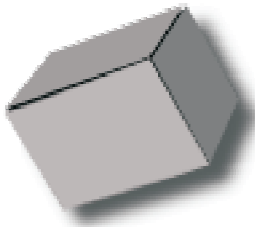
Refresh packs
Rp1

C:\WAS_downloads\name_of_refresh_pack_1_ZIP_file.pak
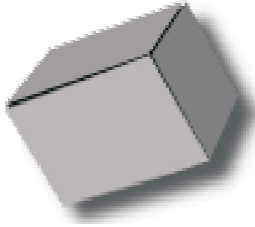
Fix packs
FP3

C:\WAS_downloads\name_of_fix_pack_3_ZIP_file.pak
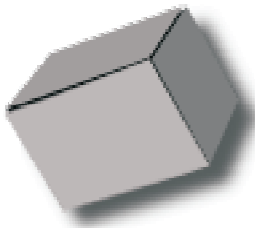
SDK, Java technology edition fix pack
SDK

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
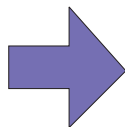
Build definition wizard

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)
- Linux and UNIX 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 111 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 batch files (*.bat)
- Linux and UNIX 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:
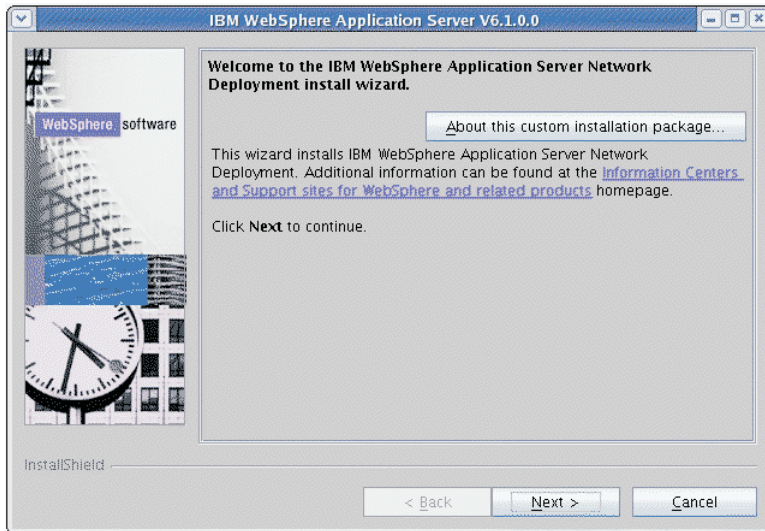
If the installer clicks **About this custom installation package**, a panel similar to the following example is displayed:
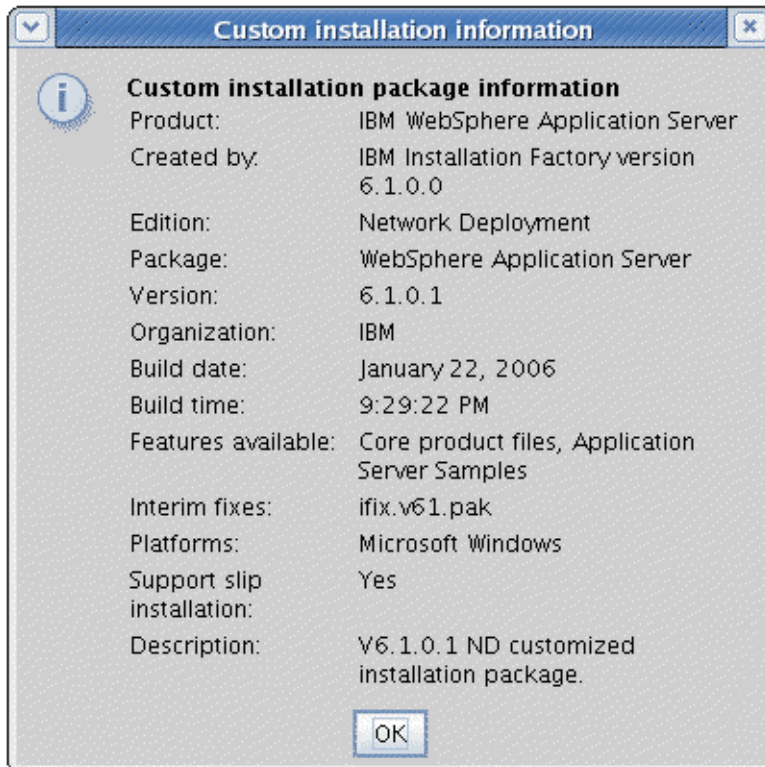
The package identifer information is gathered near the beginning of the Build Definition wizard in the Package Identification panel.

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.
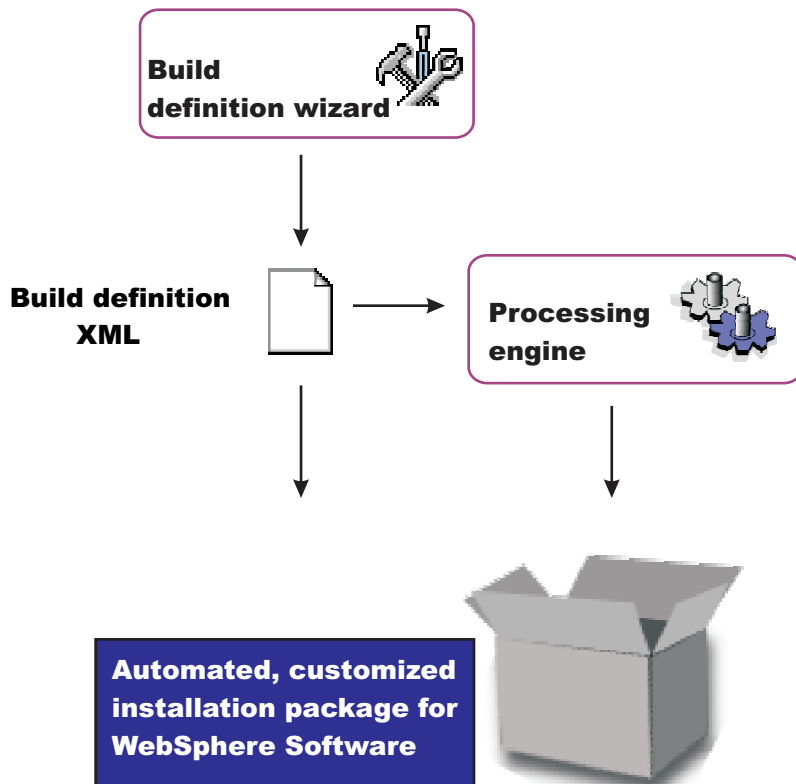
ifcli command

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 5.2 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.

Opteron/EM64T

The Installation Factory ifcli tool runs on Opteron or EM64T hardware platforms running 64-bit Linux kernels or Windows 2003 x64 editions.

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.

Sun Sparc

The Installation Factory ifcli tool runs on 32-bit Solaris 8 , 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 8, 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:

- `ifcli`

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.

Parameters

Supported arguments include:

-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 114 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 108.

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.

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:

      a. On the Install Sample Applications panel, select the **Install profile customizations** checkbox.

      b. On the WebSphere Application Server environments panel, select a profile that has profile customization defined.

         If the profile that you select has profile customization defined, then the installation wizard will effectively run the **manageprofiles** command once to do a create and augment. If there is no profile customization defined, you get a regular profile.

    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" on page 108 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 106.

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 Linux system or another supported UNIX system to create the build definition file for an unsupported UNIX 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. 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.

4. 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.

5. Start the Installation Factory console on a supported Linux or UNIX system 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.

6. 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.

7. Select the check box for disconnected mode processing because you are creating the build definition for another machine.

8. 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.

9. Click **Finish** to save the build definition file on the Build Definition machine.

10. Copy the build definition file from the Build Definition machine to the target operating system platform.

11. 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.

12. 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 (Linux or UNIX) 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 installs Fix Pack 6.x.2.5 to raise the model system to the desired 6.x.2.5 version.

3. The expert creates a default (stand-alone application server) profile, deploys applications, and makes other configuration changes.

4. 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.

5. The expert uses the Installation Factory to create a CIP that includes the 6.x product image and optionally includes 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. The expert optionally includes EARs for any of the four types of profile customization (cell, stand-alone, deployment manager, managed).

   d. The expert optionally includes scripts for any of the three types of profile customization (stand-alone, deployment manager, managed) to run either at profile creation time or profile deletion time. For Version 6.1, you can also perform customization on the ″cell″ profile set, which includes two profiles: deployment manager and federated application server.

   e. The expert optionally includes additional files to be installed on the system.

6. The expert distributes the CIP to installers who require the pre-configured system for their users.

7. The installers install the CIP.

8. The installers create any of the following profile types: cell, stand-alone application server, deployment manager, managed.

   If you are an installer, you can use one of the following methods to create the profile:

   - 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:

     a. On the Install Sample Applications panel, select the **Install profile customizations** checkbox.

b. On the WebSphere Application Server environments panel, select a profile that has profile customization defined.

If the profile that you select has profile customization defined, then the installation wizard will effectively run the **manageprofiles** command once to do a create and augment. If there is no profile customization defined, you get a regular profile.

If a the stand-alone profile is chosen and a configuration archive is present, it 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 cell, stand-alone application server, deployment manager, or managed 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 **manageprofiles** command to manually create profiles and restore the profile customizations that are included in the CIP.

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 installs Fix Pack 6.x.2.5 to raise the model system to the desired 6.x.2.5 version.
3. The expert creates a default (stand-alone application server) profile, deploys applications, and makes other configuration changes.
4. 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.

5. The expert uses the Installation Factory to create a CIP that includes the 6.x product image and optionally includes 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. The expert optionally includes EARs for any of the four types of profile customization (cell, stand-alone, deployment manager, managed).
   d. The expert optionally includes scripts for any of the three types of profile customization (stand-alone, deployment manager, managed) to run either at profile creation time or profile

deletion time. For Version 6.1, you can also perform customization on the ″cell″ profile set, which includes two profiles: deployment manager and federated application server.

    e. The expert optionally includes additional files to be installed on the system.

6. The expert distributes the CIP to installers who require the pre-configured system for their users.

7. The installers install the CIP.

8. The installers create any of the following profile types: cell, stand-alone application server, deployment manager, managed.

If you are an installer, you can use one of the following methods to create the profile:

- 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:

  a. On the Install Sample Applications panel, select the **Install profile customizations** checkbox.

  b. On the WebSphere Application Server environments panel, select a profile that has profile customization defined.

  If the profile that you select has profile customization defined, then the installation wizard will effectively run the **manageprofiles** command once to do a create and augment. If there is no profile customization defined, you get a regular profile.

If a the stand-alone profile is chosen and a configuration archive is present, it will be automatically restored.

A configuration archive is available for an application server CIP profile only. 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.

Table 4. Allowed customizations

CIP Profile Type	Include and Run Scripts	Include and Deploy an Enterprise Archive (EAR)	Include and Restore a Configuration Archive (CAR)
Cell (deployment manager and a managed node)	Yes	No	No
Deployment manager (dmgr profile)	Yes	No	No

Table 4. Allowed customizations (continued)

CIP Profile Type	Include and Run Scripts	Include and Deploy an Enterprise Archive (EAR)	Include and Restore a Configuration Archive (CAR)
Stand-alone application server (default profile)	Yes	Yes	Yes
Custom (managed profile)	Yes	No	No

- Augment an application server profile that includes a CAR file.

    1. Create the profile from the minimal default template.

       ```
       cip_profile_root/bin/manageprofiles
       -create
       -profileName my_profile
       -profilePath "cip_profile_root/profiles/my_profile"
       -templatePath cip_user_data_root/cip/profileTemplates/minimal
       ```

    2. Augment the profile using the customizations for the default profile.

       ```
       cip_profile_root/profiles/my_profile/bin/manageprofiles
       -augment
       -profileName my_profile
       -templatePath cip_profile_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.

       ```
       cip_profile_root/bin/manageprofiles
       -create
       -profileName my_profile
       -profilePath "cip_profile_root/profiles/my_profile"
       -templatePath cip_profile_root/profileTemplates/default
       ```

    2. Augment the profile using the customizations (that do not include a CAR) for the default profile.

       ```
       cip_profile_root/profiles/my_profile/bin/manageprofiles
       -augment
       -profileName my_profile
       -templatePath cip_profile_root/if_augmentingTemplates/default
       ```

- Augment a deployment manager profile.

    Use this two-step procedure to augment a deployment manager profile:

    1. Create the profile from the dmgr template.

       ```
       cip_profile_root/bin/manageprofiles
       -create
       -profileName my_dmgr_profile
       -profilePath "cip_profile_root/profiles/my_dmgr_profile"
       -templatePath cip_user_data_root/cip/profileTemplates/dmgr
       ```

    2. Augment the profile using the customizations (that do not include a CAR or an EAR) for the dmgr profile.

       ```
       cip_profile_root/profiles/my_dmgr_profile/bin/manageprofiles
       -augment
       -profileName my_dmgr_profile
       -templatePath cip_profile_root/if_augmentingTemplates/dmgr
       ```

- Augment a custom profile.

    Use this two-step procedure to augment a custom profile:

    1. Create the profile from the managed template.

```
cip_profile_root/bin/manageprofiles
-create
-profileName my_custom_profile
-profilePath "cip_profile_root/profiles/my_custom_profile"
-templatePath cip_user_data_root/cip/profileTemplates/managed
```

2. Augment the profile using the customizations for a managed profile.

```
cip_profile_root/profiles/my_custom_profile/bin/manageprofiles
-augment
-profileName my_custom_profile
-templatePath cip_profile_root/if_augmentingTemplates/managed
```

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 start the deployment manager, the node agent, and the 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.

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

Chapter 10. Starting WebSphere Application Server

After installing, start the WebSphere Application Server environment to begin using it.

This topic assumes that you have configured your WebSphere Application Server for iSeries installation. See Chapter 7, "Configuring the product after installation," on page 63 if you have not yet configured the product.

Use this procedure to start the WebSphere Application Server environment.

1. Start the default application server profile.

   Start the default stand-alone application server, as described in "Starting the default stand-alone application server profile."

   Choose this task if you intend to run a stand-alone, unfederated application server.

   Start and configure the default deployment manager profile, as described in "Starting and configuring the default deployment manager profile" on page 119

   Choose this task if you installed WebSphere Application Server Network Deployment and plan to run a deployment manager profile with one or more federated application server nodes.

2. Configure the virtual host, as described in "Configuring the virtual host" on page 124.

   If your external HTTP server configuration uses ports other than the default ports, you must update the Host Aliases table for the virtual host to reflect the correct HTTP port number.

3. Start the HTTP server instance, as described in "Starting the HTTP server instance" on page 125.

   Start the HTTP server so that your application server profile can receive and respond to client requests.

4. Start the default application server node, as described in "Starting the default application server node" on page 125.

   If you installed WebSphere Application Server Network Deployment and are running a deployment manager profile with one or more federated application server nodes, perform this step to start the default application server node.

If you have problems with any part of the installation, see "Troubleshooting an iSeries installation" on page 158.

Go to "Starting the default stand-alone application server profile" to continue the installation.

Starting the default stand-alone application server profile

WebSphere Application Server provides a default application server profile that contains several example applications. The default stand-alone profile is ready to run after you install, configure, and start WebSphere Application Server. Start the default stand-alone application server profile to use it.

This topic assumes that you have configured your WebSphere Application Server for iSeries installation. See Chapter 7, "Configuring the product after installation," on page 63 if you have not yet configured the product.

Use this procedure to start the default application server profile.

1. Start the default application server profile.

   a. Run the Start Qshell (STRQSH) command from a Control Language (CL) command line.

   b. At the Qshell prompt, run the following commands:

      ```
      cd app_server_root/bin
      startServer server1
      ```

      The startServer command starts the QWAS61 subsystem if it is not already started.

2. Start the administrative console, as described in "Starting the administrative console" on page 119. Open the administrative console in a Web browser.

Go to "Verifying that the application server is running" to continue the installation.

Verifying that the application server is running

Before you start the administrative console, verify that the application server is running.

This topic assumes that you are attempting to start your application server profile. See Chapter 10, "Starting WebSphere Application Server," on page 117 if you have not yet attempted to start the application server.

When WebSphere Application Server is ready for use, a message is written to the job log of the application server job indicating that WebSphere Application Server to determine if WebSphere Application Server is ready for use.

Issue all of the commands in this procedure from the Control Language (CL) command line.

1. Run the Work with Active Jobs (WRKACTJOB) command from the CL command line, specifying the proper subsystem on the subsystem (SBS) parameter:

   `WRKACTJOB SBS(QWAS61)`

2. Find your application server job. The application server job for the default application server profile is named SERVER1.

3. Specify option **5 (Work with Job)** on the option line next to the job, then press **Enter**.

4. On the command line of the Work with Job display, specify option **10 (Display job log, if active)**, then press **Enter**.

5. Press **F10** to display all messages.

   Look for this message:

   `WebSphere application server application_server ready.`

   The *application_server* variable is the name of your application server. The default application server is named SERVER1.

   If the message is not displayed, press **F5** to refresh the job log messages until the message is displayed.

   When the message is displayed, WebSphere Application Server has successfully started. It may take up to 20 minutes for the message to be displayed, depending on your iSeries server.

6. To display the port number on which the application server is listening for the administrative console, position the cursor on the last line of the message and press **F1**.

   The following message is displayed:

   ```
   WebSphere application server application_server
   in job app_server_job is ready to handle administrative
   requests on port port_number.
   ```

   The *application_server* variable is the name of your application server, the *app_server_job* variable is the iSeries job name for your application server, and the *port_number* variable is the number of the port used by the administrative console.

   If the administrative console application is not installed in the application server profile or if the administrative console port cannot be displayed, the port_number is *N.

   Press **F3** twice to exit.

Go to "Starting the administrative console" on page 119 to continue the installation.

Starting the administrative console

The administrative console is a Web-based application that runs on any browser supported by WebSphere Application Server. Start the administrative console to begin administering the system.

This topic assumes that you have a running application server profile. See Chapter 10, "Starting WebSphere Application Server," on page 117 if you have not yet attempted to start the application server.

The browser-based administrative console for WebSphere Application Server requires that cookies be enabled in the browser. This topic also describes how to enable cookies.

Use this procedure to start the administrative console on a workstation.

1. Open the following Web page in your browser:

   `http://your.server.name:port/ibm/console`

   The *your.server.name* variable is the host name of the iSeries server on which your application server is running. The *port* variable is the administrative console port as noted in the ready message in the joblog of your application server.

   The administrative console port of the default application server profile is 9060. For more information about the ready message, see "Verifying that the application server is running" on page 118.

2. When prompted, enter a user ID.

   The administrative console is displayed in the browser window.

   The user ID does not need to be an iSeries user profile. This user ID is used only to track which users make changes to the application server configuration.

3. Enable cookies for your Web browser.

   Netscape Navigator: Perform the following procedure:

   a. Click **Edit > Preferences**.

   b. Click **Advanced** in the left pane.

   c. The right pane shows settings for cookies. Verify that cookies are not disabled.

   Microsoft Internet Explorer 4.0, 5.0, and 5.5: Perform the following procedure:

   a. Click **Tools > Internet Options**.

   b. Click **Security**.

   c. Click **Custom Level > Cookies > Enable**.

   d. Click **OK**.

   Microsoft Internet Explorer 6.0: Perform the following procedure:

   a. Click **Tools > Internet Options**.

   b. Click **Privacy > Advanced**.

   c. Click **Accept** to accept first-party and third-party cookies..

   d. Click **OK**.

See your browser documentation for help enabling cookies for other supported Web browsers.

Some browsers provide advanced settings so that you can configure cookie settings separately for different domains, such as http://mycompany.com. For help with advanced features, see the documentation for your browser.

Next: Go to "Configuring the virtual host" on page 124 to continue the installation.

Starting and configuring the default deployment manager profile

WebSphere Application Server Network Deployment provides a configurable default deployment manager profile.

After you install WebSphere Application Server Network Deployment, you can start, configure and run the default deployment manager profile.

1. Start the default deployment manager.

   a. On the Control Language (CL) command line, run the Start Qshell (STRQSH) command.

   b. At the Qshell prompt, run the following commands:

   ```
   cd app_server_root/bin
   startServer dmgr
   ```

   The startServer command starts the QWAS61 subsystem if it is not already started.

2. Verify that the deployment manager is running

   Use the Work with Active Jobs (WRKACTJOB) command to determine when the deployment manager is ready to accept administrative requests through the administrative console.

3. Add a node to the network deployment profile, as described in "Adding a node to the deployment manager profile" on page 121.

   Run the addNode command from the Qshell command shell to federate the default application server profile into the Network Deployment cell.

4. Verify that the node agent is running, as described in "Verifying that the node agent is running" on page 122.

   Use the Work with Active Jobs (WRKACTJOB) command to determine when the node agent is ready to accept administrative requests through the administrative console.

5. Start the administrative console for the deployment manager.

   Open the administrative console in a Web browser, as described in "Starting the administrative console for the deployment manager" on page 122.

6. Verify that the node exists, as described in "Verifying that the node exists" on page 123.

   Use the administrative console to verify that the WebSphere Application Server node was successfully added to the deployment manager domain.

The addNode command creates a new server, the node agent, under the application server profile being added to the Network Deployment domain. The node agent server is started as a side effect of adding the node to the domain.

Repeat the previous steps for each node (or application server profile) that you want to manage using your deployment manager profile.

Next: Go to "Verifying that the deployment manager is running" to verify that the deployment manager is running.

Verifying that the deployment manager is running

This article describes how to verify that the deployment manager is running before you start the administrative console.

You must install WebSphere Application Server Network Deployment before you can start, configure and run the default deployment manager profile.

See "Starting and configuring the default deployment manager profile" on page 119 for more information.

Before you start the administrative console or add a node to the Network Deployment domain, verify that the Network Deployment environment is running.

When the Network Deployment environment is ready for use, a message is written to the job log of the application server job for the Deployment Manager indicating that the Network Deployment environment is ready. Use this procedure to determine if the Network Deployment environment is running.

1. Run the Work with Active Jobs (WRKACTJOB) command from the Control Language (CL) command line, specifying the proper subsystem on the subsystem (SBS) parameter:

   ```
   WRKACTJOB SBS(QWAS61)
   ```

2. Find the server job for your deployment manager profile. For the default deployment manager profile, the server job is named DMGR.

3. Specify option **5 (Work with Job)** on the option line next to the job, then press **Enter**.

4. On the command line of the Work with Job display, specify option **10 (Display job log, if active)**, then press **Enter**.

5. Press **F10** to display all messages.

   Look for this message:

   ```
   WebSphere application server application_server ready.
   ```

   The *application_server* variable is the name of your application server. For the default deployment manager profile, the application server for the deployment manager is named dmgr.

   If the message is not displayed, press **F5** to refresh the job log messages until the message displays.

   When the message is displayed, the Network Deployment environment is successfully running. The message can take up to 20 minutes to display, depending on your iSeries server. If the message is not displayed, see the "Troubleshooting an iSeries installation" on page 158 topic.

6. To display the port number on which the deployment manager is listening for the administrative console, position the cursor on the last line of the message and press **F1**.

   This message is displayed:

   ```
   WebSphere application server application_server
     in job app_server_job is ready to handle
     administrative requests on port port_number.
   ```

   The *application_server* variable is the name of the deployment manager application server. The *app_server_job* variable is the OS/400 or i5/OS job name for the deployment manager application server. The *port_number* variable is the number of the port used by the administrative console.

7. Press **F3** twice to exit.

Go to "Adding a node to the deployment manager profile" to continue the installation.

Adding a node to the deployment manager profile

You can add WebSphere Application Server nodes to the cell which your deployment manager profile is managing.

This article assumes that you are working on the iSeries server that hosts your WebSphere Application Server node.

Use the addNode command to add WebSphere Application Server nodes to the cell which your deployment manager profile is managing.

1. Run the Start Qshell (STRQSH) command from a Control Language (CL) command line.

2. At the Qshell prompt, issue the addNode command.

   Specify the host name and Simple Object Access Protocol (SOAP) port for the deployment manager. For example:

   ```
   app_server_root/bin/addNode
     host_name
     soap_port
     -includeapps
   ```

   The *host_name* variable is the host name of the server on which you installed the Network Deployment product. The *soap_port* variable is the SOAP port for the deployment manager profile. For the deployment manager profile, the default soap port is 8879.

By default, any applications installed on the application server profile are removed from the application server profile when it is added to a cell. If this is the only node that you are adding, or if you know that there are no conflicts with applications installed on other nodes, you can specify the -includeapps parameter when invoking the addNode command. When this parameter is specified, the addNode command does not remove any installed applications.

The *host_name* and the *soap_port* variables are positional and must be the first two parameters. Additional parameters such as -includeapps must be specified after the *soap_port* value.

The addNode command creates a new server, the node agent, under the application server profile being added to the Network Deployment domain. The nodeagent server is started as a side effect of adding the node to the domain.

Repeat the previous steps for each node (or application server profile) that you want to manage using your deployment manager profile.

Verify that the node agent is running after adding the node, as described in "Verifying that the node agent is running."

Verifying that the node agent is running

Verify that the node agent is running before you start the administrative console.

Use the addNode command to add WebSphere Application Server nodes to the cell which your deployment manager profile is managing.

1. Run the Work with Active Jobs (WRKACTJOB) command on the CL command line, specifying the proper subsystem on the subsystem (SBS) parameter:

   ```
   WRKACTJOB SBS(QWAS61)
   ```

2. Find the server job for your deployment manager profile. The node agent job name is the same as the node name for the application server profile. For the default application server profile, the node name is the same as the host name of the iSeries sever.

3. Specify option **5 (Work with Job)** on the option line next to the job, then press **Enter**.

4. On the command line of the Work with Job display, specify option **10 (Display job log, if active)**, then press **Enter**. Press **F10** to display all messages.

5. Look for this message:

   ```
   WebSphere application server nodeagent ready.
   ```

   If the message is not displayed, press **F5** to refresh the job log messages until the message displays.

When the message is displayed, the node agent has successfully started. It can take up to 20 minutes for the message to be displayed, depending on your iSeries server.

If the message does not display, see "Troubleshooting an iSeries installation" on page 158.

Start the administrative console for the deployment manager, as described in "Starting the administrative console for the deployment manager."

Starting the administrative console for the deployment manager

The administrative console is a Web-based application that runs on any browser supported by WebSphere Application Server. This topic describes how to start the administrative console for the deployment manager.

This topic assumes that you have a running deployment manager profile. See "Verifying that the deployment manager is running" on page 120 if you have not yet attempted to start the deployment manager.

The browser-based administrative console for WebSphere Application Server requires that cookies be enabled in the browser. This topic also describes how to enable cookies.

Use this procedure to start the administrative console on a workstation.

1. Open the following Web page in your browser:

   `http://your.server.name:port/ibm/console`

   The *your.server.name* variable is the host name of the iSeries server on which your deployment manager is running. The *port* variable is the administrative console port as noted in the ready message in the joblog of your application server.

   The administrative console port of the deployment manager profile is 9060. For more information about the ready message, see "Verifying that the deployment manager is running" on page 120.

2. When prompted, enter a user ID.

   The administrative console is displayed in the browser window.

   The user ID does not need to be an iSeries user profile. This user ID is used only to track which users make changes to the deployment manager configuration.

3. Enable cookies for your Web browser.

   Netscape Navigator: Perform the following procedure:

   a. Click **Edit > Preferences**.

   b. Click **Advanced** in the left pane.

   c. The right pane shows settings for cookies. Verify that cookies are not disabled.

   Microsoft Internet Explorer 4.0, 5.0, and 5.5: Perform the following procedure:

   a. Click **Tools > Internet Options**.

   b. Click **Security**.

   c. Click **Custom Level > Cookies > Enable**.

   d. Click **OK**.

   Microsoft Internet Explorer 6.0: Perform the following procedure:

   a. Click **Tools > Internet Options**.

   b. Click **Privacy > Advanced**.

   c. Click **Accept** to accept first-party and third-party cookies..

   d. Click **OK**.

See your browser documentation for help enabling cookies for other supported Web browsers.

Some browsers provide advanced settings so that you can configure cookie settings separately for different domains, such as http://mycompany.com. For help with advanced features, see the documentation for your browser.

Go to "Verifying that the node exists" to continue the installation.

Verifying that the node exists

This topic describes how to verify that the WebSphere Application Server node was successfully added to the deployment manager domain.

This topic assumes that you have already started the administrative console for the deployment manager. If you have not yet started the administrative console, see "Starting the administrative console for the deployment manager" on page 122.

Use this procedure to verify that the WebSphere Application Server node was successfully added to the Deployment Manager domain.

1. Click **System administration > Nodes** in the administrative console of the deployment manager.

2. Verify that the node is listed and that the status is Started. If the node does not exist, go to "Adding a node to the deployment manager profile" on page 121.

Messages in the console panel of the deployment manager show the status of the application server. The **Servers > Application Servers** panel also shows the status of each defined application server.

Go to "Configuring the virtual host" to continue the installation.

Configuring the virtual host

A virtual host is a configuration entity that allows WebSphere Application Server to treat multiple host machines or port numbers as a single logical host (virtual host) for configuration purposes. Each virtual host can be associated with multiple aliases. Each alias is a particular host name and port number. Configure the virtual host to make resources available for client requests.

This topic assumes that you have started the administrative console. See "Starting the administrative console" on page 119 if you have not yet attempted to start the application server.

You can use virtual hosts to combine multiple host machines into a single virtual host or to assign host machines to different virtual hosts. Virtual hosts separate and control WebSphere Application Server resources to make the resources available for client requests.

If your external HTTP server configuration uses ports other than the default ports, you must update the Host Aliases table for the virtual host to reflect the correct HTTP port number.

If your external HTTP server configuration uses the default port (80), skip these steps and go to "Starting the HTTP server instance" on page 125 instead.

Use this procedure to update the Host Aliases table for the default_host virtual host from the administrative console.
1. Click **Environment > Virtual Hosts** in the left frame of the administrative console.
2. Click **default_host** in the right frame.
3. Click **Host Aliases**. The settings for default_host are displayed.
4. Click the **asterisk** in the row that has a Port of 80 in the Host Name list.
   Host names are set to ″*″ when you install WebSphere Application Server.
5. Specify the correct port number for your HTTP server in the Port field.
6. Click **OK**, then click **Save** to save your configuration.
7. After you specify a new port number, you must regenerate the plug-in configuration:
   a. Click **Servers > Web servers**.
   b. Select your Web server.
   c. Click **Generate Plug-in**.
   d. Click **OK**.
8. After configuring the virtual host, start your HTTP server instance.

For a standalone application server, restart the application server after you update the virtual host configuration.

Next: Go to "Starting the HTTP server instance" on page 125 to continue the installation.

Starting the HTTP server instance

IBM HTTP Server for iSeries runs in the QHTTPSVR subsystem, and each HTTP Server instance starts multiple jobs. The WebSphere Application Server code that plugs into IBM HTTP Server for iSeries runs in the HTTP Server job that communicates with one or more application servers. Start the HTTP Server instance to enable communication with the application server.

This topic assumes that you have already created an HTTP server instance. If you have not yet created an HTTP server instance, see "Configuring IBM HTTP Server for iSeries" on page 66.

Use this procedure to start the HTTP Server instance for the HTTP Server you are using.

- Start IBM HTTP Server.

  Enter the following command on the CL command line:

  ```
  STRTCPSVR SERVER(*HTTP) HTTPSVR(myinst)
  ```

  The *myinst* variable is the name of your HTTP server instance. This is the HTTP instance that you configured in "Configuring IBM HTTP Server for iSeries" on page 66.

  If you change your HTTP server instance configuration, stop and then start your HTTP server instance.

  To stop your HTTP server instance, enter this command from the CL command line:

  ```
  ENDTCPSVR SERVER(*HTTP) HTTPSVR(myinst)
  ```

  The *myinst* variable is the name of your HTTP server instance. This is the HTTP instance that you configured in "Configuring IBM HTTP Server for iSeries" on page 66.

  You can also stop and start your HTTP server instance from the IBM HTTP Server for iSeries Configuration and Administration forms in the browser-based interface. For instructions on using the browser-based interface, see "Configuring IBM HTTP Server for iSeries" on page 66.

  The Configuration and Administration forms provide the option of restarting, as opposed to starting and stopping, your HTTP server instance. When restarting, the HTTP server recognizes all configuration changes except changes to the Basic and Security configuration forms.

- Start Lotus Domino HTTP Server

  If you have not yet configured the Lotus Domino Web server, see "Configuring Lotus Domino HTTP Server" on page 68.

  Perform the following procedure to start the Domino server Web task:

  1. Enter the Work with Domino Servers (WRKDOMSVR) command on a Control Language (CL) command line.

  2. For your Domino server instance, specify option **8** to select the Domino server console.

  3. From the Domino server's console, enter this command to restart the Domino server HTTP task:

     ```
     tell http restart
     ```

If you installed WebSphere Application Server Network Deployment and plan to run a deployment manager profile with one or more federated application server nodes, go to "Starting the default application server node" instead of Chapter 11, "Verifying the installation," on page 127 to continue the installation.

Otherwise, you have completed step 4 of 5. Go toChapter 11, "Verifying the installation," on page 127 to continue the installation.

Starting the default application server node

Start the default application server node from the deployment manager administrative console.

This topic assumes that you have already started the HTTP server instance. If you have not yet started the HTTP server instance, see "Starting the HTTP server instance."

Use this procedure to start the application server for a node from the administrative console of the deployment manager.

1. Click **Servers > Application Servers** in the administrative console of the deployment manager.
2. Select the check box next to the application server you intend to start.
3. Click **Start**.

Messages in the console panel of the deployment manager show the status of the application server. The **Servers > Application Servers** panel also shows the status of each defined application server.

You have completed step 4 of 5.

Go to Chapter 11, "Verifying the installation," on page 127 to continue the installation.

Chapter 11. Verifying the installation

After installing and configuring WebSphere Application Server installation, verify that the product performs as desired.

You can verify your WebSphere Application Server installation by invoking a verification script or by invoking example browser-based applications.

- Run the install verification script.

  One way to verify the installation of WebSphere Application Server is to call the ivt script from Qshell.

  1. On the Control Language (CL) command line, run the Start Qshell (STRQSH) command.

  2. From the Qshell prompt, run the ivt command to verify the internal HTTP instance:

     app_server_root/bin/ivt server1 default

  If the script runs successfully, the following message is displayed. Note that this example is for WebSphere Application Server.

  ```
  Server name is:server1
     Profile name is:default
     Profile home is:profile_root
     Profile type is:default
     Cell name is:MYISERIESCell
     Node name is:MYISERIES
     Current encoding is:ISO8859_1
     Server port number is:9080
     IVTL0015I: WebSphere Application Server MYISERIES is running on port 9080 for profile default
     IVTL0010I: Connecting to the WebSphere Application Server MYISERIES on port: 9080
     IVTL0015I: WebSphere Application Server MYISERIES is running on port 9080 for profile default
     IVTL0015I: WebSphere Application Server MYISERIES is running on port 9080 for profile default
     Testing server using the following URL:http://MYISERIES:9080/ivt/ivtserver?par m2=ivtservlet
     IVTL0050I: Servlet Engine Verification Status - Passed
     Testing server using the following URL:http://MYISERIES:9080/ivt/ivtserver?par m2=ivtAddition.jsp
     IVTL0055I: JSP Verification Status - Passed
     Testing server using the following URL:http://MYISERIES:9080/ivt/ivtserver?par m2=ivtejb
     IVTL0060I: EJB Verification Status - Passed
     IVTL0035I: Scanning the file
  profile_root/logs/server1/SystemOut.log for errors and warnings
     IVTL0040I: 0 errors/warnings were detected in the file
  profile_root/logs/server1/SystemOut.log
     IVTL0080I: Installation Verification is complete
  ```

- Run a Sample application.

  To call an example browser-based application to verify the installation, perform the following steps:

  1. If WebSphere Application Server is not already running, see Chapter 10, "Starting WebSphere Application Server," on page 117.

  2. Verify the internal HTTP transport.

     Open the following Web address in your browser. The URL is case-sensitive. Also, the capitalization must be consistent.

     http://*your_server_name*:9080/hitcount

     The *your_server_name* variable is the name of your iSeries server. Port 9080 is the default internal HTTP port.

     The panel that is displayed has the bold title ″Hit Count Demonstration.″ If you see something similar, WebSphere Application Server is set up successfully to run using the internal HTTP server.

  3. Verify the external HTTP server

     Open the following Web address in a browser. The URL is case-sensitive. Also, the capitalization must be consistent.

     http://*your_server_name*:80/HitCount.jsp

The *your_server_name* variable is the name of your iSeries server. Port 80 is the default port for the application server external HTTP server. If your HTTP server instance uses a different port, specify the appropriate port number.

The panel that is displayed has the bold title ″Hit Count Demonstration.″ If you see something similar, WebSphere Application Server is set up successfully to run using the configured Web server.

You can also run sample Web applications that are included with WebSphere Application Server. For information about running the sample applications, see "Installing and accessing the Samples Gallery."

- Run the installver command. See "Verifying checksums of installed files" on page 129.

If the verification indicates that WebSphere Application Server runs as desired, you do not need to perform additional steps.

You have completed the installation and the initial configuration. Go to "Installing and accessing the Samples Gallery" to learn about installing the Samples Gallery.

Installing and accessing the Samples Gallery

Install the Samples in the WebSphere Application Server Samples Gallery. The samples are included with the WebSphere Application Server on your iSeries server.

1. Create a stand-alone application server profile or use the default application server profile.

   By default, only the Samples Gallery and the Plants by WebSphere application are installed on the application server.

   The samples are in the *profile_root*/installedApps/*cell_name* directory.

   The *cell_name* variable is the name of your WebSphere Application Server Network Deployment cell.

2. Federate the stand-alone node into the cell to run the samples in a distributed WebSphere Application Server Network Deployment environment.

   Use the addNode command to federate the node into the deployment manager cell. When you run the addNode script, use the dmgr_host argument, and -includeapps and -includebuses options:

   ```
   addNode dmgr_hostname -includeapps -includebuses
   ```

   The *dmgr_hostname* variable is the name of the machine that hosts your deployment manager profile.

3. Start the application server.

4. Access the Samples Gallery.

   Go to http://*your.server.name:port*/WSsamples.

   The *your.server.name* variable is the name of your iSeries server and *port* is the port number for the internal HTTP transport of the application server.

5. **Optional:** Install additional samples.

   Additional samples are initially listed as installable samples in the Samples Gallery. For further instructions on installing each sample, refer to the Installable Samples section of the Samples Gallery in your Web browser.

   To installing additional samples on non-default profiles, you must specify the -server *myServer* parameter. Additional information about the -server parameter and other script values is in the Installable Samples section of the Samples Gallery, in the *Samples install help* section.

If you can access the Samples Gallery, you installed them successfully. If you are unable to access the Samples Gallery, verify the following items:

- Verify that the application server is running.

  On the CL command line, run the following command:

  ```
  WRKACTJOB SBS(QWAS61)
  ```

  Look for the name of your application server profile.

- Verify that the Samples are installed.

  In the administrative console, expand **Applications** and click **Enterprise applications**. Confirm that the Samples Gallery is listed as an installed application.
- Verify the port number.

  The default port for the default application server profile is 9080. To verify or change the port number, follow these steps:

  1. In the administrative console navigation frame, expand **Servers** and click **Application servers**.
  2. Click the name of the application server. For the default application server profile, the server name is server1.
  3. Click **Ports**.
  4. Verify the WC_defaulthost port number.
  5. If you need to change the port number, click **WC_defaulthost**.
  6. Type the new port number in the **Port** field.
  7. Click **OK**.
  8. To save the configuration changes, click **Save**.

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 Network Deployment
- 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.
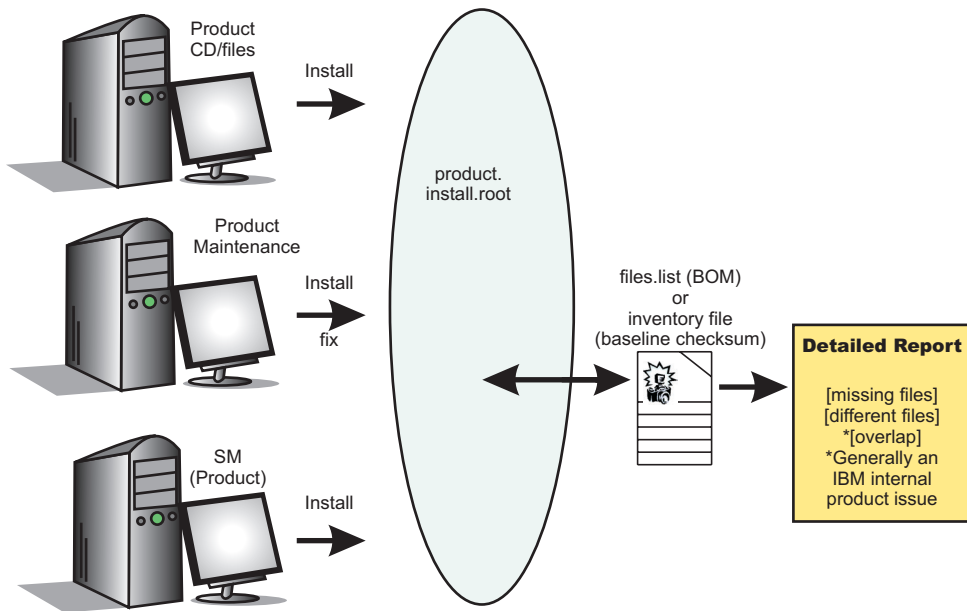
Although the most common use of the tool is to compare the product bill of materials to the installed file set after installation or after installing maintenance, other tasks are also possible.

- Verify the installed files against the bill of materials.

  See "Verifying against the bill of materials" on page 131 for more information.

- Create and use a new baseline checksum.

  See "Computing a new baseline checksum for an inventory of configured files" on page 134 for more information.

- Exclude files and components from the comparison.

  See "Excluding files from a checksum comparison" on page 135 for more information.

- Include only specific files and components in the comparison.

  See "Comparing specific file and component checksums" on page 138 for more information.

- Change the default message digest algorithm for computing checksums.

  See "Changing the default message digest algorithm" on page 140 for more information.

- Handle out-of-memory conditions.

  See "Handling out-of-memory situations" on page 141 for more information.

- Verify the installver command files.

 See "Verifying the installver command" on page 141 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.

If you detect a problem, see if the problem is a known problem by checking the Support page.

IBM Support has documents and tools that can save you time gathering information needed to resolve problems. Before opening a problem report, see the Support page:

- http://www.ibm.com/servers/eserver/support/iseries/software/v5r3/index.html

The IVU performs the tasks using the logic described in the following graphic:
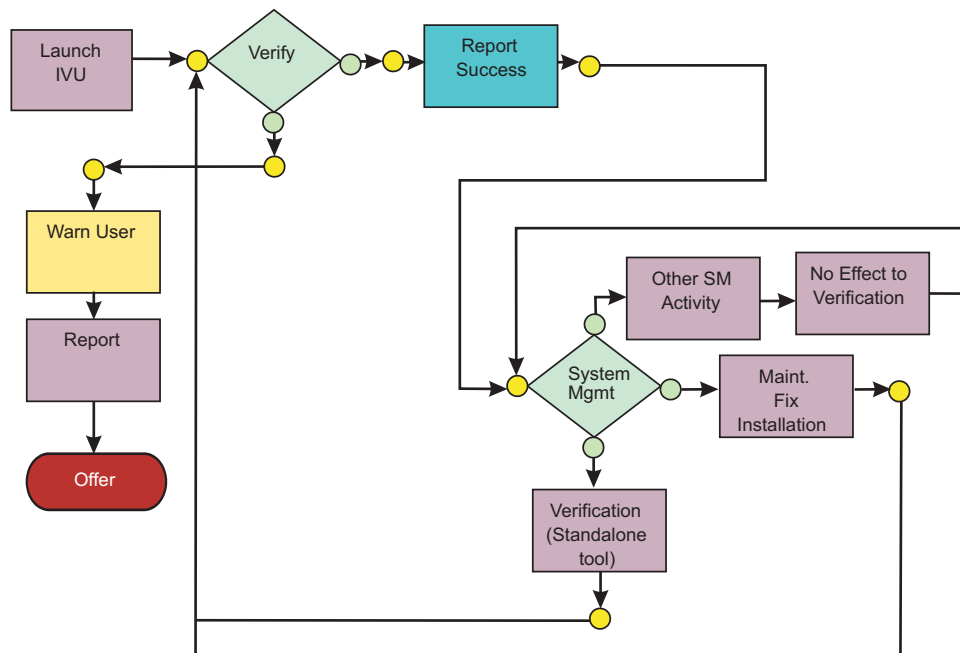
Verifying against the bill of materials

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:
- Compare checksums and display trace results:
- Display usage information:
- Compare checksums and include only specified files and components in the comparison:

    See "Comparing specific file and component checksums" on page 138 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 135 for information about creating a list of user-excluded files.

    Ignore the list of files to exclude and include the files in the comparison:
- Compare checksums and ignore IBM-excluded files:

    Ignore the list of IBM-excluded files and include the files in the comparison:

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.

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 143 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:

  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.
- Compare the inventory list to files that are currently installed in the installation root directory:

  If you created the inventory file somewhere other than the default location, use the following syntax:
- Compare and display trace results:
- Compare and exclude specified files from the inventory comparison:
- Compare and include only specified files in the inventory comparison:

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 143 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:

    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:

    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
```

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.

     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, which in this case, is a deployment manager 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*/profiles/Dmgr01/properties 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:

  For example, you might include the activity component:

  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:

  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" 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 V6.0.2 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:
- Add or increase the maximum heap size setting:

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 V6.0.2 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 *app_server_root*/bin directory.
2. Start the verifyinstallver command script from the command line.

   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:

Display verbose results:

```
verifyinstallver.bat -trace
```

Display usage information:

```
verifyinstallver.bat -help
```

The location of the verification program for installver command is:

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:

-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" on page 143 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:
- *app_server_root*\bin\installver

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.

For example, use the following command to run the tool from a user profile that has *ALLOBJ authority on iSeries systems:
```
installver
```

Or use the following command to start the tool on a Linux system or a UNIX system:
```
./installver.sh
```

See the following topics for more information about the purpose of the command:
- "Verifying against the bill of materials" on page 131
- "Computing a new baseline checksum for an inventory of configured files" on page 134
- "Excluding files from a checksum comparison" on page 135
- "Comparing specific file and component checksums" on page 138
- "Changing the default message digest algorithm" on page 140
- "Handling out-of-memory situations" on page 141
- "Verifying the installver command" on page 141

Syntax for displaying usage information
- `installver -help`

Syntax for listing all components
- installver -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.
- *app_server_root*/bin/installver

See "Verifying against the bill of materials" on page 131 for examples of using the command to compare the installed files to the product bill-of-materials files.

Create template (for listing excluded files) only
```
installver -createprofiletemplate
```

Parameters

The following parameters are associated with the command.

-createprofiletemplate

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.

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.

Perform the following procedure:

1. cd *app_server_root*/bin

2. installver -createprofiletemplate

The installver tool creates the template properties file in the properties directory of the default profile:

profile_root/properties/ivu_user.template

-help

Displays usage information.

-verbose

Provides verbose console output of what the tool checks and what the tool discovers.

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 12. Uninstalling WebSphere Application Server for i5/OS

This step describes how to uninstall WebSphere Application Server Network Deployment.

Use this procedure to uninstall WebSphere Application Server Network Deployment for i5/OS, Version 6.1.

1. Uninstall WebSphere Application Server Network Deployment for i5/OS from your iSeries server.

   To uninstall the product, run the following command from the Qshell command line:

   ```
   app_server_root/bin/uninstall
   ```

   To uninstall the product and all user data (profiles), run the following command:

   ```
   app_server_root/bin/uninstall
      -OPT removeProfilesOnUninstall="true"
   ```

   Uninstalling WebSphere Application Server from the iSeries server removes all the product libraries and directories. If you do not specify the option to delete all the profiles when you invoke the **uninstall** command, the user-defined information is not removed and can be reused if you reinstall the product. If you later decide that you do not need the user-defined data, you can manually remove it.

   User data consists of these items:

   - All directories and files under the *profile_root* directory, which is the directory specified as the value for the profilePath parameter when creating the profile with the **manageprofiles** command. Manually delete any files or directories that you no longer need.

   - Any HTTP server directives (such as LoadModule or Alias) that are in an HTTP Server Configuration file to enable WebSphere Application Server Network Deployment for i5/OS for that configuration. Remove the directives either manually or automatically using the following instructions.

2. Remove HTTP Server directives.

   a. Start your JavaScript-enabled browser.

   b. In the URL location or address window, type http://*your.server.name*:2001, where *your.server.name* is the host name of your iSeries server. Press **Enter**.

   c. Enter your iSeries user ID and password. Your user profile must have *ALLOBJ and *SECADM special authorities. The i5/OS Tasks page is displayed.

   d. Click **IBM HTTP Server for i5/OS**. The IBM HTTP Server for iSeries page is displayed.

   e. Select **Manage**. In the **Server** drop-down list on the upper right, select the HTTP server instance to change.

   f. Expand **Server Properties** in the left navigation bar.

   g. Scroll down and select **WebSphere Application Server**.

   h. Select **Disable Servlets and JSPs**.

   i. Click **OK**. This removes the WebSphere Application Server directives from the Apache configuration file and returns to the main configuration page.

3. Remove Lotus Domino Web server directives.

   a. From a Lotus Notes client connected to the Domino server, edit the Domino document, which is found in the Domino server Domino Directory (names.nsf) to remove the DSAPI filter configuration from the Domino server document.

   b. Within the server document, click the **Internet Protocols** tab and then click the **HTTP** tab.

   c. Remove from the **DSAPI filter file names** field: /QSYS.LIB/QWAS61.LIB/QSVTDOMINO.SRVPGM.

   d. Save and exit the Domino Server document to complete the removal of the DSAPI filter configuration from the Domino server document.

   e. Enter the Work with Domino Servers (WRKDOMSVR) command on a CL command line to remove the WebSphereInit directive from the notes.ini file.

f. For the appropriate Domino server instance, select option **13 (Edit NOTES.INI)** to edit the server notes.ini file.

g. Remove the WebSphereInit directive from the notes.ini file.

h. Restart the Lotus Domino Web server.

After completing the procedure, the WebSphere Application Server product is uninstalled.

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 12, "Uninstalling WebSphere Application Server for i5/OS," on page 147 for more information.

The command file is in the *app_server_root*\uninstall directory.

The command file is named:
- uninstall

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 5. 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:
  - *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:

– *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:
  – *app_server_root*/uninstall/uninstall -silent (default behavior)
  – *app_server_root*/uninstall/uninstall -silent -OPT removeProfilesOnUninstall="false"

Uninstalling WebSphere Application Server from the iSeries server removes all the product libraries and directories. If you do not specify the option to delete all the profiles when you invoke the uninstall script, the user-defined information is not removed. If you later decide that you do not need the user-defined data, you can manually remove it.

Chapter 13. Troubleshooting installation

This topic describes troubleshooting the installation of the WebSphere Application Server Network Deployment product.

If you are looking for troubleshooting information for WebSphere Application Server products on iSeries platforms, see "Troubleshooting an iSeries installation" on page 158. This topic does not describe i5/OS or OS/400 systems.

Use this topic after installing your WebSphere Application Server product.

The successful installation of the Network Deployment product is a two-part process:
- The first step is using the installation wizard to install a shared set of core product files.
- The second step is using the Profile Management tool to create a *deployment manager profile*, an *Application Server profile*, or a *custom profile*.

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. 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 129 for more information.

   Compare the output from the installver command to the installation log files that are described in the next step.

2. 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 Linux and UNIX platforms. 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.

   Log more information when InstallShield for MultiPlatforms (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 Linux and UNIX systems. See the environment variable settings on Windows system to display the value of the variable.

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Certain events can prevent the installer 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 -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
```

Attention:

The following examples show how to use the -log parameter when creating a deployment manager profile.

The command is in the *app_server_root*/bin/ProfileCreator directory. The name of the command varies per platform according to this pattern, pct*platform*:

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 6. Installation log locations when installing IBM HTTP Server

Windows system log path name	Linux and UNIX operating system log path name

Log files for Application Client for WebSphere Application Server

The following table shows the installation log locations when installing the Application Client.

Table 7. Installation log locations when installing the Application Client for WebSphere Application Server

Windows system log path name	Linux and UNIX operating system log path name

Log files for WebSphere Application Server Network Deployment: The following table shows the installation logs, content, and indicators of success and failure for WebSphere Application Server Network Deployment for Version 6.1:

Table 8. Installation and profile creation logs for WebSphere Application Server Network Deployment

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 8. Installation and profile creation logs for WebSphere Application Server Network Deployment (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.

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

hamanager_config.log
        Configuration log for the high availability application

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.

        This log is not created during product installation.

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

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

3. 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 Linux systems and UNIX systems.

4. 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.

5. 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:
   - 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:

6. If you have successfully created an application server profile, use the First steps console or the command line method to start the Application Server.

7. 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 following platform-specific directory:

8. Use the First steps console or the command line method to stop the Application Server, if it is running, and to start the deployment manager if one exists.

   To stop server1 from the command line:

   If you enable security, specify the -user and the -password parameters of the command.

   To start the deployment manager from the command line:

9. Verify that the server starts and loads properly by looking for a running Java process and the *Server dmgr open for e-business* message in the *profile_root*/logs/*server_name*/SystemOut.log file.

If no Java process exists or if the message does not appear, examine the same logs for any miscellaneous errors. Correct any errors and try again to start the deployment manager.

10. 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. In a Network Deployment environment, the Snoop servlet is available in the cell only if you included the DefaultApplication when adding the Application Server to the cell. The -includeapps option for the addNode command migrates the DefaultApplication to the cell. If the application is not present, skip this step.

Change directories to the *profile_root*/bin directory and run the startServer command:
   - startServer server1

b. Start the IBM HTTP Server or the Web server that you are using.

Use either the 2001 page or use the STRTCPSVR SERVER(*HTTP) HTTPSVR(*instance_name*) command to start the IBM HTTP Server.

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:**

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.

11. 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.

12. Federate the base Application Server into the cell. **To add the base Application Server into the cell:**

- **Deployment manager administrative console method:**

   Click **System administration > Nodes > Add Node** and follow the wizard. The default SOAP port for the Application Server is 8880. You can use localhost as the value of the Host name field, if the Application Server is on the same machine.

- **Command-line method assuming the SOAP port of the dmgr is 8879:**

If you enable security, specify the -user and the -password parameters of the command.

13. Verify that the Application Server was incorporated into the cell. The command window displays a sequence of messages when you issue the addNode command:

```
Tool information is being logged in file
         profile_root\logs\addNode.log
Begin federation of node AppServer01 with Deployment Manager at
         localhost:8879.
Successfully connected to Deployment Manager Server: localhost:8879
Servers found in configuration:
Server name: server1
Stopping all server processes for node AppServer01
Creating node agent configuration for node: AppServer01
Reading configuration for node agent process: nodeagent
Adding node AppServer01 configuration to cell: AdvancedDeploymentCell
Performing configuration synchronization between node and cell.
Launching node agent process for node: AppServer01
Node agent launched. Waiting for initialization status.
Node agent initialization completed successfully. Process ID is: 3012
Node AppServer01 has been successfully federated.
```

The last message is an indicator of success. A second Java process is running, which is the nodeagent process. The stdout.log file and stderr.log file in the *node_name* directory each contain relevant messages.

14. 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.

IP address caching and WebSphere Application Server process discovery

If you change the IP address of a federated WebSphere Application Server node, processes running in other nodes cannot contact the changed node until you stop and restart them.

If a deployment manager process starts on a disconnected node, it cannot communicate with cell member processes until you stop and restart the deployment manager process. For example, plugging in an unplugged network cable does not restore proper addresses in the IP cache until the deployment manager process is restarted.

Using the IP address cache setting

You can always stop and restart a deployment manager process to refresh its IP address cache. However, this process might be expensive or inappropriate.

The networkaddress.cache.ttl (public, JDK1.4) and sun.net.inetaddr.ttl (private, JDK1.3) parameters control IP caching. The value is an integer that specifies the number of seconds to cache IP addresses. The default value, -1, specifies to cache forever. A value of zero (0) is a specification to never cache.

Using a zero (0) value is not recommended for normal operation. If you do not anticipate network outages or changes in IP addresses, use the cache forever setting. The never caching setting introduces the potential for DNS spoofing attacks.

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 V5.1 and V6.0) and J2SE 1.5 (WebSphere Application Server V6.1).

This procedure results in debugging errors that might occur during 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 an iSeries installation

This topic describes how to troubleshoot an installation problem for a WebSphere Application Server product on the i5/OS operating system.

WebSphere Application Server offers several methods you can use to troubleshoot problems. Which method you use depends on the nature of the problem. Generally, you use a combination of these methods to determine the cause of a problem and then decide on an appropriate method for its resolution.

Troubleshoot Step 1: Refer to troubleshooting documentation for WebSphere Application Server for i5/OS

These resources provide general troubleshooting assistance:

- See "IBM WebSphere Application Server release notes" on page 21.
- Check the WebSphere Application Server FAQ database.
- Refer to the WebSphere Application Server for i5/OS newsgroup. This iSeries Technical Support Web-based forum is dedicated to WebSphere Application Server for i5/OS.

Troubleshoot Step 2: Install WebSphere Application Server Version 6.1 for i5/OS

- **Wrong version of i5/OS installed on your server.**

  WebSphere Application Server runs on i5/OS V5R3 or V5/R4. The product cannot be installed on prior releases of i5/OS.

- **IBM Development Kit for Java V1.5 is not installed.**

  Local and remote command-line installations require JDK 1.5. Install product 5722-JV1, option 7 to obtain JDK 1.5. After installing option 7, you should reinstall the cumulative PTF package and Java group PTF to pick up any JDK 1.5 specific fixes.

- **Host servers are not started, or failed to start correctly.**

  The installation process requires that the i5/OS host servers be running. To start the host servers, run this command from the CL command line.

  ```
  STRHOSTSVR SERVER(*ALL)
  ```

  If errors other than "Host server daemon jobs unable to communicate using IPX." occur when starting the host servers, follow the instructions in the error message to fix the problem. Once the problem is fixed, start the host servers and attempt to install WebSphere Application Server again.

- **Installation fails due to "Object not found" or "Not authorized" errors.**

  The user profile of the user installing the product must have *ALLOBJ and *SECADM special authorities.

Troubleshoot Step 3: Start WebSphere Application Server for i5/OS

- **Server does not start.**

  Prerequisite software may not be installed.

- **Port conflicts**

  Port conflicts may exist if you have a previous version of WebSphere Application Server installed and running.

Problems installing or starting an Apache or an IBM HTTP Server

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 Aug 27 19:21:59 2003] [error] lib_security: initializeSecurity: Failed to initialize GSK environment
[Wed Aug 27 19:21:59 2003] [error] ws_transport: transportInitializeSecurity: Failed to initialize security
[Wed Aug 27 19:21:59 2003] [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/.

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.

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