

IBM WebSphere Application Server - Express for IBM i,
Version 8.5

*Installing your application serving
environment*

IBM

Note

Before using this information, be sure to read the general information under “Notices” on page 85.

Compilation date: May 23, 2012

© Copyright IBM Corporation 2012.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

How to send your comments	v
Using this PDF	vii
Chapter 1. What is new for installers	1
Chapter 2. How do I install an application serving environment?	3
Chapter 3. Checklist: Installing WebSphere Application Server on the IBM i platform	5
Chapter 4. Task overview: Installing on IBM i	7
WebSphere Application Server Version 8.5 product offerings for supported operating systems	7
Directory conventions	17
Hardware and software requirements	18
Required disk space	18
Translated Languages	18
Updating ports in existing profiles on IBM i	19
Installing the WebSphere Application Server group PTF on IBM i	22
Installation: Resources for learning	23
Chapter 5. Preparing the operating system for installation on IBM i	27
IBM i prerequisites	28
Workstation prerequisites	31
Determining the proper cumulative PTF level on IBM i	32
Cumulative PTFs for IBM i	33
Chapter 6. Installing and uninstalling the product on IBM i operating systems	35
Installing the product on IBM i operating systems using response files	37
Installing the product on IBM i operating systems using the command line	43
Installing the product remotely on IBM i operating systems using the <code>iRemoteInstall</code> command	48
Installing and removing features on IBM i operating systems using response files	51
Installing interim fixes on IBM i operating systems using the command line	54
Installing fix packs on IBM i operating systems using response files	56
Installing fix packs on IBM i operating systems using the command line	58
Uninstalling interim fixes from IBM i operating systems using the command line	62
Uninstalling fix packs from IBM i operating systems using response files	63
Uninstalling fix packs from IBM i operating systems using the command line	64
Uninstalling the product from IBM i operating systems using response files	65
Uninstalling the product from IBM i operating systems using the command line	66
Chapter 7. Verifying the installation	67
Chapter 8. Configuring the product after installation on IBM i	69
Configuring software license information	69
Configuring SQL jobs on IBM i	70
Configuring TCP/IP on IBM i	71
Configuring an HTTP server instance on IBM i	72
Configuring IBM HTTP Server for IBM i	73
Configuring Lotus Domino HTTP Server on IBM i	76
Chapter 9. Starting WebSphere Application Server on IBM i	79
Starting default standalone application server profiles on IBM i	79
Verifying that the application server is running on IBM i	80

Starting the administrative console on IBM i	81
Configuring virtual hosts on IBM i	81
Starting HTTP server instances on IBM i	82
Starting default application server nodes on IBM i	83
Notices	85
Trademarks and service marks.	87
Index	89

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 email form appears.
 3. Fill out the email form as instructed, and submit your feedback.
- To send comments on PDF books, you can email your comments to: **wasdoc@us.ibm.com**.

Your comment should pertain to specific errors or omissions, accuracy, organization, subject matter, or completeness of this book. 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.

For technical questions and information about products and prices, please contact your IBM branch office, your IBM business partner, or your authorized remarketer. When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you. IBM or any other organizations will only use the personal information that you supply to contact you about your comments.

Using this PDF

Links

Because the content within this PDF is designed for an online information center deliverable, you might experience broken links. You can expect the following link behavior within this PDF:

- Links to Web addresses beginning with `http://` work.
- Links that refer to specific page numbers within the same PDF book work.
- The remaining links will *not* work. You receive an error message when you click them.

Print sections directly from the information center navigation

PDF books are provided as a convenience format for easy printing, reading, and offline use. The information center is the official delivery format for IBM WebSphere Application Server documentation. If you use the PDF books primarily for convenient printing, it is now easier to print various parts of the information center as needed, quickly and directly from the information center navigation tree.

To print a section of the information center navigation:

1. Hover your cursor over an entry in the information center navigation until the **Open Quick Menu** icon is displayed beside the entry.
2. Right-click the icon to display a menu for printing or searching your selected section of the navigation tree.
3. If you select **Print this topic and subtopics** from the menu, the selected section is launched in a separate browser window as one HTML file. The HTML file includes each of the topics in the section, with a table of contents at the top.
4. Print the HTML file.

For performance reasons, the number of topics you can print at one time is limited. You are notified if your selection contains too many topics. If the current limit is too restrictive, use the feedback link to suggest a preferable limit. The feedback link is available at the end of most information center pages.

Chapter 1. What is new for installers





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

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

Follow these shortcuts to get started quickly with popular tasks.

When you visit a task in the information center, look for the **IBM Suggests** feature at the bottom of the page. Use it to find available tutorials, demonstrations, presentations, developerWorks® articles, Redbooks®, support documents, and more.

Review the software and hardware prerequisites

-  Plan your installation of WebSphere® Application Server
-  Install the product
-  Configure the product after installation
-  Start the application server

Chapter 3. Checklist: Installing WebSphere Application Server on the IBM i platform

Print this article and use it as a checklist of steps for installing WebSphere Application Server products on the IBM® i platform.

Procedure

1. Step 1: Preparing for the installation

- a. _____ Determine if WebSphere Application Server for IBM i is already installed on your server.
Note that you are looking for Version 8.5 only, not previous versions of the product.
See Chapter 5, “Preparing the operating system for installation on IBM i,” on page 27 for more information.
- b. _____ Read the product Release Notes for the WebSphere Application Server product.
- c. _____ Schedule enough time for each step of the process.
See Chapter 5, “Preparing the operating system for installation on IBM i,” on page 27 for more information.
- d. _____ Verify that your system meets all hardware and software prerequisites, and install prerequisite software if necessary.
 - _____ IBM i server hardware requirements
 - _____ IBM i server software requirementsSee “IBM i prerequisites” on page 28 for more information.
- e. _____ Verify that your workstation meets all hardware and software prerequisites, and install prerequisite software if necessary.
See “Workstation prerequisites” on page 31 for more information.
- f. _____ Obtain and install the correct IBM i cumulative PTF package.
See “Cumulative PTFs for IBM i” on page 33 for more information.
- g. _____ Obtain the WebSphere Application Server product and current fixes.
See Chapter 5, “Preparing the operating system for installation on IBM i,” on page 27 for more information.

2. Step 2: Installing WebSphere Application Server

- a. _____ Install WebSphere Application Server on your IBM i server.
See Chapter 6, “Installing and uninstalling the product on IBM i operating systems,” on page 35 for more information.
- b. _____ Install the WebSphere Application Server group PTF.
See “Installing the WebSphere Application Server group PTF on IBM i” on page 22 for more information.

3. Step 3: Configuring WebSphere Application Server

- a. _____ Set SQL server jobs.
See “Configuring SQL jobs on IBM i” on page 70 for more information.
- b. _____ Configure TCP/IP.
See “Configuring TCP/IP on IBM i” on page 71 for more information.
- c. _____ Configure an HTTP server instance.
See “Configuring an HTTP server instance on IBM i” on page 72 for more information.

4. Step 4: Starting WebSphere Application Server

- a. _____ Start WebSphere Application Server.

See Chapter 9, “Starting WebSphere Application Server on IBM i,” on page 79 for more information.

- b. _____ Verify that WebSphere Application Server is running.

See “Verifying that the application server is running on IBM i” on page 80 for more information.

- c. _____ Start the administrative console.

See “Starting the administrative console on IBM i” on page 81 for more information.

- d. _____ Configure the virtual host.

See “Configuring virtual hosts on IBM i” on page 81 for more information.

- e. _____ Start the HTTP server.

See “Starting HTTP server instances on IBM i” on page 82 for more information.

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

- a. _____ Verify the installation.

See Chapter 7, “Verifying the installation,” on page 67 for more information.

Chapter 4. Task overview: Installing on IBM i

Use this high-level procedure to install and customize IBM WebSphere Application Server on IBM i systems.

Before you begin

Read through the major articles in the Welcome, Learn about, and Product overview sections of the information center before beginning the installation.

About this task

Use this procedure to install WebSphere Application Server for IBM i.

Procedure

1. Prepare your operating system for installation.
See Chapter 5, “Preparing the operating system for installation on IBM i,” on page 27 for more information.
2. Install the product on your IBM i system.
See Chapter 6, “Installing and uninstalling the product on IBM i operating systems,” on page 35.
3. Install the WebSphere Application Server group PTF.
Apply the most recent WebSphere Application Server for IBM i 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 IBM i” on page 22.
4. Configure the product after installation.
For example, you can create a standalone application server profile or a management profile with an administrative agent server using the `manageprofiles` command.
See the *What to do next* section at the end of “Installing the product on IBM i operating systems using response files” on page 37 for an example of creating a default standalone application server profile using the `manageprofiles` command.

What to do next

Go to Chapter 6, “Installing and uninstalling the product on IBM i operating systems,” on page 35 to continue the installation.

WebSphere Application Server Version 8.5 product offerings for supported operating systems

WebSphere Application Server Version 8.5 includes several related offerings.

Table 1. WebSphere Application Server Version 8.5 product offerings for supported operating systems. The following table shows the WebSphere Application Server Version 8.5 product offerings for supported operating systems.

Offering, offering ID, and operating systems	Description	Location					
		Product media	Passport Advantage [®] offerings ² (non-z/OS systems only)	Shop zSeries (z/OS [®] systems only)	Entitled Software Support (ESS)	developer Works	Web-based repository
Application Client for IBM WebSphere Application Server com.ibm.websphere.APPLCLIENT.v85 AIX [®] , HP-UX, IBM i, Linux, Solaris, Windows	Application Client for IBM WebSphere Application Server provides resources and clients to aid development of client applications for use with WebSphere Application Server. The Application Client provides a runtime framework for client applications either to run on the Application Client machine or to be distributed with client applications that are to run on other machines.	↘ ²	↘				↘
Application Client for IBM WebSphere Application Server (ILAN) com.ibm.websphere.APPLCLIENTILAN.v85 AIX, HP-UX, IBM i, Linux, Solaris, Windows	Application Client for IBM WebSphere Application Server provides resources and clients to aid development of client applications for use with WebSphere Application Server. The Application Client provides a runtime framework for client applications either to run on the Application Client machine or to be distributed with client applications that are to run on other machines. This offering is a no-cost non-supported and non-warranted version of the product.					↘	↘
DMZ Secure Proxy Server for IBM WebSphere Application Server com.ibm.websphere.NDDMZ.v85 AIX, HP-UX, IBM i, Linux, Solaris, Windows	DMZ Secure Proxy Server for IBM WebSphere Application Server provides enhanced security for WebSphere Application Server environments. This offering can be used to install a proxy server in the demilitarized zone (DMZ), while reducing the security risk of installing an application server in the DMZ to host a proxy server.	↘ ³	↘				↘
DMZ Secure Proxy Server for IBM WebSphere Application Server Trial com.ibm.websphere.NDDMZTRIAL.v85 AIX, HP-UX, IBM i, Linux, Solaris, Windows	DMZ Secure Proxy Server for IBM WebSphere Application Server provides enhanced security for WebSphere Application Server environments. This offering can be used to install a proxy server in the demilitarized zone (DMZ), while reducing the security risk of installing an application server in the DMZ to host a proxy server. This offering is a no-cost trial version of the product.					↘	↘
DMZ Secure Proxy Server for IBM WebSphere Application Server for z/OS com.ibm.websphere.NDDMZ.zOS.v85 z/OS	DMZ Secure Proxy Server for IBM WebSphere Application Server provides enhanced security for WebSphere Application Server for z/OS environments. This offering can be used to install a proxy server in the demilitarized zone (DMZ), while reducing the security risk of installing an application server in the DMZ to host a proxy server.	↘		↘ ⁴			↘
IBM HTTP Server for WebSphere Application Server com.ibm.websphere.IHS.v85 AIX, HP-UX, Linux, Solaris, Windows	IBM HTTP Server for WebSphere Application Server provides advanced web server capabilities with consistent management and security in a WebSphere Application Server environment. IBM HTTP Server for WebSphere Application Server is based on Apache HTTP Server.	↘ ²	↘				↘

Table 1. WebSphere Application Server Version 8.5 product offerings for supported operating systems (continued). The following table shows the WebSphere Application Server Version 8.5 product offerings for supported operating systems.

Offering, offering ID, and operating systems	Description	Location					
		Product media	Presort Advantage [®] images ² (non-z/OS systems only)	Shop ZSeries (z/OS [®] systems only)	Entitled Software Support (ESS)	developer Works	Web-based repository
IBM HTTP Server for WebSphere Application Server (ILAN) com.ibm.websphere. IHS.LAN.v85 AIX, HP-UX, Linux, Solaris, Windows	IBM HTTP Server for WebSphere Application Server provides advanced web server capabilities with consistent management and security in a WebSphere Application Server environment. IBM HTTP Server for WebSphere Application Server is based on Apache HTTP Server. This offering is a no-cost non-supported and non-warranted version of the product.	↘				↘	↘
IBM HTTP Server for WebSphere Application Server for z/OS com.ibm.websphere. IHS.zOS.v85	IBM HTTP Server for WebSphere Application Server for z/OS provides advanced web server capabilities with consistent management and security in a WebSphere Application Server for z/OS environment. IBM HTTP Server for WebSphere Application Server z/OS is based on Apache HTTP Server.	↘		↘ ⁴			
z/OS	The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability.	↘			↘		
IBM Web Enablement for IBM I com.ibm.websphere. WEBEMB.v85	Web Enablement for IBM I offers an entitlement to WebSphere Application Server - Express [®] .						
IBM I	WebSphere Application Server - Express delivers an affordable ready-to-go application foundation for smaller deployments of dynamic web applications which can be effortlessly migrated to more advanced versions of the WebSphere Application Server family as business needs change.						
IBM WebSphere Application Server Application Server Trial com.ibm.websphere. BASE.v85	The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability.	↘ ³	↘				↘
AIX, HP-UX, IBM I, Linux, Solaris, Windows	WebSphere Application Server delivers the availability and security your business depends on while optimizing cost. This base edition of WebSphere Application Server is the foundation of the IBM WebSphere software platform.						
IBM WebSphere Application Server Application Server Trial com.ibm.websphere. BASE.IRL.v85	WebSphere Application Server also includes the Liberty profile. ⁵						
AIX, HP-UX, IBM I, Linux, Solaris, Windows	The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability.						
IBM WebSphere Application Server - Express com.ibm.websphere. EXPRESS.v85	WebSphere Application Server delivers the availability and security your business depends on while optimizing cost. This base edition of WebSphere Application Server is the foundation of the IBM WebSphere software platform.	↘ ³	↘				↘
AIX, HP-UX, IBM I, Linux, Solaris ⁶ , Windows	This offering is a no-cost trial version of the product. The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability. WebSphere Application Server - Express delivers an affordable ready-to-go application foundation for smaller deployments of dynamic web applications which can be effortlessly migrated to more advanced versions of the WebSphere Application Server family as business needs change.						
	WebSphere Application Server also includes the Liberty profile. ⁵						

Table 1. WebSphere Application Server Version 8.5 product offerings for supported operating systems (continued). The following table shows the WebSphere Application Server Version 8.5 product offerings for supported operating systems.

Offering, offering ID, and operating systems	Description	Location					
		Product media	Passport Advantage [®] offerings ² (non-z/OS systems only)	Shop ZSeries (z/OS [®] systems only)	Entitled Software Support (ESS)	developer Works	Web-based repository
IBM WebSphere Application Server - Express Trial com.ibm.websphere.EXPRESSTRIAL.v85 AIX, HP-UX, IBM i, Linux, Solaris [®] , Windows	The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability. WebSphere Application Server - Express delivers an affordable ready-to-go application foundation for smaller deployments or dynamic web applications which can be effortlessly migrated to more advanced versions of the WebSphere Application Server family as business needs change. WebSphere Application Server also includes the Liberty profile. ⁵ This offering is a no-cost trial version of the product.	↗ ³	↗			↗	↗
IBM WebSphere Application Server for Developers com.ibm.websphere.DEVELOPERS.v85 AIX, HP-UX, IBM i, Linux, Solaris, Windows	The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability. WebSphere Application Server for Developers delivers the efficient development and innovative features of WebSphere Application Server to help developers reduce testing effort and develop with confidence using a runtime environment that is identical to the production runtime environment their applications will eventually run on. WebSphere Application Server also includes the Liberty profile. ⁵	↗ ³	↗				↗
IBM WebSphere Application Server for Developers (LAN) com.ibm.websphere.DEVELOPERS.LAN.v85 AIX, HP-UX, IBM i, Linux, Solaris, Windows	The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability. WebSphere Application Server for Developers delivers the efficient development and innovative features of WebSphere Application Server to help developers reduce testing effort and develop with confidence using a runtime environment that is identical to the production runtime environment their applications will eventually run on. WebSphere Application Server also includes the Liberty profile. ⁵ This offering is a no-cost non-supported and non-warranted version of the product.					↗ ⁴	
IBM WebSphere Application Server for z/OS com.ibm.websphere.zOS.v85 z/OS	The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability. WebSphere Application Server for z/OS delivers near-continuous availability, with advanced performance and management capabilities for mission-critical applications by leveraging the qualities of services of IBM System z [®] and z/OS. WebSphere Application Server also includes the Liberty profile. ⁵	↗					
IBM WebSphere Application Server Network Deployment com.ibm.websphere.ND.v85 AIX, HP-UX, IBM i, Linux, Solaris, Windows	The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability. WebSphere Application Server Network Deployment delivers near-continuous availability, with advanced performance and management capabilities for mission-critical applications. WebSphere Application Server also includes the Liberty profile. ⁵	↗ ³	↗				↗
IBM WebSphere Application Server Network Deployment Trial com.ibm.websphere.NDTRIAL.v85 AIX, HP-UX, IBM i, Linux, Solaris, Windows	The IBM WebSphere Application Server family is the leading open standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation offering broad programming model choice and lower total cost of ownership through high performance and high manageability. WebSphere Application Server Network Deployment delivers near-continuous availability, with advanced performance and management capabilities for mission-critical applications. WebSphere Application Server also includes the Liberty profile. ⁵ This offering is a no-cost trial version of the product.						↗

Table 1. WebSphere Application Server Version 8.5 product offerings for supported operating systems (continued). The following table shows the WebSphere Application Server Version 8.5 product offerings for supported operating systems.

Offering, offering ID, and operating systems	Description	Location					
		Product media	Passport Advantage® (non-z/OS systems only)	Shop ZSeries (z/OS® systems only)	Entitled Software Support (ESS)	developer Works	Web-based repository
IBM WebSphere Application Server Web 2.0 and Mobile Toolkit com.ibm.websphere.w20tk.v11	Web 2.0 and Mobile Toolkit offers targeted, incremental new features that can make your web applications running on WebSphere Application Server easier to use. With this offering, WebSphere Application Server applications that were originally developed for desktop browsers can be adapted and deployed to mobile devices such as smartphones and tablets. This offering extends Service Oriented Architecture (SOA) by connecting external web services, internal SOA services, and Java Platform, Enterprise Edition (Java EE) objects into highly-interactive web application interfaces. Web 2.0 and Mobile Toolkit provides a supported, best-in-class Ajax development toolkit for WebSphere Application Server.	↘ ³	↘	↘ ⁴			↘
AIX, HP-UX, IBM i, Linux, Solaris, Windows, z/OS							
IBM WebSphere Application Server Web 2.0 and Mobile Toolkit (LAN) com.ibm.websphere.w20tklan.v11	Web 2.0 and Mobile Toolkit offers targeted, incremental new features that can make your web applications running on WebSphere Application Server easier to use. With this offering, WebSphere Application Server applications that were originally developed for desktop browsers can be adapted and deployed to mobile devices such as smartphones and tablets. This offering extends Service Oriented Architecture (SOA) by connecting external web services, internal SOA services, and Java Platform, Enterprise Edition (Java EE) objects into highly-interactive web application interfaces. Web 2.0 and Mobile Toolkit provides a supported, best-in-class Ajax development toolkit for WebSphere Application Server. This offering is a no-cost non-supported and non-warranted version of the product.	↘					↘
AIX, HP-UX, IBM i, Linux, Solaris, Windows, z/OS							
IBM WebSphere Edge Components: Caching Proxy com.ibm.websphere.EDGECP.v85	WebSphere Edge Components: Caching Proxy offers efficiency and performance for WebSphere Application Server environments. This offering can satisfy multiple client requests for the same content directly from a local cache. This offering is stabilized and clients are encouraged to consider using the Proxy Server and DMZ Secure Proxy functionality provided with WebSphere Application Server Network Deployment.	↘	↘				↘
AIX, HP-UX, Linux, Solaris, Windows							
IBM WebSphere Edge Components: Load Balancer for IPv4 com.ibm.websphere.EDGEIPV4.v85	WebSphere Edge Components: Load Balancer for IPv4 offers improved performance and scalability for WebSphere Application Server in IPv4 network environments and is not intended for IPv6 network environments. This offering provides an edge-of-network system that directs network traffic flow to reduce congestion and balance incoming requests to other servers and systems. This offering is stabilized and clients are encouraged to consider using the WebSphere Edge Components: Load Balancer for IPv4 and IPv6 offering.	↘	↘				↘
AIX, HP-UX, Linux, Solaris, Windows							
IBM WebSphere Edge Components: Load Balancer for IPv4 and IPv6 com.ibm.websphere.EDGEIPV4IPV6.v85	WebSphere Edge Components: Load Balancer for IPv4 and IPv6 offers improved performance and scalability for WebSphere Application Server in IPv4 or IPv6 network environments. This offering provides an edge-of-network system that directs network traffic flow to reduce congestion and balance incoming requests to other servers and systems. This offering is a no-cost trial version of the product.	↘	↘				↘
AIX, HP-UX, Linux, Solaris, Windows							
IBM WebSphere Edge Components: Load Balancer for IPv4 and IPv6 Trial com.ibm.websphere.EDGEIPV4IPV6TRIAL.v85	WebSphere Edge Components: Load Balancer for IPv4 and IPv6 offers improved performance and scalability for WebSphere Application Server in IPv4 or IPv6 network environments. This offering provides an edge-of-network system that directs network traffic flow to reduce congestion and balance incoming requests to other servers and systems. This offering is a no-cost trial version of the product.						↘
AIX, HP-UX, Linux, Solaris, Windows							

Table 1. WebSphere Application Server Version 8.5 product offerings for supported operating systems (continued). The following table shows the WebSphere Application Server Version 8.5 product offerings for supported operating systems.

Offering, offering ID, and operating systems	Description	Location					
		Product media	Passport Advantage [®] offerings ² (non-z/OS systems only)	Shop ZSeries (z/OS [®] systems only)	Entitled Software Support (ESS)	developer Works	Web-based repository
IBM WebSphere SDK Java Technology Edition Version 7.0 com.ibm.websphere.IBUNAV.v70	This IBM Software Development Kit (SDK) provides a full-function SDK for Java that is compliant with Java Platform, Standard Edition (Java SE) 7 application programming interfaces (APIs). With IBM WebSphere SDK Java Technology Edition Version 7.0, you can develop and deploy Java applications at the Java 7 API level and continue the "write once, run anywhere" Java paradigm at the Java API level. The SDK contains the Runtime Environment. The Runtime Environment allows users to run Java applications. The SDK also contains other tools that enable developers to create Java applications.	↘ ³	↘	↘ ⁴			↘
AIX, HP-UX, Linux, Solaris, Windows, z/OS							
Pluggable Application Client for IBM WebSphere Application Server com.ibm.websphere.PU6CLIENT.v85	Pluggable Application Client for IBM WebSphere Application Server provides a downloadable runtime environment for Java client applications to run with the Java Runtime Environment (JRE) on the Windows platform. The Pluggable Application Client is deprecated. It is replaced by the standalone thin client, IBM Thin Client for EJB, available as part of the Application Client for IBM WebSphere Application Server offering.	↘ ²	↘				↘
Windows							
Pluggable Application Client for IBM WebSphere Application Server (ILAN) com.ibm.websphere.PU6CLIENT.LAN.v85	Pluggable Application Client for IBM WebSphere Application Server provides a downloadable runtime environment for Java client applications to run with the Java Runtime Environment (JRE) on the Windows platform. The Pluggable Application Client is deprecated. It is replaced by the standalone thin client, IBM Thin Client for EJB, available as part of the Application Client for IBM WebSphere Application Server offering. This offering is a no-cost non-supported and non-warranted version of the product.						↘
Windows							
Web Server Plug-ins for IBM WebSphere Application Server com.ibm.websphere.PLG.v85	Web Server Plug-ins for IBM WebSphere Application Server provides an optimized connection to route requests from a web server and WebSphere Application Server.	↘ ²	↘				↘
AIX, HP-UX, IBM i, Linux, Solaris, Windows							
Web Server Plug-ins for IBM WebSphere Application Server (ILAN) com.ibm.websphere.PLGLAN.v85	Web Server Plug-ins for IBM WebSphere Application Server provides an optimized connection to route requests from a web server and WebSphere Application Server. This offering is a no-cost non-supported and non-warranted version of the product.						↘
AIX, HP-UX, IBM i, Linux, Solaris, Windows							
Web Server Plug-ins for IBM WebSphere Application Server for z/OS com.ibm.websphere.PLG.zOS.v85	Web Server Plug-ins for IBM WebSphere Application Server for z/OS provides an optimized connection to route requests from a web server and WebSphere Application Server for z/OS.	↘		↘ ⁴			
z/OS							

Table 1. WebSphere Application Server Version 8.5 product offerings for supported operating systems (continued). The following table shows the WebSphere Application Server Version 8.5 product offerings for supported operating systems.

Offering, offering ID, and operating systems	Description	Location				
		Product media	Presort Advantage [®] eImage ² (non-z/OS systems only)	Shop ZSeries (z/OS [®] systems only)	Entitled Software Support (ESS)	developer Works
WebSphere Customization Toolbox com.ibm.websphere.wct1.v85 AIX, HP-UX, Linux, Solaris, Windows ⁸	<p>The WebSphere Customization Toolbox includes tools for customizing various parts of your WebSphere Application Server environment. For example, you can use the WebSphere Customization Toolbox graphical user interface (GUI) to launch the Web Server Plug-ins Configuration Tool to configure your web server plug-ins for any operating system on which the WebSphere Customization Toolbox can be installed.</p> <p>Launch the Profile Management Tool (z/OS only) on a Windows or Linux operating system to generate jobs and instructions for creating profiles for WebSphere Application Server on z/OS systems, or launch the z/OS Migration Management tool on a Windows or Linux operating system to generate definitions for migrating WebSphere Application Server for z/OS profiles.</p> <p>You can use the Remote Installation Tool for IBM i to install IBM Installation Manager or a WebSphere Application Server product offering from a Windows workstation to a remote target IBM i system.</p> <p>Restriction: These tools are intended for use with the full WebSphere Application Server profile; they are not required or supported for use with the Liberty profile.</p>	<p>2</p>	<p>2</p>	<p>2</p>	<p>2</p>	<p>2</p>
WebSphere Customization Toolbox (LAN) com.ibm.websphere.wctLAN.v85 AIX, HP-UX, Linux, Solaris, Windows ⁸	<p>The WebSphere Customization Toolbox includes tools for customizing various parts of your WebSphere Application Server environment. For example, you can use the WebSphere Customization Toolbox graphical user interface (GUI) to launch the Web Server Plug-ins Configuration Tool to configure your web server plug-ins for any operating system on which the WebSphere Customization Toolbox can be installed.</p> <p>Launch the Profile Management Tool (z/OS only) on a Windows or Linux operating system to generate jobs and instructions for creating profiles for WebSphere Application Server on z/OS systems, or launch the z/OS Migration Management Tool on a Windows or Linux operating system to generate definitions for migrating WebSphere Application Server for z/OS profiles.</p> <p>You can use the Remote Installation Tool for IBM i to install IBM Installation Manager or a WebSphere Application Server product offering from a Windows workstation to a remote target IBM i system.</p> <p>Restriction: These tools are intended for use with the full WebSphere Application Server profile; they are not required or supported for use with the Liberty profile.</p> <p>This offering is a no-cost non-supported and non-warranted version of the product.</p>					

Table 1. WebSphere Application Server Version 8.5 product offerings for supported operating systems (continued). The following table shows the WebSphere Application Server Version 8.5 product offerings for supported operating systems.

Offering, offering ID, and operating systems	Description	Location				
		Product media	Passport Advantage [®] zImages ² (non-z/OS systems only)	Shop ZSeries (z/OS [®] systems only)	Entitled Software Support (ESS)	Web-based repository
	<p>1 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 <i>Supported hardware and software</i> pages, the information at the website takes precedence. Prerequisites information in the information center is provided as a convenience only.</p> <p>2 Located on the Supplements disk in the physical media for non-z/OS systems</p> <p>3 Located on its own disk in the physical media for non-z/OS systems</p> <p>4 Installation Manager repositories in SMP/E format, available through CBPDO or ServerPac</p> <p>5 The Liberty profile delivers a simplified and lightweight runtime environment for OSGi and web applications. Fast restart times, coupled with its small size and ease of use, make this a good option for developers building applications that do not require the full Java EE environment of traditional enterprise application-server profiles. In addition to being installable when you install the full product using Installation Manager, the Liberty profile can be downloaded and installed separately. When installed separately using downloaded files, the Liberty profile is supported on the Mac OS as well as on the platforms supported by the full WebSphere Application Server profile.</p> <p>6 IBM WebSphere Application Server - Express is not supported on Solaris x86.</p> <p>7 The Java 7 extension offering works with the following primary offerings:</p> <ul style="list-style-type: none"> • Application Client for IBM WebSphere Application Server • DMZ Secure Proxy Server for IBM WebSphere Application Server • DMZ Secure Proxy Server for IBM WebSphere Application Server for z/OS • IBM WebSphere Application Server • IBM WebSphere Application Server - Express • IBM WebSphere Application Server for Developers • IBM WebSphere Application Server for z/OS • IBM WebSphere Application Server Network Deployment <p>8 Platform-related notes:</p> <ul style="list-style-type: none"> • The Profile Management Tool (z/OS only) and z/OS Migration Management Tool that are contained in this toolbox, which create jobs to be run on z/OS systems, can be run on Intel-based Windows and Linux platforms only. • The Web Server Plugins Configuration Tool that is contained in this toolbox can be run on AIX, HP-UX, Linux, Solaris, and Windows operating systems. • The Remote Installation Tool for IBM J (the <code>!RemoteInsta11</code> command) can be run on Windows operating systems only. <p>A version of this utility that is current when the product is released is available also on the media or installation image.</p>					

Web-based service repositories for WebSphere Application Server Version 8.5 product offerings:

- For the live service repositories, use the same URLs as those used for the generally available product-offering repositories during installation. These URLs are based on the following pattern:
`http://www.ibm.com/software/repositorymanager/offering_ID`

where *offering_ID* is the offering ID that you can find in the table above.

- These locations do not contain web pages that you can access using a web browser. They are remote web-based repository locations that you specify for Installation Manager so that it can maintain the product.

Table 2. WebSphere Application Server Version 8.5 associated products. The following table shows the products associated with WebSphere Application Server Version 8.5.

Offering	Operating systems	Description	Location			
			Product media	Passport Advantage elements (Non-z/OS systems only)	Shop ZSeries (z/OS systems only)	Web
IBM Assembly and Deploy Tools for WebSphere Administration Version 8.5	AIX, HP-UX, IBM i, Linux, Solaris, Windows	IBM Assembly and Deploy Tools for WebSphere Administration enable rapid assembly and deployment of applications to WebSphere Application Server environments. These tools replace the previously available IBM Rational® Application Developer Assembly and Deploy function and are restricted to assembly and deployment usage only.	✓	✓		
IBM DB2® Enterprise Server Edition Limited Use for zLinux Version 9.7	zLinux	DB2 Enterprise Server Edition is database software capable of handling demanding workloads. Designed for large and mid-sized departmental servers, Enterprise Edition should be used for applications that require flexibility and scalability.	✓	✓		
IBM DB2 Workgroup Server Edition Limited Use Version 9.7	AIX, HP-UX, Linux, Solaris, Windows	DB2 Workgroup Server Edition is a scalable, full-fledged relational database for small to medium-sized businesses.	✓	✓		
IBM Installation Manager Version 1.5.2	AIX, HP-UX, IBM i, Linux, Solaris, Windows, z/OS	IBM Installation Manager is a single installation program that can use remote or local software repositories to install, modify, or update new WebSphere Application Server products. It determines and shows available packages—including products, fix packs, interim fixes, and so on—checks prerequisites and interdependencies, and installs the selected packages. You also use Installation Manager to easily uninstall the packages that it installed.	✓	✓	✓ ¹	✓
IBM Packaging Utility Version 1.5.2	AIX, HP-UX, Linux, Solaris, Windows ²	IBM Packaging Utility is a program that is used to create and manage packages for repositories to be used by Installation Manager. You can generate a new repository for packages, copy multiple packages to one repository, copy multiple versions of a product to one repository, delete packages that are no longer needed, create a repository to install packages over HTTP, or copy packages from installation images or IBM repositories to a repository that resides on an internal server or a local machine for example.	✓	✓	✓ ¹	✓
IBM Rational Agent Controller Version 8.3.5	AIX, Solaris, Linux, zLinux, z/OS	IBM Rational Agent Controller is a daemon process that enables client applications to launch host processes and interact with agents that coexist within host processes.	✓	✓	✓	✓
IBM Rational Application Developer Trial Version 8.5	AIX, HP-UX, IBM i, Linux, Solaris, Windows	IBM Rational Application Developer, the enterprise software development solution for Java and Java Enterprise Edition (Java EE), helps development teams deliver solutions for WebSphere Application Server. It includes support for feature packs and integrated test servers.	✓	✓	?	
IBM Support Assistant Version 4.1.2 or Version 5	AIX, HP-UX, IBM i, Linux, Solaris, Windows, z/OS	IBM Support Assistant is a free program that simplifies support and helps users resolve questions and problems with IBM software products.	✓	✓		✓
IBM Tivoli® Access Manager for e-business Version 6.1.1	AIX, HP-UX, Linux, Solaris, Windows, z/OS	IBM Tivoli Access Manager for e-business is a user authentication, authorization, and web SSO solution for executing security policies for web and application resources.	✓	✓	✓	
IBM Tivoli Composite Application Manager for WebSphere Application Server	AIX, HP-UX, Linux, Solaris, Windows, z/OS	IBM Tivoli Composite Application Manager for WebSphere Application Server is an optional tool that can be installed after the installation of WebSphere Application Server. It monitors the performance of WebSphere Application Server applications and provides transaction response metrics and realtime status on the health of applications. You can view this data in the Tivoli Performance Viewer, which you can access from the WebSphere Application Server administrative console. This tool also provides integration with the Tivoli Application Performance Monitoring solutions.	✓	✓		✓
IBM Tivoli Directory Server Version 6.3	AIX, HP-UX, Linux, Solaris, Windows	IBM Tivoli Directory Server is an IBM implementation of the Lightweight Directory Access Protocol. IBM Tivoli Directory Server is a standards-compliant enterprise directory for corporate intranets and the Internet.	✓	✓		
IBM Tivoli Federated Identity Manager Version 6.2.2	AIX, HP-UX, Linux, Solaris, Windows	IBM Tivoli Federated Identity Manager offers secure information sharing between trusted parties with federated SSO and a security token service.	✓	✓		✓
IBM WebSphere Adapters Version 7.5.0. ³	Various, depending on adapter	IBM WebSphere Adapters help accelerate business integration projects with rapidly deployable, enterprise ready connections based on best practices.	✓	✓	✓	
Mozilla Firefox for AIX Version 3.5.13 (64-bit only)	AIX	Mozilla Firefox for AIX is an open source web browser. It implements technologies like the Gecko layout engine and supports Wweb standards or draft standards like HTML, XHTML, XML, CSS, DOM, and more.	✓	✓		

¹ Installation Manager repositories in SMP/E format, available through CBPDO or ServerPac

² IBM i customers can build repositories using the IBM Packaging Utility on a Windows system.

³ WebSphere Adapters Version 7.5.0.1 for WebSphere Application Server for z/OS Version 8.5 cannot be installed using the disk containing IBM WebSphere Adapters Version 7.5.0.1 on IBM WebSphere Application Server Version 8.5 Adobe Acrobat PDF and follow the z/OS installation instructions in the section on performing silent installation and uninstallation.

Directory conventions

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

IBM i

Default product locations - IBM i

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 products or components require multiple locations.

app_client_root

The default installation root directory for the Application Client for IBM WebSphere Application Server is the `/QIBM/ProdData/WebSphere/AppClient/V85/client` directory.

app_client_user_data_root

The default Application Client for IBM WebSphere Application Server user data root is the `/QIBM/UserData/WebSphere/AppClient/V85/client` directory.

app_client_profile_root

The default Application Client for IBM WebSphere Application Server profile root is the `/QIBM/UserData/WebSphere/AppClient/V85/client/profiles/profile_name` directory.

app_server_root

The default installation root directory for WebSphere Application Server - Express is the `/QIBM/ProdData/WebSphere/AppServer/V85/Express` directory.

java_home

Table 3. Root directories for supported Java Virtual Machines.

This table shows the root directories for all supported Java Virtual Machines (JVMs).

JVM	Directory
32-bit IBM Technology for Java	<code>/QOpenSys/QIBM/ProdData/JavaVM/jdk60/32bit</code>
64-bit IBM Technology for Java	<code>/QOpenSys/QIBM/ProdData/JavaVM/jdk60/64bit</code>

plugins_profile_root

The default Web Server Plug-ins profile root is the `/QIBM/UserData/WebSphere/Plugins/V85/webserver/profiles/profile_name` directory.

plugins_root

The default installation root directory for Web Server Plug-ins is the `/QIBM/ProdData/WebSphere/Plugins/V85/webserver` directory.

plugins_user_data_root

The default Web Server Plug-ins user data root is the `/QIBM/UserData/WebSphere/Plugins/V85/webserver` directory.

product_library

product_lib

This is the product library for the installed product. The product library for each Version 8.5 installation on the system contains the program and service program objects (similar to `.exe`, `.dll`, `.so` objects) for the installed product. The product library name is `QWAS85x` (where `x` is `A`, `B`, `C`, and so on). The product library for the first WebSphere Application Server Version 8.5 product installed on the system is `QWAS85A`. The `app_server_root/properties/product.properties` file contains the value for the product library of the installation, was `.install.library`, and is located under the `app_server_root` directory.

profile_root

The default directory for a profile named *profile_name* for WebSphere Application Server - Express is the `/QIBM/UserData/WebSphere/AppServer/V85/Express/profiles/profile_name` directory.

shared_product_library

The shared product library, which contains all of the objects shared by all installations on the system, is QWAS85. This library contains objects such as the product definition, the subsystem description, the job description, and the job queue.

user_data_root

The default user data directory for WebSphere Application Server - Express is the `/QIBM/UserData/WebSphere/AppServer/V85/Express` directory.

The profiles and profileRegistry subdirectories are created under this directory when you install the product.

The *user_data_root* directory contains the default locations for WLP_USR_DIR and WLP_OUTPUT_DIR when the Liberty profile is installed. These directories are `user_data_root/wlp/usr` and `user_data_root/wlp/output/servers`, respectively.

web_server_root

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

Hardware and software requirements

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

See Supported hardware and software website 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 website takes precedence. Prerequisites information in the information center is provided as a convenience only.

Required disk space

IBM i

Disk-space requirements vary according to the hardware platform. See Chapter 5, “Preparing the operating system for installation on IBM i,” on page 27 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.

Translated Languages

IBM i

The WebSphere Application Server Version 8.5 distributed product is available in these native languages:

- Brazilian Portuguese
- Chinese (Simplified)
- Chinese (Traditional)
- Czech
- English
- French
- German
- Hungarian
- Italian

- Japanese
- Korean
- Polish
- Russian
- Spanish

Updating ports in existing profiles on IBM i

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

Before you begin

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.

Note: You should only run this script if the profile is unfederated and if the configuration is the same structure as it was when the profile was created. For example, this script is ideal for changing ports for an unfederated application server profile after you created the profile but before you altered its configuration. For all other situations, use the techniques described in the *Setting port numbers to the `serverindex.xml` file using scripting* article.

About this task

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.

Procedure

- 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/V85/<edition>
was_install.root=/QIBM/ProdData/WebSphere/AppServer/V85/<edition>
profileName=myprofile
profilePath=/QIBM/UserData/WebSphere/AppServer/V85/<edition>/profiles/myprofile
templatePath=/QIBM/ProdData/WebSphere/AppServer/V85/<edition>/profileTemplates/default
nodeName=MYISERIES_myprofile
cellName=MYISERIES_myprofile
hostName=MYISERIES.mycompany.com
```

2. Start a Qshell session

```
STRQSH
```

3. Change directories to the `app_server_root/bin` directory.

```
cd /QIBM/ProdData/WebSphere/AppServer/V85/<edition>/bin
```

4. Issue the command.

```
ws_ant -propertyfile /TMP/was_props/appserver.props -file
/QIBM/ProdData/WebSphere/AppServer/V85/<edition>/profileTemplates/default/actions/updatePorts.ant
```

5. Open the administrative console and view the changed port assignments.

To view the port assignments, click **Servers > Server Types > WebSphere 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/V85/<edition>
was_install.root=/QIBM/ProdData/WebSphere/AppServer/V85/<edition>
profileName=AppSrv02
profilePath=/QIBM/UserData/WebSphere/AppServer/V85/<edition>/profiles/AppSrv02
templatePath=/QIBM/ProdData/WebSphere/AppServer/V85/<edition>/profileTemplates/default
nodeName=MYISERIES_AppSrv02
cellName=MYISERIES_AppSrv02
hostName=MYISERIES.mycompany.com
defaultPorts=true
```

2. Start a Qshell session

```
STRQSH
```

3. Change directories to the `app_server_root/bin` directory.

```
cd /QIBM/ProdData/WebSphere/AppServer/V85/<edition>/bin
```

4. Issue the command.

```
ws_ant -propertyfile /TMP/was_props/appserver.props -file
/QIBM/ProdData/WebSphere/AppServer/V85/<edition>/profileTemplates/default/actions/updatePorts.ant
```

5. Open the administrative console and view the changed port assignments.

To view the port assignments, click **Servers > Server Types > WebSphere 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 IBM i command line to see all ports in use on the machine.

- Assign ports starting at 20050 to the AppSrv03 profile.

On IBM i, 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/V85/<edition>
was_install.root=/QIBM/ProdData/WebSphere/AppServer/V85/<edition>
profileName=AppSrv03
profilePath=/QIBM/UserData/WebSphere/AppServer/V85/<edition>/profiles/AppSrv03
templatePath=/QIBM/ProdData/WebSphere/AppServer/V85/<edition>/profileTemplates/default
nodeName=MYISERIES_AppSrv03
cellName=MYISERIES_AppSrv03
hostName=MYISERIES.mycompany.com
startingPort=20050
```

2. Start a Qshell session

```
STRQSH
```

3. Change directories to the `app_server_root/bin` directory.

```
cd /QIBM/ProdData/WebSphere/AppServer/V85/<edition>/bin
```

4. Issue the command.

```
ws_ant -propertyfile /TMP/was_props/appserver.props -file
/QIBM/ProdData/WebSphere/AppServer/V85/<edition>/profileTemplates/default/actions/updatePorts.ant
```

5. Open the administrative console and view the changed port assignments.

To view the port assignments, click **Servers > Server Types > WebSphere 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/V85/<edition>
was_install.root=/QIBM/ProdData/WebSphere/AppServer/V85/<edition>
profileName=AppSrv04
profilePath=/QIBM/UserData/WebSphere/AppServer/V85/<edition>/profiles/AppSrv04
templatePath=/QIBM/ProdData/WebSphere/AppServer/V85/<edition>/profileTemplates/default
nodeName=MYISERIES_AppSrv04
cellName=MYISERIES_AppSrv04
hostName=MYISERIES.mycompany.com
portsFile=/TMP/was_props/portdefs.our_appsrv_ex.props
```

2. Start a Qshell session

```
STRQSH
```

3. Change directories to the `app_server_root/bin` directory.

```
cd /QIBM/ProdData/WebSphere/AppServer/V85/<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/V85/<edition>/profileTemplates/default/actions/updatePorts.ant
```

5. Open the administrative console and view the changed port assignments.

To view the port assignments, click **Servers > Server Types > WebSphere 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.

Results

This procedure results in four different methods of port assignments with the `updatePorts.ant` script.

What to do next

Start or restart your server to use the new ports.

Installing the WebSphere Application Server group PTF on IBM i

Install the WebSphere Application Server group PTF to obtain the latest fix pack for the product and to install required PTFs for other products on which WebSphere Application Server relies. After installing the group PTF, an additional step is required to install the fix pack and bring the product to the current fix level.

Before you begin

Install the WebSphere Application Server product before using this procedure. See Chapter 4, “Task overview: Installing on IBM i,” on page 7 for more information.

About this task

Fixes for the WebSphere Application Server product are shipped in a fix pack. The WebSphere Application Server for IBM i group PTF delivers the most current level of the fix pack for the product.

Use this procedure to load and apply the latest WebSphere Application Server for IBM i group PTF before installing the current level of fix pack and then starting WebSphere Application Server for the first time.

Along with the current fix pack, the group PTF includes WebSphere Application Server PTFs that bring the product up to the latest service level for WebSphere Application Server Version for IBM i 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 IBM i, 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 website to determine the group PTF that you must order and install for your WebSphere Application Server edition and for your IBM i release level.

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

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 IBM i 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.

Procedure

1. Verify that all of the prerequisite software is installed.
2. Place the WebSphere for IBM i group PTF disk into the disk drive on your IBM i 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 disk 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 IBM i 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, install the fix pack for the product.

If you obtained the fix pack by installing the WebSphere Application Server group PTF, the instructions for installing the fix pack can be found in file /QIBM/WAS/WASFixpacks/ReadmeV8.html or /QIBM/WAS/WASFixpacks/ReadmeV8.txt. Otherwise, see “Installing fix packs on IBM i operating systems using response files” on page 56 or “Installing fix packs on IBM i operating systems using the command line” on page 58 for details on installing the fix pack.

9. See the product release notes for information about the release, including a description of known problems and workarounds.

Results

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

What to do next

Go to Chapter 8, “Configuring the product after installation on IBM i,” on page 69 to continue the installation.

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.

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 website 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 website

The IBM WebSphere Application Server Library website 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 website

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

- Java EE information

For more information about Java Platform, Enterprise Edition 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 website

The IBM Terminology website 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 email 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 IBM i.

- Adobe Acrobat website

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

Chapter 5. Preparing the operating system for installation on IBM i

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.

About this task

Use this procedure to verify that you are ready to install. Complete the following procedure before you begin to install the product on your IBM i system.

Procedure

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 5733W80.
 - 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 3, “Checklist: Installing WebSphere Application Server on the IBM i platform,” on page 5 to use as a checklist during the installation process.

3. Determine the 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.

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

Table 4. Tasks for preparing your operating system.

The following table shows the tasks for preparing your operating system.

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 IBM i cumulative PTF package	1-2 hours
Installing WebSphere Application Server	
Installing WebSphere Application Server on your IBM i 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.

4. Read the product release notes for important information about the product.
See the WebSphere Application Server documentation page for IBM i .
5. Verify that your system meets all hardware and software prerequisites, and install prerequisite software if necessary.
Verify that the IBM i prerequisites are satisfied. Install prerequisite software if necessary.

If you are running an IBM i 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 “IBM i prerequisites” 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 31 for more information.

7. Obtain and install the correct IBM i cumulative PTF package.

See “Cumulative PTFs for IBM i” on page 33 for more information.

8. Obtain the WebSphere Application Server product and current fixes.

Before you install WebSphere Application Server for IBM i, you need to obtain the application server product and current fixes.

- **WebSphere Application Server Version 8.5 for IBM i**

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 8.5 for IBM i was tested on a specific IBM i 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 8.5 for IBM i successfully on earlier or later cumulative PTF packages.

See “Determining the proper cumulative PTF level on IBM i” on page 32 for more information about determining the cumulative PTF package level for your server.

- **PTFs**

To install the WebSphere Application Server product, ensure that you have a recent level of the Java group PTF installed. For V5R4M0, level 13 or higher is recommended.

The WebSphere Application Server Version 8.5 for IBM i group PTF includes fixes for WebSphere Application Server and other IBM i 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 IBM i group PTF you must order and install, see the WebSphere Application Server for IBM i PTFs web page. Group PTF numbers differ by WebSphere Application Server product and IBM i release level.

What to do next

IBM i prerequisites

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

Hardware requirements

Overall system requirements will vary based on actual workload requirements. Use IBM Systems Workload Estimator for sizing assistance.

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
- Disk requirements

Minimum server requirements

- Recommended minimum server models:
 - WebSphere requires a partition with a minimum of 600 CPW
 - WebSphere applications can benefit from the addition of an Accelerator Feature on models where this is available
 - Each active WebSphere profile requires a minimum of 1 GB of memory
- Any partition running WebSphere Application Server should have a minimum of 2 GB of memory. This memory requirement is in addition to memory required for any other applications running on your IBM i 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 5. Disk requirements.

This table describes WebSphere Application Server for IBM i disk requirements.

Installation option	Description	Disk space after installation
WebSphere Application Server	WebSphere Application Server run time	910 MB
Application Server Samples	Sample applications	90 MB
Application Client	Client development and run time	230 MB
Web Server Plug-ins	Web Server Plug-ins	100 MB

IBM i software requirements

The software required is as follows:

IBM i Version X Release Y (VXRY)

WebSphere Application Server is supported on IBM i Version 6 Release 1 (V6R1) and Version 7 Release 1 (V7R1). The IBM i server must be in an unrestricted state, and your user profile must have *ALLOBJ and *SECADM special authorities.

Java requirements

The following Java product is required to use or install WebSphere Application Server Version 8.5:

V6R1 and V7R1

- IBM J2SE 6.0 32-bit JVM (5761-JV1 option 11)

The following PTFs are required for 5761-JV1 option 11:

- SI42021
- SI42022
- SI42026

IBM i Qshell (5761-SS1, or 5770-SS1 option 30)

Required to run installation scripts and to use other scripts in WebSphere Application Server.

IBM i Extended Base Directory Support (5761-SS1, or 5770-SS1 option 3)

Required for installation.

IBM i Portable Application Solutions Environment (5761-SS1, or 5770-SS1 option 33)

Required to use Tivoli Performance Viewer. Required for Java SE 6 32 bit and Java SE 6 64 bit.

IBM i Host Servers (5761-SS1, or 5770-SS1 option 12)

Required for installation.

IBM i Digital Certificate Manager (5761-SS1, or 5770-SS1 option 34)

Required for installation to use Secure Sockets Layer (SSL) protocol.

All necessary fixes

The following PTF is required for 5761-SS1:

- SI41986

The following PTF is required for 5770-SS1:

- SI41988

For a list of current fixes, see <http://www.ibm.com/systems/i/software/websphere/index.html> and click **PTFs**.

IBM i optional software

The optional software is as follows:

Java products

You can choose the following optional Java product to use with WebSphere Application Server Version 8.5:

- **V6R1** and **V7R1**

- IBM SE 6.0 64 bit (5761-JV1 option 12)

The following PTFs are required for 5761-JV1 option 12:

- SI41985
- SI41998
- SI42024

- **V7R1** only

- IBM SE 7

- IBM SE 7 32 bit (5761-JV1 option 14)
Level 7 or higher of group PTF SF99572
- IBM SE 7 64 bit (5761-JV1 option 15)
Level 7 or higher of group PTF SF99572

- IBM WebSphere SDK Java Technology Edition Version 7.0

- IBM WebSphere SDK Java Technology Edition Version 7.0 32 bit (5761-JV1 option 14)
PTF SI46212
- IBM WebSphere SDK Java Technology Edition Version 7.0 64 bit (5761-JV1 option 15)
PTF SI46211

You can obtain 5761-JV1 option 14 and option 15 from the IBM Entitled software support site.

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) (5761-DG1 or 5770-DG1)
- Lotus® Domino® 8 for System i® 8.0 (5733-LD8), versions 8.0.1 and 8.0.2
- IBM Domino 8.5 for i (5733-L85)

DB2 Query Manager and SQL Development Kit for iSeries (5761-ST1 or 5770-ST1)

The DB2 Query Manager and SQL Development Kit for iSeries help you develop client applications.

Next, see “Workstation prerequisites.”

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

See Detailed system requirements for more information.

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.

Disk drive

Your workstation must have a disk 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. See Detailed system requirements for more information.

Any of these IBM development kits for Java

- Windows IBM Enhanced Java SE Development Kit 6
- HP-UX IBM Software Development Kit for the Java Platform, Version 1.6
- IBM Developer Kit for Linux, Java 2 Technology Edition, Version 1.6
- Solaris IBM Java SE Development Kit 6
- IBM Developer Kit for AIX, Java 2 Technology Edition, Version 1.6

These IBM development kits for Java are included on the WebSphere Application Server workstation disk. 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 6.0 SP2 or later
- AIX: Mozilla Firefox Version 1.5 or later

- HP-UX, Linux, Solaris: Mozilla Firefox Version 2.0 or later

Next, see “Determining the proper cumulative PTF level on IBM i.”

Determining the proper cumulative PTF level on IBM i

WebSphere Application Server for IBM i 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 IBM i.

Before you begin

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.

About this task

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

Procedure

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 page.
 - b. Under WebSphere PTF information, click the release level for your operating system.
 - c. Click the Cumulative 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 on V6R1:

```

                                Display PTF Status
                                System: your.server
Product ID . . . . . : 5761999
IPL source . . . . . : ##MACH#B
Release of base option . . . . . : V6R1M0 L00

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

   PTF                               IPL
Opt ID      Status                    Action
-----
TL10215    Temporarily applied         None
TL10047    Permanently applied          None
TL09279    Permanently applied          None
TL09111    Permanently applied          None
TL08365    Permanently applied          None
TL08288    Superseded                     None
TL08190    Superseded                     None
TL08127    Superseded                     None
More...

F3=Exit  F11=Display alternate view  F17=Position to  F12=Cancel

```

What to do next

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 IBM i” on page 33 for more information.

- Obtain WebSphere Application Server for IBM i if the correct cumulative PTF is installed. See Chapter 5, “Preparing the operating system for installation on IBM i,” on page 27.

Cumulative PTFs for IBM i

WebSphere Application Server requires a minimum cumulative PTF package level for the operating system on your IBM i server. If the correct cumulative PTF package is not installed on your IBM i 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 IBM i information center*.

Installing the cumulative PTF package requires you to restart your IBM i 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.

For information about verifying your cumulative PTF level, see “Determining the proper cumulative PTF level on IBM i” on page 32.

If the correct cumulative PTF is already installed, skip this step and continue to Chapter 4, “Task overview: Installing on IBM i,” on page 7.

Next, go to Chapter 4, “Task overview: Installing on IBM i,” on page 7.

Chapter 6. Installing and uninstalling the product on IBM i operating systems

IBM Installation Manager is a common installer for many IBM software products that you use to install or uninstall this version of WebSphere Application Server.

Before you begin

Installation Manager is a single installation program that can use remote or local software repositories to install, modify, or update new WebSphere Application Server products. It determines available packages—including products, fix packs, interim fixes, and so on—checks prerequisites and interdependencies, and installs the selected packages. You also use Installation Manager to uninstall the packages that it installed.

Restriction: The Installation Manager GUI is not available on IBM i; all interaction with Installation Manager on IBM i is done through the command line or response files.

Overview of IBM Installation Manager: IBM Installation Manager is a general-purpose software installation and update tool that runs on a range of computer systems. Installation Manager can be invoked through a command-line interface. You can also create response files in XML and use them to direct the performance of Installation Manager tasks in silent mode.

For more information on using Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Packages and package groups: Each software product that can be installed with Installation Manager is referred to as a package. An installed package has a product level and an installation location. A package group consists of all of the products that are installed at a single location.

How many Installation Managers do you need: You only need to run Installation Manager on those systems on which you install or update product code. You normally need only one Installation Manager on a system because one Installation Manager can keep track of any number of product installations.

Creating an Installation Manager: When the installation kit is available on your system, you can create an Installation Manager. An Installation Manager consists of a set of binaries that are copied from the installation kit and a set of runtime data that describe the products that have been installed by this particular Installation Manager. Before creating an Installation Manager, you must decide in which mode the Installation Manager will run as well as where the binaries and runtime data—called agent data or appdata—will reside. Then, you issue the Installation Manager installation command from the appropriate user ID to create the Installation Manager.

Accessing product repositories: All software materials that will be installed with IBM Installation Manager are stored in repositories. Each repository contains program objects and metadata for one or more packages—that is, software products at a particular level. Repositories can also contain product maintenance, such as fix packs and interim fixes. Whenever you install a new product, you can choose from any of the available product levels in any accessible repository.

Installing the product: After you have created an Installation Manager and have access to all necessary product repositories, you can use Installation Manager command-line commands or response files to perform the actual product installations. When you install a product, you provide the package name, optionally the product level to be installed, the product location, and any other optional properties. For example, some products have optional features that you can select at installation time or a list of optional supported language packs from which you can select.

Working with installed products: You can use Installation Manager commands to list installed products and product levels. You can also obtain this information for installed copies of WebSphere Application Server Version 8.5 products by issuing the `versionInfo` command from the product file system. You can use Installation Manager commands or response files to install a new product level, roll back to a previous level, or modify the product by adding or removing optional features or language packs.

Notes:

- You must have Java SE 6 32 bit (option 11 of the IBM Developer Kit for Java) installed on your IBM i system before installing WebSphere Application Server Version 8.5. For more information, read “IBM i prerequisites” on page 28.
- Installation Manager console mode, which is included in Installation Manager Version 1.4.3 and later, does not work with WebSphere Application Server Version 8.5 offerings on systems other than z/OS.
- Do not transfer the content of a repository in non-binary mode and do not convert any content on extraction.
- When you try to install IBM Installation Manager locally from the WebSphere Application Server product media on an IBM i operating system, the following error message might be displayed:
The Installc executable launcher was unable to locate its companion shared library.

This error occurs because all directory and files names contained by the product media are displayed in upper case. To resolve this issue, enable the handling of mixed case on your IBM i operating system using the following command:

```
CHGOPTA EXTMEDFMT(*YES)
```

About this task

For more information on using Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Perform one of these procedures to install, update, rollback, or uninstall the product using Installation Manager.

Note: Before using Installation Manager to install a product, you might want to back up your Installation Manager configuration using the instructions in the IBM Installation Manager Version 1.5 Information Center if the possibility of corruption is a concern.

Procedure

- “Installing the product on IBM i operating systems using response files” on page 37
- “Installing the product on IBM i operating systems using the command line” on page 43
- “Installing the product remotely on IBM i operating systems using the `iRemoteInstall` command” on page 48
- “Installing and removing features on IBM i operating systems using response files” on page 51
- “Installing interim fixes on IBM i operating systems using the command line” on page 54
- “Uninstalling interim fixes from IBM i operating systems using the command line” on page 62
- “Installing fix packs on IBM i operating systems using response files” on page 56
- “Installing fix packs on IBM i operating systems using the command line” on page 58
- “Uninstalling fix packs from IBM i operating systems using response files” on page 63
- “Uninstalling fix packs from IBM i operating systems using the command line” on page 64
- “Uninstalling the product from IBM i operating systems using response files” on page 65
- “Uninstalling the product from IBM i operating systems using the command line” on page 66

Results

- The following locations are the defaults for Installation Manager files on IBM i systems:
 - **Installation location:** /QIBM/ProdData/InstallationManager
 - **Agent data location:** /QIBM/UserData/InstallationManager
 - **Registry:** /QIBM/InstallationManager/.ibm/registry/InstallationManager.dat
- Logs are located in the logs directory of Installation Manager's agent data location. For example:

/QIBM/UserData/InstallationManager/logs

The main log files are time-stamped XML files in the logs directory, and they can be viewed using any standard web browser.

Note: The `versionInfo` and `historyInfo` commands return version and history information based on all of the installation, uninstallation, update, and rollback activities performed on the system.

Installing the product on IBM i operating systems using response files

You can install WebSphere Application Server Version 8.5 on IBM i operating systems using Installation Manager response files.

Before you begin

Prepare for the installation before using this procedure. See Chapter 5, “Preparing the operating system for installation on IBM i,” on page 27 for more information.

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

Install Installation Manager on the system onto which you want to install the product.

- If you want to use the Installation Manager that comes with this product, perform the following actions:

1. Obtain the necessary files.

There are three basic options for obtaining and installing Installation Manager and the product.

- **Access the physical media, and use local installation**

You can access the product repositories on the product media.

- a. Install Installation Manager on your system.

You can install Installation Manager using the product media, using a file obtained from the Passport Advantage site, or using a file containing the most current version of Installation Manager from the IBM Installation Manager download website.

- b. Use Installation Manager to install the product from the product repositories on the media.

- **Download the files from the Passport Advantage site, and use local installation**

Licensed customers with a Passport Advantage ID and password can download the necessary product repositories from the Passport Advantage site.

- a. Download the files from the Passport Advantage site.

- b. Install Installation Manager on your system.

You can install Installation Manager using the product media, using a file obtained from the Passport Advantage site, or using a file containing the most current version of Installation Manager from the IBM Installation Manager download website.

- c. Use Installation Manager to install the product from the downloaded repositories.

- **Access the live repositories, and use web-based installation**

If you have a Passport Advantage ID and password, you can install the product from the web-based repositories.

- a. Install Installation Manager on your system.

You can install Installation Manager using the product media, using a file obtained from the Passport Advantage site, or using a file containing the most current version of Installation Manager from the IBM Installation Manager download website.

- b. Use Installation Manager to install the product from the web-based repository located at

<http://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85>

Note: This location does not contain a web page that you can access using a web browser. This is a remote web-based repository location that you must specify in the response file so that the installation can access the files in this repository.

Whenever possible, you should use the remote web-based repositories so that you are accessing the most up-to-date installation files.

Note: If you do not have a Passport Advantage ID and password, you must install the product from the product repositories on the media or local repositories.

2. Install Installation Manager.

- a. Sign on to the IBM i system with a user profile that has *ALLOBJ and *SECADM special authorities.
- b. On a CL command line, run the **STRQSH** command to start the Qshell command shell.
- c. Make sure that the umask is set to 022.

To verify the umask setting, issue the following command:

```
umask
```

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

```
umask 022
```

- d. Change to the temporary directory where you unpacked the Installation Manager files.
- e. Run the following command in the temporary folder:

```
installc -acceptLicense -log log_file_path_and_name
```

Notes:

- For more information on installing Installation Manager, see the IBM Installation Manager Version 1.5 Information Center.
- Use only the **installc** command to install Installation Manager.
- If you already have a version of Installation Manager installed on your system and you want to use it to install and maintain the product, obtain the necessary product files.

There are three basic options for installing the product.

– Access the physical media, and use local installation

You can access the product repositories on the product media. Use Installation Manager to install the product from the product repositories on the media.

– Download the files from the Passport Advantage site, and use local installation

Licensed customers with a Passport Advantage ID and password can download the necessary product repositories from the Passport Advantage site.

1. Download the product repositories from the Passport Advantage site.
2. Use Installation Manager to install the product from the downloaded repositories.

– Access the live repositories, and use web-based installation

If you have a Passport Advantage ID and password, you can use Installation Manager to install the product from the web-based repositories. Use Installation Manager to install the product from the web-based repository located at

<http://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85>

Note: This location does not contain a web page that you can access using a web browser. This is a remote web-based repository location that you must specify in the response file so that the installation can access the files in this repository.

Whenever possible, you should use the remote web-based repositories so that you are accessing the most up-to-date installation files.

Note: If you do not have a Passport Advantage ID and password, you must install the product from the product repositories on the media or local repositories.

Procedure

1. Optional: If the repository requires a username and password, create a keyring file to access this repository.

For more information on creating a keyring file for Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Tip: When creating a keyring file, append `/repository.config` at the end of the repository URL location if the `imutilsc` command is unable to find the URL that is specified.

2. Sign on to the IBM i system with a user profile that has `*ALLOBJ` and `*SECADM` special authorities.
3. On a CL command line, run the `STRQSH` command to start the Qshell command shell.
4. Make sure that the `umask` is set to `022`.

To verify the `umask` setting, issue the following command:

```
umask
```

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

```
umask 022
```

5. Use a response file to install the product.

Change to the `eclipse/tools` subdirectory in the directory where you installed Installation Manager, and install the product. For example:

```
./imcl -acceptLicense  
input $HOME/WASFiles/temp/install_response_file.xml  
-log $HOME/WASFiles/temp/install_log.xml  
-keyring $HOME/WASFiles/temp/im.keyring
```

Notes:

- The relevant terms and conditions, notices, and other information are provided in the license-agreement files in the `lafiles` or `product_name/lafiles` subdirectory of the installation image or repository for this product.
- `/QIBM/ProdData/InstallationManager` is the default installation location for Installation Manager files on IBM i systems.
- The program might write important post-installation instructions to standard output.

Read the IBM Installation Manager Version 1.5 Information Center for more information.

Example

The following is an example of a response file for installing the product with no optional features into the `/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS` directory using a web-based repository located at `http://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85`.

```
<?xml version="1.0" encoding="UTF-8"?>  
<agent-input>  
<server>  
  <repository location='http://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85' />  
</server>  
<profile id='IBM WebSphere Application Server V8.5' installLocation='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS'>  
  <data key='eclipseLocation' value='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS' />  
  <data key='was.install.os400.profile.location' value='/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS' />  
  <data key='user.import.profile' value='false' />  
  <data key='cic.selector.nl' value='en, fr, it, zh, ro, ru, zh_TW, de, ja, pl, es, cs, hu, ko, pt_BR' />  
</profile>
```

```

<install modify='false'>
  <offering profile='IBM WebSphere Application Server V8.5'
    features='core.feature' id='com.ibm.websphere.EXPRESS.v85' />
</install>
<preference name='com.ibm.cic.common.core.preferences.eclipseCache'
  value='/QIBM/UserData/InstallationManager/IMShared' />
<preference name='com.ibm.cic.common.core.preferences.connectTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.readTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.downloadAutoRetryCount' value='0' />
<preference name='offering.service.repositories.areUsed' value='true' />
<preference name='com.ibm.cic.common.core.preferences.ssl.nonsecureMode' value='false' />
<preference name='com.ibm.cic.common.core.preferences.http.disablePreemptiveAuthentication' value='false' />
<preference name='http.ntlm.auth.kind' value='NTLM' />
<preference name='http.ntlm.auth.enableIntegrated.win32' value='true' />
<preference name='com.ibm.cic.common.core.preferences.preserveDownloadedArtifacts' value='true' />
<preference name='com.ibm.cic.common.core.preferences.keepFetchedFiles' value='false' />
<preference name='PassportAdvantageIsEnabled' value='false' />
<preference name='com.ibm.cic.common.core.preferences.searchForUpdates' value='false' />
</agent-input>

```

Tips:

- Make sure that the repository location points to the web-based or local product repository. For example:

```
<repository location='https://downloads.mycorp.com:8080/WAS_85_repository' />
```

- The following line from the example specifies the default value of the profile location for IBM i:

```
<data key='was.install.os400.profile.location' value='/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS' />
```

To override this default location, specify a different location

- The following line from the example specifies the default value of the shared resources directory for IBM i:

```
<preference name='com.ibm.cic.common.core.preferences.eclipseCache' value='/QIBM/UserData/InstallationManager/IMShared' />
```

To override this default location, specify a different location

Note: There is only one shared resources directory for Installation Manager. If there has been an installation on the system in the past, it will use that shared resources directory and not the one specified in the response file.

- To disable remote searches for updates in the response file, set the following preferences to false:
 - offering.service.repositories.areUsed
Used for searching remote repositories for updates to installed offerings
 - com.ibm.cic.common.core.preferences.searchForUpdates
Used for searching for updates to Installation Manager

For example:

```

<preference value='false' name='offering.service.repositories.areUsed' />
<preference value='false' name='com.ibm.cic.common.core.preferences.searchForUpdates' />

```

You can find more details on silent preference keys in the IBM Installation Manager Version 1.5 Information Center.

- To install more than one instance of an offering, you must make the profile ID of each additional instance unique. For example:

```

<offering profile='IBM WebSphere Application Server V8.5 - Another User's WAS EXPRESS'
  features='core.feature' id='com.ibm.websphere.EXPRESS.v85' />

```

This must be changed in both places that specify the profile ID in the response file.

Here are some examples of changes that you could make to manipulate this response file to perform alternative actions.

- To alter the location of the installation, simply change the installation location. For example:

Replace

```
<profile id='IBM WebSphere Application Server V8.5' installLocation='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS'>
```


with

```
<profile id='IBM WebSphere Application Server V8.5' installLocation='/home/user/IBM/WebSphere/AppServer/V85/Server'>
```

- To install from a local repository instead of the live remote repository, replace the repository location. For example:

Replace

```
<repository location='http://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85' />
```

with

```
<repository location='/home/user/repositories/WAS85/local-repositories' />
```

- To add the optional features, add each desired feature in the offering as an entry in a comma-separated list.

In the following list, the offering IDs to be used in the response files are enclosed in parentheses:

- WebSphere Application Server full profile (core.feature)

Installing this application-server feature gives you the traditional standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation, offering broad programming model choice and low total cost of ownership through high performance and high manageability.

- EJBDeploy tool for pre-EJB 3.0 modules (ejbdeploy)

This option installs the EJBDeploy tool for pre-EJB 3.0 modules.

Before you deploy applications on the server, you must run the EJBDeploy tool on applications that contain EJB modules that are based on specifications prior to EJB 3.0. Running the EJBDeploy tool generates deployment code for enterprise beans in the application. Beginning with the EJB 3.0 specification, the EJBDeploy tool is no longer required because WebSphere Application Server uses a new feature called JITDeploy, which automatically generates code when the application starts.

Note: Unexpected errors might occur if applications that are provided with IBM WebSphere Application Server, such as the samples, require the optional EJBDeploy tool for pre-EJB 3.0 modules but the feature is not installed. If you deploy and use applications that might require pre-EJB 3.0 modules, include the optional EJBDeploy feature in all WebSphere Application Server installations that will be used by servers running the pre-EJB 3.0 applications.

- Standalone thin clients, resource adapters, and embeddable containers

- Standalone thin clients and resource adapters (thinclient)

This option installs the IBM standalone thin clients and resource adapters.

IBM thin clients provide a set of clients for a variety of technologies, such as JAX-WS, JAX-RPC, JAX-RS, XML, EJB, JPA, JMS, and more. IBM resource adapters provide the resource adapters for JMS.

- Embeddable EJB container (embeddablecontainer)

This option installs the embeddable EJB container.

The embeddable EJB Container is a Java Archive (JAR) file that you can use to run enterprise beans in a standalone Java Platform, Standard Edition environment. You can run enterprise beans using this embeddable container outside the application server. The embeddable EJB container is a part of the EJB 3.1 specification and is primarily used for unit testing enterprise beans business logic.

- Sample applications (samples)

This option installs the sample applications for learning and demonstration environments.

The samples include both source code files and integrated enterprise applications that demonstrate some of the latest Java (TM) Platform, Enterprise Edition (Java EE) and WebSphere technologies. The samples are recommended for installation to learning and demonstration environments, such as development environments. However, they are not recommended for installation to production application server environments.

- WebSphere Application Server Liberty profile (`liberty`)

Installing this application-server feature gives you a lightweight profile of the application server along with a simplified configuration approach for the development environment. Its fast restart times, small size, and ease of use make it a good option for building web applications that do not require the full JEE environment of traditional enterprise application server profiles. The Liberty profile also can be used in production; and because it is a dynamic configuration, the application server provisions only the features required by the running applications.

Notes:

- The features `samples`, `thinclient`, `embeddablecontainer`, and `ejbdeploy` are subfeatures of `core.feature`.
- If no features are specified, the default features (`core.feature`, `ejbdeploy`, `thinclient`, and `embeddablecontainer`) are installed. To install only the features that you want, specify the list of features explicitly.
- You must install `core.feature` (full WebSphere Application Server profile), `liberty` (Liberty profile), or both.
- You cannot use the Installation Manager modify, update, or rollback functions to modify this installation later and add or remove `core.feature` (full WebSphere Application Server profile) or `liberty` (Liberty profile). You can use these functions to add or remove the `ejbdeploy`, `thinclient`, `embeddablecontainer`, or `samples` subfeature of `core.feature` later.

For example, to install the samples:

Replace

```
<offering profile='IBM WebSphere Application Server V8.5'  
  features='core.feature' id='com.ibm.websphere.EXPRESS.v85' />
```

with

```
<offering profile='IBM WebSphere Application Server V8.5'  
  features='core.feature,samples' id='com.ibm.websphere.EXPRESS.v85' />
```

Tip: If no features are specified, the default features (`core.feature`, `ejbdeploy`, `thinclient`, and `embeddablecontainer`) are installed. To install only the features that you want, specify the list of features explicitly.

What to do next

You can create a standalone application server profile or a management profile with an administrative agent server using the **manageprofiles** command.

The following is an example of using the **manageprofiles** command to create a default standalone application server profile. This example is based on the following assumptions:

- The `samples` feature is installed.
- Security is to be enabled.
- The system host name is `myhost.abc.com`.
- The `appserver_install_root` is `/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS`.
- The `user_data_root` is `/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS`.
- The administrative user name is `wasadmin`.
- The password is `password`.

Default standalone application server:

```
manageprofiles -create  
-portsFile /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS/profileTemplates/default/actions/portsUpdate/portdef.props  
-serverName server1  
-nodeName myhost  
-hostName myhost.abc.com  
-cellName myhost  
-adminUserName wasadmin
```

```
-adminPassword password
-templatePath /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS/profileTemplates/default
-enableAdminSecurity true
-profileName default
```

Installing the product on IBM i operating systems using the command line

You can install WebSphere Application Server Version 8.5 using the Installation Manager command line.

Before you begin

Prepare for the installation before using this procedure. See Chapter 5, “Preparing the operating system for installation on IBM i,” on page 27 for more information.

Important: Before installing WebSphere Application Server Version 8, you must read the license agreement that you can find with the product files. Signify your acceptance of the license agreement by specifying `-acceptLicense` in the command as described below.

Install Installation Manager on the system onto which you want to install the product.

- If you want to use the Installation Manager that comes with this product, perform the following actions:

1. Obtain the necessary files.

There are three basic options for obtaining and installing Installation Manager and the product.

- **Access the physical media, and use local installation**

You can access the product repositories on the product media.

- a. Install Installation Manager on your system.

You can install Installation Manager using the product media, using a file obtained from the Passport Advantage site, or using a file containing the most current version of Installation Manager from the IBM Installation Manager download website.

- b. Use Installation Manager to install the product from the product repositories on the media.

- **Download the files from the Passport Advantage site, and use local installation**

Licensed customers with a Passport Advantage ID and password can download the necessary product repositories from the Passport Advantage site.

- a. Download the files from the Passport Advantage site.

- b. Install Installation Manager on your system.

You can install Installation Manager using the product media, using a file obtained from the Passport Advantage site, or using a file containing the most current version of Installation Manager from the IBM Installation Manager download website.

- c. Use Installation Manager to install the product from the downloaded repositories.

- **Access the live repositories, and use web-based installation**

If you have a Passport Advantage ID and password, you can install the product from the web-based repositories.

- a. Install Installation Manager on your system.

You can install Installation Manager using the product media, using a file obtained from the Passport Advantage site, or using a file containing the most current version of Installation Manager from the IBM Installation Manager download website.

- b. Use Installation Manager to install the product from the web-based repository located at

<http://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85>

Note: This location does not contain a web page that you can access using a web browser. This is a remote web-based repository location that you must specify for the value of the `-repositories` parameter so that the `imc1` command can access the files in this repository to install the product.

Whenever possible, you should use the remote web-based repositories so that you are accessing the most up-to-date installation files.

Note: If you do not have a Passport Advantage ID and password, you must install the product from the product repositories on the media or local repositories.

2. Choose three separate locations for Installation Manager's binaries, runtime data (agent data), and shared data locations.
3. Install Installation Manager using the Installation Manager command line.
 - a. Sign on to the IBM i system with a user profile that has `*ALLOBJ` and `*SECADM` special authorities.
 - b. On a CL command line, run the `STRQSH` command to start the Qshell command shell.
 - c. Make sure that the `umask` is set to `022`.

To verify the `umask` setting, issue the following command:

```
umask
```

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

```
umask 022
```

- d. Change to the location containing the Installation Manager installation files, and run the following command:

```
installc -acceptLicense -log log_file_path_and_name
```

Notes:

- For more information on installing Installation Manager, see the IBM Installation Manager Version 1.5 Information Center.
- Use only the `installc` command to install Installation Manager.
- If you already have a version of Installation Manager installed on your system and you want to use it to install and maintain the product, obtain the necessary product files.

There are three basic options for installing the product.

– Access the physical media, and use local installation

You can access the product repositories on the product media. Use Installation Manager to install the product from the product repositories on the media.

– Download the files from the Passport Advantage site, and use local installation

Licensed customers with a Passport Advantage ID and password can download the necessary product repositories from the Passport Advantage site.

1. Download the product repositories from the Passport Advantage site.
2. Use Installation Manager to install the product from the downloaded repositories.

– Access the live repositories, and use web-based installation

If you have a Passport Advantage ID and password, you can use Installation Manager to install the product from the web-based repositories. Use Installation Manager to install the product from the web-based repository located at

```
http://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85
```

Note: This location does not contain a web page that you can access using a web browser. This is a remote web-based repository location that you must specify for the value of the `-repositories` parameter so that the `imc1` command can access the files in this repository to install the product.

Whenever possible, you should use the remote web-based repositories so that you are accessing the most up-to-date installation files.

Note: If you do not have a Passport Advantage ID and password, you must install the product from the product repositories on the media or local repositories.

Procedure

1. Optional: If the repository requires a username and password, create a keyring file to access this repository.

For more information on creating a keyring file for Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Tip: When creating a keyring file, append `/repository.config` at the end of the repository URL location if the `imutilsc` command is unable to find the URL that is specified.

2. Choose three separate locations for the product's binaries, runtime data (agent data), and shared data locations.
3. Sign on to the IBM i system with a user profile that has *ALLOBJ and *SECADM special authorities.
4. On a CL command line, run the `STRQSH` command to start the Qshell command shell.
5. Make sure that the `umask` is set to `022`.

To verify the `umask` setting, issue the following command:

```
umask
```

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

```
umask 022
```

6. Change to the `eclipse/tools` subdirectory in the directory where you installed Installation Manager.
7. Use the `imcl` command to install the product.

```
./imcl install com.ibm.websphere.EXPRESS.v85_offering_version,optional_feature_ID  
-repositories source_repository  
-installationDirectory installation_directory  
-sharedResourcesDirectory shared_directory  
-accessRights access_mode  
-preferences preference_key=value  
-properties property_key=value  
-keyring keyring_file -password password  
-acceptLicense
```

Tips:

- The relevant terms and conditions, notices, and other information are provided in the license-agreement files in the `lafiles` or `product_name/lafiles` subdirectory of the installation image or repository for this product.
- You can install a list of features that are separated by commas.

In the following list, the optional offering IDs are enclosed in parentheses:

- WebSphere Application Server full profile (`core.feature`)

Installing this application-server feature gives you the traditional standards-based Java Platform, Enterprise Edition (Java EE) compliant application foundation, offering broad programming model choice and low total cost of ownership through high performance and high manageability.

- EJBDeploy tool for pre-EJB 3.0 modules (`ejbdeploy`)

This option installs the EJBDeploy tool for pre-EJB 3.0 modules.

Before you deploy applications on the server, you must run the EJBDeploy tool on applications that contain EJB modules that are based on specifications prior to EJB 3.0. Running the EJBDeploy tool generates deployment code for enterprise beans in the application. Beginning with the EJB 3.0 specification, the EJBDeploy tool is no longer required because WebSphere Application Server uses a new feature called JITDeploy, which automatically generates code when the application starts.

Note: Unexpected errors might occur if applications that are provided with IBM WebSphere Application Server, such as the samples, require the optional EJBDeploy tool for pre-EJB 3.0 modules but the feature is not installed. If you deploy and use applications that might require pre-EJB 3.0 modules, include the optional EJBDeploy feature in all WebSphere Application Server installations that will be used by servers running the pre-EJB 3.0 applications.

- Standalone thin clients, resource adapters, and embeddable containers

- Standalone thin clients and resource adapters (`thinclient`)

This option installs the IBM standalone thin clients and resource adapters.

IBM thin clients provide a set of clients for a variety of technologies, such as JAX-WS, JAX-RPC, JAX-RS, XML, EJB, JPA, JMS, and more. IBM resource adapters provide the resource adapters for JMS.

- Embeddable EJB container (`embeddablecontainer`)

This option installs the embeddable EJB container.

The embeddable EJB Container is a Java Archive (JAR) file that you can use to run enterprise beans in a standalone Java Platform, Standard Edition environment. You can run enterprise beans using this embeddable container outside the application server. The embeddable EJB container is a part of the EJB 3.1 specification and is primarily used for unit testing enterprise beans business logic.

- Sample applications (`samples`)

This option installs the sample applications for learning and demonstration environments.

The samples include both source code files and integrated enterprise applications that demonstrate some of the latest Java (TM) Platform, Enterprise Edition (Java EE) and WebSphere technologies. The samples are recommended for installation to learning and demonstration environments, such as development environments. However, they are not recommended for installation to production application server environments.

- WebSphere Application Server Liberty profile (`liberty`)

Installing this application-server feature gives you a lightweight profile of the application server along with a simplified configuration approach for the development environment. Its fast restart times, small size, and ease of use make it a good option for building web applications that do not require the full JEE environment of traditional enterprise application server profiles. The Liberty profile also can be used in production; and because it is a dynamic configuration, the application server provisions only the features required by the running applications.

Notes:

- The features `samples`, `thinclient`, `embeddablecontainer`, and `ejbdeploy` are subfeatures of `core.feature`.
- If no features are specified, the default features (`core.feature`, `ejbdeploy`, `thinclient`, and `embeddablecontainer`) are installed. To install only the features that you want, specify the list of features explicitly.
- You must install `core.feature` (full WebSphere Application Server profile), `liberty` (Liberty profile), or both.
- You cannot use the Installation Manager modify, update, or rollback functions to modify this installation later and add or remove `core.feature` (full WebSphere Application Server profile) or `liberty` (Liberty profile). You can use these functions to add or remove the `ejbdeploy`, `thinclient`, `embeddablecontainer`, or `samples` subfeature of `core.feature` later.
- The *offering_version*, which optionally can be attached to the offering ID with an underscore, is a specific version of the offering to install (8.5.0.20110503_0200 for example).

- If *offering_version* is **not** specified, the latest version of the offering and **all** interim fixes for that version are installed.
- If *offering_version* is specified, the specified version of the offering and **no** interim fixes for that version are installed.

The offering version can be found attached to the end of the offering ID with an underscore when you run the following command against the repository:

```
./imcl listAvailablePackages -repositories source_repository
```

- You can also specify none, recommended or all with the `-installFixes` argument to indicate which interim fixes you want installed with the offering.
 - If the offering version is **not** specified, the `-installFixes` option defaults to all.
 - If the offering version is specified, the `-installFixes` option defaults to none.
- For initial installations, it is a good practice to specify the *user_data_root*; otherwise, the default value for the *user_data_root*, `/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS`, is used. Use the `was.install.os400.profile.location` property to specify the *user_data_root*. If the *user_data_root* is to be `/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS`, for example, specify `-properties was.install.os400.profile.location=/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS` on the **imcl** installation command.
- The program might write important post-installation instructions to standard output.

For more information on using the **imcl** command to install the product, see the IBM Installation Manager Version 1.5 Information Center.

Example

Here is an example of using the **imcl** command to install Websphere Application Server:

```
./imcl install com.ibm.websphere.EXPRESS.v85
-repositories https://downloads.mycorp.com:8080/WAS_85_repository
-installationDirectory /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS
-properties was.install.os400.profile.location=/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS
-sharedResourcesDirectory /QIBM/UserData/InstallationManager/IMShared
-keyring $HOME/WASFiles/temp/im.keyring
-acceptLicense
```

What to do next

You can create a standalone application server profile or a management profile with an administrative agent server using the **manageprofiles** command.

The following is an example of using the **manageprofiles** command to create a default standalone application server profile. This example is based on the following assumptions:

- The samples feature is installed.
- Security is to be enabled.
- The system host name is `myhost.abc.com`.
- The *appserver_install_root* is `/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS`.
- The *user_data_root* is `/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS`.
- The administrative user name is `wasadmin`.
- The password is `password`.

Default standalone application server:

```
manageprofiles -create
-portsFile /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS/profileTemplates/default/actions/portsUpdate/portdef.props
-serverName server1
-nodeName myhost
-hostName myhost.abc.com
-cellName myhost
-adminUserName wasadmin
-adminPassword password
-templatePath /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS/profileTemplates/default
-enableAdminSecurity true
-profileName default
```

Installing the product remotely on IBM i operating systems using the `iRemoteInstall` command

You can use the `iRemoteInstall` command to install IBM Installation Manager or a WebSphere Application Server product offering from a Windows workstation to a remote target IBM i system.

Before you begin

Prepare for the installation before using this procedure. See Chapter 5, “Preparing the operating system for installation on IBM i,” on page 27 for more information.

The product offering repository files or the IBM Installation Manager for IBM i installation kit compressed file must be available on the Windows system.

Important: You must set your `JAVA_HOME` environment variable to your IBM Installation Manager JRE home before running the command directly from the product media. You do not need to set your `JAVA_HOME` environment variable to your IBM Installation Manager JRE home before running the command from a WebSphere Customization Toolbox installation.

Restrictions:

- The `iRemoteInstall` command does not support keyring files used to pass confidential information. You must use the physical media or download the installation files to your local system.
- The `iRemoteInstall` command does not support the use of response files.

About this task

Note: By running this script, you accept the terms of the product license. The relevant terms and conditions, notices, and other information are provided in the license-agreement files in the `lafiles` or `product_name/lafiles` subdirectory of the installation image or repository for this product.

Location of the `iRemoteInstall` command:

The `iRemoteInstall` command is located in the following directory when it has been installed as part of the WebSphere Customization Toolbox:

```
wct_root/Remote_Installation_Tool_for_IBM_i
```

Tip: A version of this utility that is current when the product is released is also available on the media or installation image. You can run the command directly from the media connected to a Windows system to install the offering on a remote target IBM i system. This version of the utility is located at the following location:

```
media_root\Remote_Installation_Tool_for_IBM_i\iRemoteInstall.bat
```

where `media_root` is the root directory of the media or installation image containing the product or supplements.

Syntax of the `iRemoteInstall` command:

```
iRemoteInstall.bat
-hostname i5_hostname
-username user_login_name
-password user_login_password
-iminstit im_install_kit_file_path_and_name | -wasoid was_offering_id
-wasrepoloc was_install_file_location
-appdataloc im_agent_data_location
-wasinstloc was_install_location
-wassharedloc was_shared_location
-features feature_ID_1,feature_ID_2, . . .
-waslangs lang_ID_1,lang_ID_2, . . .
-properties key=value,key=value, . . .
-log log_file_path_and_name
-trace
-version
-help
```


Parameters of the `iRemoteInstall` command:

- hostname** *i5_hostname*
Specifies the host name of the target IBM i machine to which Installation Manager or the WebSphere Application Server product offering is going to be installed

This parameter is required.
- username** *user_login_name*
Specifies the login name of the user who is performing the Installation Manager or WebSphere Application Server remote installation

This user must be a valid user for the target IBM i system with *ALLOBJ and *SECADM special authorization.
- password** *user_login_password*
Specifies the login password of the user specified in -username
- iminstkit** *im_install_kit_file_name*
Specifies the location of the Installation Manager for IBM i installation kit

You must include the path if it is not in the same directory as the command.

This parameter is required.
- wasoid** *was_offering_id*
Specifies the ID of the WebSphere Application Server product offering being installed

Example values are base, nd, express, etc. This parameter is not case sensitive.

The value to use can be found in the product offering ID. If the offering ID is com.ibm.websphere.XXX.v85, for example, the -wasoid value should be XXX. The IDs for various WebSphere Application Server product offerings can be found in “WebSphere Application Server Version 8.5 product offerings for supported operating systems” on page 7
- wasrepoloc** *was_install_file_location*
Specifies the location of the WebSphere Application Server installation repository

This option must be specified if the -wasoid parameter is specified.
- appdataloc** *im_agent_data_location*
Specifies the location of the Installation Manager agent data

If no value is specified for this parameter, it is set to the default value of /QIBM/UserData/InstallationManager.
- wasinstloc** *was_install_location*
Specifies the location of the WebSphere Application Server installation

If no value is specified for this parameter, it is set to the default value of /QIBM/WAS85/AppServer.
- wassharedloc** *was_shared_location*
Specifies the location of the WebSphere Application Server shared location

If no value is specified for this parameter, it is set to the default value of /QIBM/WAS85/AppServer_Shared.
- features** *feature_ID_1,feature_ID_2, . . .*
Specifies the features to be installed

The feature IDs must be separated by commas (.). For example:
core.feature,ejbdeploy,thinclient,embeddablecontainer,samples,liberty

Tip: If no features are specified, the default features (core.feature, ejbdeploy, thinclient, and embeddablecontainer) are installed. To install only the features that you want, specify the list of features explicitly.

-waslangs *lang_ID_1,lang_ID_2, . . .*

Specifies the languages for which translated content should be installed

The language IDs must be separated by commas (.). For example:

en,fr,it,zh,ro,ru,zh_TW,de,ja,pl,es,cs,hu,ko,pt_BR

English is installed even if it is not specified in the language list.

If this parameter is not specified, only the English translation content is installed by default.

If languages are specified using both this parameter and the -properties parameter, the values specified in this parameter are used.

-properties *key=value,key=value, . . .*

Specifies package-group (profile) properties

-log *log_file_path_and_name*

Turns on the log, and sends all messages to the specified file and location

The path can be absolute (c:\temp\mylog.log for example) or relative (..\mylog.log for example).

Because you can append multiple installation actions into the same log, the actual name of a log file that is generated is *log_file_path_and_name.x.log*, where *x* is the number of the log file from 0 to 29. The maximum log file size is approximately 10 MB; and the maximum number of log files generated is 30.

-trace

Provides trace output of what the command checks and what the command discovers

-version

Displays the version information for the command

-help

Displays usage information for the command

Procedure

1. Log in to the IBM i machine using the IBM Personal Communications tool, or telnet with TN5250 to the IBM i machine.
2. If TCP/IP is not started or if you do not know if TCP/IP is started, enter the following command on the Control Language (CL) command line:

```
STRTCP
```

3. Verify that the host server jobs are started on your IBM i server.

The host server jobs allow the installation code to run on IBM i.

Enter the following command on the CL command line:

```
STRHOSTSVR SERVER(*ALL)
```

4. Verify that your user profile has *ALLOBJ and *SECADM special authorities.
5. Run the **iRemoteInstall** command in the temporary directory to install Installation Manager or the Websphere Application Server product offering.

In order to install a Websphere Application Server product offering, Installation manager must already be installed on the target system.

Example

Here is an example of installing IBM Installation Manager with the **iRemoteInstall** command:

```
./iRemoteInstall
-hostname iserver1.somedomain.com
-username wasadmin -password mypwd
-iminstkkit E:\agent.installer.os400.motif.ppc_1.4.3000.20101206_0100.zip
```

Here is an example of installing WebSphere Application Server with the **iRemoteInstall** command:

```
./iRemoteInstall
-hostname iserver1.somedomain.com
-username wasadmin -password mypwd
-wasoid EXPRESS
-wasrepoloc E:\repository
```

What to do next

After you install WebSphere Application Server, you can create a standalone application server profile or a management profile with an administrative agent server by running the **manageprofiles** command on the IBM i system containing the WebSphere Application Server installation.

The following is an example of using the **manageprofiles** command to create a default standalone application server profile. This example is based on the following assumptions:

- The samples feature is installed.
- Security is to be enabled.
- The system host name is myhost.abc.com.
- The *appserver_install_root* is /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS.
- The *user_data_root* is /QIBM/UserData/WebSphere/AppServer/V85/EXPRESS.
- The administrative user name is wasadmin.
- The password is password.

Default standalone application server:

```
manageprofiles -create
-portsFile /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS/profileTemplates/default/actions/portsUpdate/portdef.props
-serverName server1
-nodeName myhost
-hostName myhost.abc.com
-cellName myhost
-adminUserName wasadmin
-adminPassword password
-templatePath /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS/profileTemplates/default
-enableAdminSecurity true
-profileName default
```

Installing and removing features on IBM i operating systems using response files

You can install and remove a product feature using Installation Manager response files.

About this task

Perform this procedure to use Installation Manager to install or remove a feature silently using a response file.

Like other Installation Manager operations, you can invoke a modification using the **imcl** command-line tool. Go to the IBM Installation Manager Version 1.5 Information Center for more information.

Optional features: In the following list of optional features, the offering names to be used in the response files are enclosed in parentheses:

- EJBDeploy tool for pre-EJB 3.0 modules (ejbdeploy)

This option installs the EJBDeploy tool for pre-EJB 3.0 modules.

Before you deploy applications on the server, you must run the EJBDeploy tool on applications that contain EJB modules that are based on specifications prior to EJB

3.0. Running the EJBDeploy tool generates deployment code for enterprise beans in the application. Beginning with the EJB 3.0 specification, the EJBDeploy tool is no longer required because WebSphere Application Server uses a new feature called JITDeploy, which automatically generates code when the application starts.

Tip: Unexpected errors might occur if applications that are provided with IBM WebSphere Application Server, such as the samples, require the optional EJBDeploy tool for pre-EJB 3.0 modules but the feature is not installed. If you deploy and use applications that might require pre-EJB 3.0 modules, include the optional EJBDeploy feature in all WebSphere Application Server installations that will be used by servers running the pre-EJB 3.0 applications.

- Standalone thin clients, resource adapters, and embeddable containers
 - Standalone thin clients and resource adapters (`thinclient`)

This option installs the IBM standalone thin clients and resource adapters. IBM thin clients provide a set of clients for a variety of technologies, such as JAX-WS, JAX-RPC, JAX-RS, XML, EJB, JPA, JMS, and more. IBM resource adapters provide the resource adapters for JMS.
 - Embeddable EJB container (`embeddablecontainer`)

This option installs the embeddable EJB container. The embeddable EJB Container is a Java Archive (JAR) file that you can use to run enterprise beans in a standalone Java Platform, Standard Edition environment. You can run enterprise beans using this embeddable container outside the application server. The embeddable EJB container is a part of the EJB 3.1 specification and is primarily used for unit testing enterprise beans business logic.
- Sample applications (`samples`)

This option installs the sample applications for learning and demonstration environments. The samples include both source code files and integrated enterprise applications that demonstrate some of the latest Java (TM) Platform, Enterprise Edition (Java EE) and WebSphere technologies. The samples are recommended for installation to learning and demonstration environments, such as development environments. However, they are not recommended for installation to production application server environments.

Restriction: You cannot use the Installation Manager to modify an installation and add or remove the full WebSphere Application Server profile feature or the Liberty profile feature.

Procedure

1. Optional: If the repository requires a username and password, create a keyring file to access this repository.

For more information on creating a keyring file for Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Tip: When creating a keyring file, append `/repository.config` at the end of the repository URL location if the `imutilsc` command is unable to find the URL that is specified.

2. Sign on to the IBM i system with a user profile that has `*ALLOBJ` and `*SECADM` special authorities.
3. On a CL command line, run the `STRQSH` command to start the Qshell command shell.
4. Use a response file to install or remove a feature.

Change to the `eclipse/tools` subdirectory in the directory where you installed Installation Manager, and modify the product. For example:

```
./imcl
input $HOME/WASFiles/temp/modify_response_file.xml
-log $HOME/WASFiles/temp/modify_log.xml
-keyring $HOME/WASFiles/temp/im.keyring
```

Note: The program might write important post-installation instructions to standard output. For more information on using Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Example

- Here are examples of response files for modifying the features in an installation:
 - Here is a response file that adds the sample applications feature to an existing product that is installed in the /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS directory:

```
<?xml version="1.0" encoding="UTF-8"?>
<agent-input>
<server>
  <repository location='https://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85' />
</server>
<profile id='IBM WebSphere Application Server V8.5' installLocation='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS'>
  <data key='eclipseLocation' value='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS' />
  <data key='was.install.os400.profile.location' value='/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS' />
  <data key='user.import.profile' value='false' />
  <data key='cic.selector.nl' value='en, fr, it, zh, ro, ru, zh_TW, de, ja, pl, es, cs, hu, ko, pt_BR' />
</profile>
<install modify='true'>
  <offering profile='IBM WebSphere Application Server V8.5' features='samples' id='com.ibm.websphere.EXPRESS.v85' />
</install>
<preference name='com.ibm.cic.common.core.preferences.eclipseCache' value='/QIBM/UserData/InstallationManager/IMShared' />
<preference name='com.ibm.cic.common.core.preferences.connectTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.readTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.downloadAutoRetryCount' value='0' />
<preference name='offering.service.repositories.areUsed' value='true' />
<preference name='com.ibm.cic.common.core.preferences.ssl.nonsecureMode' value='false' />
<preference name='com.ibm.cic.common.core.preferences.http.disablePreemptiveAuthentication' value='false' />
<preference name='http.ntlm.auth.kind' value='NTLM' />
<preference name='http.ntlm.auth.enableIntegrated.win32' value='true' />
<preference name='com.ibm.cic.common.core.preferences.preserveDownloadedArtifacts' value='true' />
<preference name='com.ibm.cic.common.core.preferences.keepFetchedFiles' value='false' />
<preference name='PassportAdvantageIsEnabled' value='false' />
<preference name='com.ibm.cic.common.core.preferences.searchForUpdates' value='false' />
</agent-input>
```

- To alter this response file to remove a feature, simply change the install tags to uninstall. Here is the same response file modified to remove the standalone thin clients and resource adapters feature:

```
<?xml version="1.0" encoding="UTF-8"?>
<agent-input>
<server>
  <repository location='https://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85' />
</server>
<profile id='IBM WebSphere Application Server V8.5' installLocation='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS'>
  <data key='eclipseLocation' value='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS' />
  <data key='was.install.os400.profile.location' value='/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS' />
  <data key='user.import.profile' value='false' />
  <data key='cic.selector.nl' value='en, fr, it, zh, ro, ru, zh_TW, de, ja, pl, es, cs, hu, ko, pt_BR' />
</profile>
<uninstall modify='true'>
  <offering profile='IBM WebSphere Application Server V8.5' features='thinclient' id='com.ibm.websphere.EXPRESS.v85' />
</uninstall>
<preference name='com.ibm.cic.common.core.preferences.eclipseCache' value='/QIBM/UserData/InstallationManager/IMShared' />
<preference name='com.ibm.cic.common.core.preferences.connectTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.readTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.downloadAutoRetryCount' value='0' />
<preference name='offering.service.repositories.areUsed' value='true' />
<preference name='com.ibm.cic.common.core.preferences.ssl.nonsecureMode' value='false' />
<preference name='com.ibm.cic.common.core.preferences.http.disablePreemptiveAuthentication' value='false' />
<preference name='http.ntlm.auth.kind' value='NTLM' />
<preference name='http.ntlm.auth.enableIntegrated.win32' value='true' />
<preference name='com.ibm.cic.common.core.preferences.preserveDownloadedArtifacts' value='true' />
<preference name='com.ibm.cic.common.core.preferences.keepFetchedFiles' value='false' />
<preference name='PassportAdvantageIsEnabled' value='false' />
<preference name='com.ibm.cic.common.core.preferences.searchForUpdates' value='false' />
</agent-input>
```

- To combine adding and removing features using a single response file, add both an install action and an uninstall action. Here is the same response file combining the previous two examples, installing the sample applications while removing the standalone thin clients and resource adapters feature:

```
<?xml version="1.0" encoding="UTF-8"?>
<agent-input>
<server>
  <repository location='https://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85' />
```

```

</server>
<profile id='IBM WebSphere Application Server V8.5' installLocation='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS'>
  <data key='eclipseLocation' value='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS' />
  <data key='was.install.os400.profile.location' value='/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS' />
  <data key='user.import.profile' value='false' />
  <data key='cic.selector.nl' value='en, fr, it, zh, ro, ru, zh_TW, de, ja, pl, es, cs, hu, ko, pt_BR' />
</profile>
<install modify='true'>
  <offering profile='IBM WebSphere Application Server V8.5' features='samples' id='com.ibm.websphere.EXPRESS.v85' />
</install>
<uninstall modify='true'>
  <offering profile='IBM WebSphere Application Server V8.5' features='thinclient' id='com.ibm.websphere.EXPRESS.v85' />
</uninstall>
<preference name='com.ibm.cic.common.core.preferences.eclipseCache' value='/QIBM/UserData/InstallationManager/IMShared' />
<preference name='com.ibm.cic.common.core.preferences.connectTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.readTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.downloadAutoRetryCount' value='0' />
<preference name='offering.service.repositories.areUsed' value='true' />
<preference name='com.ibm.cic.common.core.preferences.ssl.nonsecureMode' value='false' />
<preference name='com.ibm.cic.common.core.preferences.http.disablePreemptiveAuthentication' value='false' />
<preference name='http.ntlm.auth.kind' value='NTLM' />
<preference name='http.ntlm.auth.enableIntegrated.win32' value='true' />
<preference name='com.ibm.cic.common.core.preferences.preserveDownloadedArtifacts' value='true' />
<preference name='com.ibm.cic.common.core.preferences.keepFetchedFiles' value='false' />
<preference name='PassportAdvantageIsEnabled' value='false' />
<preference name='com.ibm.cic.common.core.preferences.searchForUpdates' value='false' />
</agent-input>

```

- Here is an example of the `imc1` command for modifying the features in an installation:

```

./imc1.exe modify com.ibm.websphere.EXPRESS.v85
-addFeatures samples
-removeFeatures thinclient,ejbdeploy,embeddablecontainer
-repositories http://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85
-installationDirectory /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS
-keyring /var/keyring_file.keyring -password password

```

Installing interim fixes on IBM i operating systems using the command line

Product fix packs contain bundled service to bring WebSphere Application Server up to a new product level. Interim fixes provide corrective service for specific known problems. You can use the IBM Installation Manager command-line function to update the product with the fixes that are available for your service level of WebSphere Application Server Version 8.5.

Before you begin

Contact the IBM Software Support Center for information about upgrades for WebSphere Application Server for IBM i. The most current information is available from the IBM Software Support Center and Fix Central.

IBM Installation Manager is used to apply product maintenance to WebSphere Application Server for IBM i.

About this task

Use this procedure whenever you want to apply a new interim fix to your system.

Tip: You can also install interim fixes using silent response files with Installation Manager. For information on creating and using response files, read the IBM Installation Manager Version 1.5 Information Center.

Restriction: You cannot use the `iRemoteInstall` command to install an interim fix.

Procedure

1. For a list of interim fixes that are available for WebSphere Application Server Version 8.x and specific information about each interim fix, perform the following actions.
 - a. Go to Fix Central.
 - b. Select **WebSphere** as the product group.

- c. Select **WebSphere Application Server** as the product.
 - d. Select the version of the product to be updated (8.x.x.x).
 - e. Select your operating system as the platform, and click **Continue**.
 - f. Select **Browse for fixes**, and click **Continue**.
 - g. Click **More Information** under each fix to view information about the fix.
 - h. **Recommendation:** Make a list of the names of the interim fixes that you would like to install.
2. Update WebSphere Application Server Version 8.x with the interim fixes using one of the following procedures.

- Access the live service repository that contains the fixes, and use web-based updating.

Use Installation Manager on your local system to update WebSphere Application Server Version 8.x with the interim fixes from the live web-based service repositories.

- For the live service repositories, use the same URLs as those used for the generally available product-offering repositories during installation. These URLs are based on the following pattern:

```
http://www.ibm.com/software/repositorymanager/offering_ID
```

where *offering_ID* is the offering ID that you can find in “WebSphere Application Server Version 8.5 product offerings for supported operating systems” on page 7.

- These locations do not contain web pages that you can access using a web browser. They are remote web-based repository locations that you specify for Installation Manager so that it can maintain the product.

To install an interim fix from a service repository, perform the following actions:

- a. If you do not already have an Installation Manager credentials file containing your IBM software user ID and password, create one that will allow you to access the repository.

Note: These are the credentials that you use to access protected IBM software websites. For information on creating a keyring file for Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Tip: When creating a keyring file, append `/repository.config` at the end of the repository URL location if the `imutilsc` command is unable to find the URL that is specified.

- b. Sign on to the IBM i system with a user profile that has `*ALLOBJ` and `*SECADM` special authorities.
- c. Stop all servers and applications on the WebSphere Application Server installation that is being updated.
- d. On a CL command line, run the STRQSH command to start the Qshell command shell.
- e. Make sure that the umask is set to 022.

To verify the umask setting, issue the following command:

```
umask
```

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

```
umask 022
```

- f. Change to the `Installation_Manager_binaries/eclipse/tools` directory, where `Installation_Manager_binaries` is the installation root directory for the Installation Manager.

On IBM i systems, the root directory for the Installation Manager is `/QIBM/ProdData/InstallationManager`.

- g. Install the interim fix.

```
./imcl install interim_fix_name
  -installationDirectory product_installation_location
  -repositories repository_URL
  -keyring keyring_file
```

Tip: If a keyring file is specified and the keyring is password protected, you also need to specify `-password password`.

h. **Optional:** List all installed packages to verify the installation:

```
./imcl listInstalledPackages -long
```

- Download the files that contain the fixes from Fix Central, and use local updating.

You can download compressed files that contain the fixes from Fix Central. Each compressed fix file contains an Installation Manager repository for the fix and usually has a .zip extension. After downloading the fix files, you can use Installation Manager to update WebSphere Application Server Version 8.x with the interim fixes.

a. To download the interim fixes, perform the following actions:

- 1) Go to Fix Central.
- 2) Select **WebSphere** as the product group.
- 3) Select **WebSphere Application Server** as the product.
- 4) Select the version of the product to be updated (8.x.x.x).
- 5) Select your operating system as the platform, and click **Continue**.
- 6) Select **Browse for fixes**, and click **Continue**.
- 7) Select the interim fixes that you want to download, and click **Continue**.
- 8) Select your download options, and click **Continue**.
- 9) Click **I agree** to agree to the terms and conditions.
- 10) Click **Download now** to download the interim fixes.
- 11) Transfer the compressed fix files in binary format to the IBM i system on which they will be installed.

b. To install an interim fix from a downloaded file, perform the following actions:

- 1) Sign on to the IBM i system with a user profile that has *ALLOBJ and *SECADM special authorities.
- 2) Stop all servers and applications on the WebSphere Application Server installation that is being updated.
- 3) On a CL command line, run the STRQSH command to start the Qshell command shell.
- 4) Make sure that the umask is set to 022.

To verify the umask setting, issue the following command:

```
umask
```

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

```
umask 022
```

- 5) Change to the *Installation_Manager_binaries/eclipse/tools* directory, where *Installation_Manager_binaries* is the installation root directory for the Installation Manager.

On IBM i systems, the root directory for the Installation Manager is */QIBM/ProdData/InstallationManager*.

- 6) Install the interim fix.

```
./imcl install interim_fix_name  
-installationDirectory product_installation_location  
-repositories compressed_file
```

- 7) **Optional:** List all installed packages to verify the installation:

```
./imcl listInstalledPackages -long
```

Installing fix packs on IBM i operating systems using response files

You can update this product to a later version using Installation Manager response files.

Before you begin

Tip: As an alternative to the procedure that is described in this article, Installation Manager allows you to use the `updateAll` command in a response file or on the command line to search for and update all installed packages. Use this command only if you have full control over which fixes are contained in the targeted repositories. If you create and point to a set of custom repositories that include only the specific fixes that you want to install, you should be able to use this command confidently. If you enable searching service repositories or install fixes directly from other live web-based repositories, then you might not want to select this option so that you can select only the fixes that you want to install using the `-installFixes` option with the `install` command on the command line or the `installFixes` attribute in a response file.

About this task

Restriction: You cannot use the Installation Manager to upgrade an installation and add or remove the full WebSphere Application Server profile feature or the Liberty profile feature.

Procedure

1. Optional: If the repository requires a username and password, create a keyring file to access this repository.

For more information on creating a keyring file for Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Tip: When creating a keyring file, append `/repository.config` at the end of the repository URL location if the `imutilsc` command is unable to find the URL that is specified.

2. Sign on to the IBM i system with a user profile that has `*ALLOBJ` and `*SECADM` special authorities.
3. On a CL command line, run the `STRQSH` command to start the Qshell command shell.
4. Use a response file to update the product.

Change to the `eclipse/tools` subdirectory in the directory where you installed Installation Manager, and update the product. For example:

```
./imcl -acceptLicense
input $HOME/WASFiles/temp/update_response_file.xml
-log $HOME/WASFiles/temp/update_log.xml
-keyring $HOME/WASFiles/temp/im.keyring
```

Note: The program might write important post-installation instructions to standard output.

For more information on using Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Example

The following is an example of a response file for updating the product to a later version.

```
<?xml version="1.0" encoding="UTF-8"?>
<agent-input>
<server>
  <repository location='https://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85' />
</server>
<profile id='IBM WebSphere Application Server V8.5' installLocation='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS'>
  <data key='eclipseLocation' value='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS' />
  <data key='was.install.os400.profile.location' value='/QIBM/UserData/WebSphere/AppServer/V85/EXPRESS' />
  <data key='user.import.profile' value='false' />
  <data key='cic.selector.nl' value='en, fr, it, zh, ro, ru, zh_TW, de, ja, pl, es, cs, hu, ko, pt_BR' />
</profile>
<install modify='false'>
  <offering profile='IBM WebSphere Application Server V8.5' id='com.ibm.websphere.EXPRESS.v85'
    version='8.5.0.20101025_2108' features='core.feature' />
</install>
<preference name='com.ibm.cic.common.core.preferences.eclipseCache' value='/QIBM/UserData/InstallationManager/IMShared' />
<preference name='com.ibm.cic.common.core.preferences.connectTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.readTimeout' value='30' />
<preference name='com.ibm.cic.common.core.preferences.downloadAutoRetryCount' value='0' />
<preference name='offering.service.repositories.areUsed' value='true' />
<preference name='com.ibm.cic.common.core.preferences.ssl.nonsecureMode' value='false' />
```

```

<preference name='com.ibm.cic.common.core.preferences.http.disablePreemptiveAuthentication' value='false' />
<preference name='http.ntlm.auth.kind' value='NTLM' />
<preference name='http.ntlm.auth.enableIntegrated.win32' value='true' />
<preference name='com.ibm.cic.common.core.preferences.preserveDownloadedArtifacts' value='true' />
<preference name='com.ibm.cic.common.core.preferences.keepFetchedFiles' value='false' />
<preference name='PassportAdvantageIsEnabled' value='false' />
<preference name='com.ibm.cic.common.core.preferences.searchForUpdates' value='false' />
</agent-input>

```

Tips:

- The profile ID (<profile . . . id='profile_ID'> and <offering . . . profile='profile_ID'>) can be found when you run the `imcl listInstallationDirectories -verbose` command from the `eclipse/tools` subdirectory in the directory where you installed Installation Manager. It is the same as the package group's name.
- The offering ID (<offering . . . id='offering_ID'>) can be found in the Install Manager Offering ID section of the report that is generated when you run the **historyInfo** or **genHistoryReport** command from the `app_server_root/bin` directory.
- The *version* is a specific version of the offering to install (8.5.0.20101025_2108 for example). This specification is optional.
 - If *version* is **not** specified, the latest version of the offering and **all** interim fixes for that version are installed.
 - If *version* is specified, the specified version of the offering and **no** interim fixes for that version are installed.

The offering version can be found attached to the end of the offering ID with an underscore when you run the following command against the repository:

```
./imcl listAvailablePackages -repositories source_repository
```

- You can also specify none, recommended or all with the `-installFixes` argument to indicate which interim fixes you want installed with the offering.
 - If the offering version is **not** specified, the `-installFixes` option defaults to all.
 - If the offering version is specified, the `-installFixes` option defaults to none.
- If you obtained the fix pack by installing the WebSphere Application Server group PTF, you can use the local fix-pack repositories to install the fix pack.

For information about the local fix-pack repositories, see file `/QIBM/WAS/WASFixpacks/ReadmeV8.html` or `/QIBM/WAS/WASFixpacks/ReadmeV8.txt`.

Installing fix packs on IBM i operating systems using the command line

Product fix packs contain bundled service to bring WebSphere Application Server up to a new product level. Interim fixes provide corrective service for specific known problems. You can use the IBM Installation Manager command-line function to update the product with the fixes that are available for your service level of WebSphere Application Server Version 8.5.

Before you begin

Contact the IBM Software Support Center for information about upgrades for WebSphere Application Server for IBM i. The most current information is available from the IBM Software Support Center and Fix Central.

IBM Installation Manager is used to apply product maintenance to WebSphere Application Server for IBM i.

Tip: As an alternative to the procedure that is described in this article, Installation Manager allows you to use the **updateAll** command in a response file or on the command line to search for and update all installed packages. Use this command only if you have full control over which fixes are contained in the targeted repositories. If you create and point to a set of custom repositories that include only the

specific fixes that you want to install, you should be able to use this command confidently. If you enable searching service repositories or install fixes directly from other live web-based repositories, then you might not want to select this option so that you can select only the fixes that you want to install using the `-installFixes` option with the `install` command on the command line or the `installFixes` attribute in a response file.

About this task

Use this procedure whenever you want to apply a new fix pack to your system.

Tip: You can also install fix packs using response files with Installation Manager. For information on creating and using response files, read “Installing fix packs on IBM i operating systems using response files” on page 56 and the IBM Installation Manager Version 1.5 Information Center.

Restrictions:

- You cannot use the `iRemoteInstall` command to install a fix pack.
- You cannot use Installation Manager to upgrade an installation and add or remove the full WebSphere Application Server profile feature or the Liberty profile feature.

Procedure

1. For a list of fixes that are available for WebSphere Application Server Version 8.x and specific information about each fix, perform the following actions.
 - a. Go to Fix Central.
 - b. Select **WebSphere** as the product group.
 - c. Select **WebSphere Application Server** as the product.
 - d. Select **8.x** as the installed version.
 - e. Select your operating system as the platform, and click **Continue**.
 - f. Select **Browse for fixes**, and click **Continue**.
 - g. Click **More Information** under each fix to view information about the fix.
 - h. **Recommendation:** Make a list of the names of the fixes that you would like to install.
 2. Update WebSphere Application Server Version 8.x with the fix pack using one of the following procedures.
 - Access the live service repository that contains the fix pack, and use web-based updating. Use Installation Manager on your local system to update WebSphere Application Server Version 8.x with the interim fixes from the live web-based service repositories.
 - For the live service repositories, use the same URLs as those used for the generally available product-offering repositories during installation. These URLs are based on the following pattern:
`http://www.ibm.com/software/repositorymanager/offering_ID`

where *offering_ID* is the offering ID that you can find in “WebSphere Application Server Version 8.5 product offerings for supported operating systems” on page 7.
 - These locations do not contain web pages that you can access using a web browser. They are remote web-based repository locations that you specify for Installation Manager so that it can maintain the product.
- To install a fix from a service repository, perform the following actions:
- a. If you do not already have an Installation Manager credentials file containing your IBM software user ID and password, create one that will allow you to access the repository.

Note: These are the credentials that you use to access protected IBM software websites. For information on creating a keyring file for Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Tip: When creating a keyring file, append `/repository.config` at the end of the repository URL location if the `imutilsc` command is unable to find the URL that is specified.

- b. Sign on to the IBM i system with a user profile that has *ALLOBJ and *SECADM special authorities.
- c. Stop all servers and applications on the WebSphere Application Server installation that is being updated.
- d. On a CL command line, run the STRQSH command to start the Qshell command shell.
- e. Make sure that the umask is set to 022.

To verify the umask setting, issue the following command:

```
umask
```

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

```
umask 022
```

- f. Change to the `Installation_Manager_binaries/eclipse/tools` directory, where `Installation_Manager_binaries` is the installation root directory for the Installation Manager. On IBM i systems, the root directory for the Installation Manager is `/QIBM/ProdData/InstallationManager`.

- g. Install the fix pack.

```
./imcl install offering_ID offering_version,optional_feature_ID  
-repositories source_repository  
-installationDirectory product_installation_location  
-keyring keyring_file -password password  
-acceptLicense
```

Tips:

- The `offering_ID` is the offering ID that is listed in “WebSphere Application Server Version 8.5 product offerings for supported operating systems” on page 7.
- The `offering_version`, which optionally can be attached to the offering ID with an underscore, is a specific version of the offering to install (8.5.0.20110503_0200 for example).
 - If `offering_version` is **not** specified, the latest version of the offering and **all** interim fixes for that version are installed.
 - If `offering_version` is specified, the specified version of the offering and **no** interim fixes for that version are installed.

The offering version can be found attached to the end of the offering ID with an underscore when you run the following command against the repository:

```
./imcl listAvailablePackages -repositories source_repository
```

- You can also specify none, recommended or all with the `-installFixes` argument to indicate which interim fixes you want installed with the offering.
 - If the offering version is **not** specified, the `-installFixes` option defaults to all.
 - If the offering version is specified, the `-installFixes` option defaults to none.
- You can add a list of features that are separated by commas. If a list of features is not specified, the default features are installed.
- If you obtained the fix pack by installing the WebSphere Application Server group PTF, you can use the local fix-pack repositories to install the fix pack.

For information about the local fix-pack repositories, see file `/QIBM/WAS/WASFixpacks/ReadmeV85.html` or `/QIBM/WAS/WASFixpacks/ReadmeV85.txt`.

- h. **Optional:** List all installed packages to verify the installation:

```
./imcl listInstalledPackages -long
```

- Download a file that contains the fix pack from Fix Central, and use local updating.

You can download a compressed file that contains the fix pack from Fix Central. Each compressed fix file contains an Installation Manager repository for the fix pack and usually has a .zip extension. After downloading the fix file, you can use Installation Manager to update WebSphere Application Server Version 8.x with the fix pack.

- a. To download the fix pack, perform the following actions:
 - 1) Go to Fix Central.
 - 2) Select **WebSphere** as the product group.
 - 3) Select **WebSphere Application Server** as the product.
 - 4) Select **8.x** as the installed version.
 - 5) Select your operating system as the platform, and click **Continue**.
 - 6) Select **Browse for fixes**, and click **Continue**.
 - 7) Select the fix pack that you want to download, and click **Continue**.
 - 8) Select your download options, and click **Continue**.
 - 9) Click **I agree** to agree to the terms and conditions.
 - 10) Click **Download now** to download the fix pack.
 - 11) Transfer the compressed fix file in binary format to the IBM i systems on which it will be installed.
 - 12) Extract the compressed repository file to a directory on your system.
- b. To install a fix pack from a downloaded file, perform the following actions:
 - 1) Sign on to the IBM i system with a user profile that has *ALLOBJ and *SECADM special authorities.
 - 2) Stop all servers and applications on the WebSphere Application Server installation that is being updated.
 - 3) On a CL command line, run the STRQSH command to start the Qshell command shell.
 - 4) Make sure that the umask is set to 022.
To verify the umask setting, issue the following command:
umask

To set the umask setting to 022, issue the following command:
umask 022
 - 5) Change to the *Installation_Manager_binaries/eclipse/tools* directory, where *Installation_Manager_binaries* is the installation root directory for the Installation Manager.
On IBM i systems, the root directory for the Installation Manager is /QIBM/ProdData/InstallationManager.
 - 6) Install the fix pack.

```
./imcl install offering_ID_offering_version,optional_feature_ID  
-repositories location_of_expanded_files  
-installationDirectory product_installation_location  
-acceptLicense
```

Tips:

- The *offering_ID* is the offering ID that is listed in “WebSphere Application Server Version 8.5 product offerings for supported operating systems” on page 7.
- The *offering_version*, which optionally can be attached to the offering ID with an underscore, is a specific version of the offering to install (8.5.0.20110503_0200 for example).
- If *offering_version* is **not** specified, the latest version of the offering and **all** interim fixes for that version are installed.

- If *offering_version* is specified, the specified version of the offering and **no** interim fixes for that version are installed.

The offering version can be found attached to the end of the offering ID with an underscore when you run the following command against the repository:

```
./imcl listAvailablePackages -repositories source_repository
```

- You can also specify none, recommended or all with the `-installFixes` argument to indicate which interim fixes you want installed with the offering.
 - If the offering version is **not** specified, the `-installFixes` option defaults to all.
 - If the offering version is specified, the `-installFixes` option defaults to none.
- You can add a list of features that are separated by commas. If a list of features is not specified, the default features are installed.
- If you obtained the fix pack by installing the WebSphere Application Server group PTF, you can use the local fix-pack repositories to install the fix pack.

For information about the local fix-pack repositories, see file `/QIBM/WAS/WASFixpacks/ReadmeV85.html` or `/QIBM/WAS/WASFixpacks/ReadmeV85.txt`.

- 7) **Optional:** List all installed packages to verify the installation:

```
./imcl listInstalledPackages -long
```

Uninstalling interim fixes from IBM i operating systems using the command line

You can use the IBM Installation Manager command-line function to remove interim fixes.

About this task

Use this procedure whenever you want to remove an interim fix from your system using the command line.

Tip: You can also uninstall interim fixes using silent response files with Installation Manager. For information on creating and using response files, read “Installing fix packs on IBM i operating systems using response files” on page 56 and the IBM Installation Manager Version 1.5 Information Center.

Procedure

1. Sign on to the IBM i system with a user profile that has *ALLOBJ and *SECADM special authorities.
2. Stop all servers and applications on the WebSphere Application Server installation.
3. On a CL command line, run the STRQSH command to start the Qshell command shell.
4. Make sure that the umask is set to 022.

To verify the umask setting, issue the following command:

```
umask
```

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

```
umask 022
```

5. Change to the `Installation_Manager_binaries/eclipse/tools` directory, where `Installation_Manager_binaries` is the installation root directory for the Installation Manager.

On IBM i systems, the root directory for the Installation Manager is `/QIBM/ProdData/InstallationManager`.

6. Uninstall the interim fix:

```
./imcl uninstall interim_fix_name
-iinstallationDirectory product_installation_location
```

7. Optional: List all installed packages to verify the uninstallation.

```
./imcl listInstalledPackages -long
```

Uninstalling fix packs from IBM i operating systems using response files

You can roll back this product to an earlier version using Installation Manager response files.

Before you begin

During the rollback process, Installation Manager must access files from the earlier version of the package. By default, these files are stored on your computer when you install a package. If you change the default setting or delete the saved files, Installation Manager requires access to the repository that was used to install the earlier version.

Restriction: You cannot use the Installation Manager to roll back an installation and add or remove the full WebSphere Application Server profile feature or the Liberty profile feature.

Procedure

1. Optional: If the repository requires a username and password, create a keyring file to access this repository.

For more information on creating a keyring file for Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Tip: When creating a keyring file, append `/repository.config` at the end of the repository URL location if the `imutilsc` command is unable to find the URL that is specified.

2. Sign on to the IBM i system with a user profile that has `*ALLOBJ` and `*SECADM` special authorities.
3. Stop all servers and applications on the WebSphere Application Server installation that is being rolled back.
4. On a CL command line, run the `STRQSH` command to start the Qshell command shell.
5. Use a response file to roll back the product.

Change to the `eclipse/tools` subdirectory in the directory where you installed Installation Manager, and roll back the product. For example:

```
./imcl
input $HOME/WASFiles/temp/rollback_response_file.xml
-log $HOME/WASFiles/temp/rollback_log.xml
-keyring $HOME/WASFiles/temp/im.keyring
```

Note: The program might write important post-installation instructions to standard output.

For more information on using Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

6. Optional: List all installed packages to verify the roll back.

```
./imcl listInstalledPackages -long
```

Example

The following is an example of a response file for rolling back the product to an earlier version.

```
<?xml version="1.0" encoding="UTF-8"?>
<agent-input>
<server>
  <repository location='https://www.ibm.com/software/repositorymanager/com.ibm.websphere.EXPRESS.v85' />
</server>
<profile id='IBM WebSphere Application Server V8.5' installLocation='/QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS'>
  <data key='eclipseLocation' value='/QIBM/ProdData/InstallationManager' />
</profile>
<rollback>
  <offering profile='IBM WebSphere Application Server V8.5' id='com.ibm.websphere.EXPRESS.v85' version='8.5.0.20101025_2108' />
</rollback>
</agent-input>
```

Tips:

- The profile ID (<profile . . . id='profile_ID'> and <offering . . . profile='profile_ID'>) can be found when you run the `imcl listInstallationDirectories -verbose` command from the `eclipse/tools` subdirectory in the directory where you installed Installation Manager. It is the same as the package group's name.
- The offering ID (<offering . . . id='offering_ID'>) can be found in the Install Manager Offering ID section of the report that is generated when you run the `historyInfo` or `genHistoryReport` command from the `app_server_root/bin` directory.
- The *version* is a specific version of the offering to which to roll back (8.5.0.20101025_2108 for example).

This specification is optional if you are using Installation Manager Version 1.5 or later.

- If *version* is **not** specified, the installation rolls back to the previously installed version of the offering and **all** interim fixes for that version are installed.
- If *version* is specified, the installation rolls back to the specified earlier version of the offering and **no** interim fixes for that version are installed.

The offering version can be found attached to the end of the offering ID with an underscore in the Package section of the report that is generated when you run the `historyInfo` or `genHistoryReport` command from the `app_server_root/bin` directory.

Uninstalling fix packs from IBM i operating systems using the command line

You can roll back this product to an earlier version using the Installation Manager command line.

Before you begin

Restriction: In order to use this procedure, you must have Installation Manager Version 1.5 or later installed on your system.

During the rollback process, Installation Manager must access files from the earlier version of the package. By default, these files are stored on your computer when you install a package. If you change the default setting or delete the saved files, Installation Manager requires access to the repository that was used to install the earlier version.

Restriction: You cannot use the Installation Manager to roll back an installation and add or remove the full WebSphere Application Server profile feature or the Liberty profile feature.

Procedure

1. Optional: If the repository requires a username and password, create a keyring file to access this repository.

For more information on creating a keyring file for Installation Manager, read the IBM Installation Manager Version 1.5 Information Center.

Tip: When creating a keyring file, append `/repository.config` at the end of the repository URL location if the `imutilsc` command is unable to find the URL that is specified.

2. Sign on to the IBM i system with a user profile that has `*ALLOBJ` and `*SECADM` special authorities.
3. Stop all servers and applications on the WebSphere Application Server installation that is being rolled back.
4. On a CL command line, run the `STRQSH` command to start the Qshell command shell.
5. Change to the `eclipse/tools` subdirectory in the directory where you installed Installation Manager.
6. Use the `imcl` command to roll back the product.


```
./imcl rollback offering_ID_offering_version
-repositories source_repository
-installationDirectory installation_directory
-preferences preference_key=value
-properties property_key=value
-keyring keyring_file -password password
-acceptLicense
```

Tips:

- The *offering_ID* is the offering ID that is listed in “WebSphere Application Server Version 8.5 product offerings for supported operating systems” on page 7.
- The *offering_version*, which optionally can be attached to the offering ID with an underscore, is a specific version of the offering to which to roll back (8.5.0.20110503_0200 for example).
 - If *offering_version* is **not** specified, the installation rolls back to the previously installed version of the offering and **all** interim fixes for that version are installed.
 - If *offering_version* is specified, the installation rolls back to the specified earlier version of the offering and **no** interim fixes for that version are installed.

The offering version can be found attached to the end of the offering ID with an underscore in the Package section of the report that is generated when you run the **historyInfo** or **genHistoryReport** command from the *app_server_root/bin* directory.

For more information on using the **imcl** command, read the IBM Installation Manager Version 1.5 Information Center.

7. Optional: List all installed packages to verify the roll back.

```
./imcl listInstalledPackages -long
```

Uninstalling the product from IBM i operating systems using response files

You can uninstall this product using Installation Manager response files.

About this task

Using Installation Manager, you can work with response files to uninstall the product.

Procedure

1. Stop all servers and applications on the WebSphere Application Server installations that contain the product.
2. Sign on to the IBM i system with a user profile that has *ALLOBJ and *SECADM special authorities.
3. On a CL command line, run the **STRQSH** command to start the Qshell command shell.
4. Use a response file to uninstall the product.

Complete one of the following actions:

- From a command line on each of the systems from which you want to uninstall the product, run the **uninstall** script (which uses the *uninstall.xml* response file in the same directory) to uninstall the product. For example:

```
app_server_root/uninstall/uninstall
```

- From a command line on each of the systems from which you want to uninstall the product, change to the *eclipse/tools* subdirectory in the directory where you installed Installation Manager and use the *uninstall.xml* response file in the same directory to uninstall the product. For example:

```
./imcl
input app_server_root/uninstall/uninstall.xml
-log $HOME/WASFiles/temp/uninstall_log.xml
```

- From a command line on each of the systems from which you want to uninstall the product, change to the `eclipse/tools` subdirectory in the directory where you installed Installation Manager and use a response file that you created to uninstall the product. For example:

```
./imcl
input $HOME/WASFiles/temp/uninstall_response_file.xml
-log $HOME/WASFiles/temp/uninstall_log.xml
```

Go to the IBM Installation Manager Version 1.5 Information Center for more information.

5. Optional: Uninstall IBM Installation Manager.

Important: Before you can uninstall IBM Installation Manager, you must uninstall all of the packages that were installed by Installation Manager.

Read the IBM Installation Manager Version 1.5 Information Center for information about using the uninstall script to perform this procedure.

Example

The `app_server_root/uninstall/uninstall.xml` file is an example of a response file for uninstalling the product.

Uninstalling the product from IBM i operating systems using the command line

You can use Installation Manager to uninstall this product using the Installation Manager command line (`imcl`).

Procedure

1. Stop all servers and applications on the WebSphere Application Server installations that contain the product.
2. Sign on to the IBM i system with a user profile that has `*ALLOBJ` and `*SECADM` special authorities.
3. On a CL command line, run the `STRQSH` command to start the Qshell command shell.
4. Change to the `eclipse/tools` subdirectory in the directory where you installed Installation Manager.
5. Use the `imcl` command to uninstall the product.

For example:

```
./imcl uninstall com.ibm.websphere.EXPRESS.v85,optional_feature_ID
-installationDirectory installation_directory
```

You can remove a list of features that are separated by commas. If a list of features is not specified, the entire product is uninstalled.

For more information on using the `imcl` command to uninstall the product, see the IBM Installation Manager Version 1.5 Information Center.

6. Optional: Uninstall IBM Installation Manager.

Important: Before you can uninstall IBM Installation Manager, you must uninstall all of the packages that were installed by Installation Manager.

For more information on uninstalling Installation Manager, see the IBM Installation Manager Version 1.5 Information Center.

Example

Here is an example of using the `imcl` command to uninstall WebSphere Application Server:

```
./imcl uninstall com.ibm.websphere.EXPRESS.v85
-installationDirectory /QIBM/ProdData/WebSphere/AppServer/V85/EXPRESS
```

Chapter 7. Verifying the installation

You can verify successful installation of the product using the capabilities of IBM Installation Manager.

About this task

WebSphere Application Server Version 7 and earlier had an installation verification utility, the `installver` command, that would verify checksums of installed files against a bill of materials that was shipped with the product. In WebSphere Application Server Version 8.0 and later, where the installation is based on the Installation Manager rather than on InstallShield MultiPlatform (ISMP), the `installver` command is replaced by the verification capabilities of the Installation Manager.

Procedure

- To verify installation of the product, you can use Installation Manager to find the product in the list of installed packages.

Change the directory to the `eclipse/tools` subdirectory of the Installation Manager binaries location and run this command:

```
./imcl listInstalledPackages
```

This will display a list indicating which packages this Installation Manager has installed. For example:

```
com.ibm.websphere.ND.v85_8.5.0.20110203_0234
```

- If an installation was successful, the `installed.xml` file should contain a location element for the installed product.

For example, the following file:

```
installation_manager_root/properties/version/installed.xml
```

should contain something like this:

```
<location id="IBM WebSphere Application Server V8.5" kind="product" path="/QIBM/ProdData/WebSphere/AppServer/V85/ND"> ..... </location>
```

- If you used the Installation Manager `-log` option during installation, you can verify that the resulting log file does not contain any errors.

If you used the following command to install the product silently for example:

```
./imcl -acceptLicense  
input $HOME/WASFiles/temp/install_response_file.xml  
-log $HOME/WASFiles/temp/install_log.xml  
-keyring $HOME/WASFiles/temp/im.keyring
```

and the installation was successful, the `install_log.xml` file should contain something like this:

```
<?xml version="1.0" encoding="UTF-8"?>  
<result>  
</result>
```

Chapter 8. Configuring the product after installation on IBM i

Configure your IBM i server, WebSphere Application Server - Express, and your HTTP server so that WebSphere Application Server runs correctly.

About this task

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

Procedure

1. Configure SQL jobs, as described in “Configuring SQL jobs on IBM i” on page 70.
Set the maximum number of jobs that are allowed for the SQL server jobs.
2. Configure TCP/IP, as described in “Configuring TCP/IP on IBM i” on page 71.
Configure TCP/IP for WebSphere Application Server.
3. Configure an HTTP server instance, as described in “Configuring an HTTP server instance on IBM i” on page 72.
Create an HTTP server instance and configure it to use WebSphere Application Server to serve JavaServer Pages (JSP) files and servlets.

Results

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

What to do next

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.

Before you begin

This article assumes that you have installed the WebSphere Application Server for IBM i product and that you have installed the WebSphere Application Server group PTF.

See Chapter 4, “Task overview: Installing on IBM i,” on page 7 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 special authority.

About this task

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

Procedure

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 5733W80 and the feature code for the product that you installed.
The feature code is 5101 for WebSphere Application Server Version 8.5 - Express.
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.

Results

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**.

What to do next

Go to “Configuring SQL jobs on IBM i” to continue the installation.

Configuring SQL jobs on IBM i

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.

Before you begin

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

About this task

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

Procedure

- 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 SBS(D(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 IBM i 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.

Results

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.
```

What to do next

Go to “Configuring TCP/IP on IBM i” to continue the installation.

Configuring TCP/IP on IBM i

Configure TCP/IP to run WebSphere Application Server on IBM i.

Before you begin

Before you configure TCP/IP settings, ensure that your user profile has *IOSYSCFG special authority.

About this task

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

Procedure

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 IBM i 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 IBM i 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
```

Results

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 IBM i 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 IBM i 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 IBM i server, you receive an `UnknownHostException` message.

What to do next

Go to “Configuring an HTTP server instance on IBM i” to continue the installation.

Configuring an HTTP server instance on IBM i

Configure your IBM HTTP Server or Lotus Notes® Domino HTTP Server to use either web server with WebSphere Application Server for IBM i.

Before you begin

Decide which HTTP Server you want to use to serve requests to WebSphere Application Server.

The following web servers are supported on IBM i:

- IBM HTTP Server (powered by Apache) (5761-DG1 or 5770-DG1)
- Lotus Domino 8 for System i 8.0 (5733-LD8), versions 8.0.1 and 8.0.2
- IBM Domino 8.5 for i (5733-L85)

The IBM HTTP Server (original) is not supported for WebSphere Application Server. However, you can use the IBM i 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 IBM i server.

About this task

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

Procedure

- Configure IBM HTTP Server for IBM i.
Go to “Configuring IBM HTTP Server for IBM i” if you plan to use IBM HTTP Server.
- Configure Lotus Domino HTTP Server.
Go to “Configuring Lotus Domino HTTP Server on IBM i” on page 76 if you plan to use Lotus Domino HTTP Server.

Configuring IBM HTTP Server for IBM i

You must configure IBM HTTP Server for IBM i before using the web server with WebSphere Application Server for IBM i.

Before you begin

This article assumes that you have decided to use the IBM HTTP Server for IBM i to serve requests to WebSphere Application Server. “Configuring an HTTP server instance on IBM i” on page 72 describes the HTTP servers available to WebSphere Application Server users.

About this task

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 IBM i, you must configure an instance of IBM HTTP Server to communicate with WebSphere Application Server.

Procedure

1. Start the *ADMIN server instance of IBM HTTP Server to use the IBM HTTP Server for IBM i configuration and administration forms.
See “Starting the *ADMIN instance of IBM HTTP Server on IBM i” for more information.
2. Create an HTTP server instance or select an existing instance, and configure it to work with WebSphere Application Server.
 - Create an HTTP server instance, and configure it to work with WebSphere Application Server.
Go to “Creating and configuring HTTP server instances on IBM i” on page 74 for more information.
 - Select an existing HTTP server instance, and configure it to work with WebSphere Application Server.
Go to the second step in “Creating and configuring HTTP server instances on IBM i” on page 74 for more information.

Starting the *ADMIN instance of IBM HTTP Server on IBM i

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

Before you begin

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

About this task

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 IBM i Configuration and Administration forms.

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

Procedure

- 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 Navigator for i.

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

For more information about IBM i Access for Windows and Navigator for i, see the IBM i Access Family website.

To start the *ADMIN instance from Navigator for i:

1. Start Navigator for i.
2. Double-click your IBM i 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.

What to do next

Go to “Creating and configuring HTTP server instances on IBM i” to continue the installation.

Creating and configuring HTTP server instances on IBM i

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

Before you begin

This article assumes that you have started the *Admin instance of IBM HTTP Server. See “Starting the *ADMIN instance of IBM HTTP Server on IBM i” on page 73 for more information.

About this task

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.

Procedure

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 IBM i configuration and administration forms.

Perform the following steps:

- a. Using a web browser, go to the IBM HTTP Server for IBM i 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 IBM i server.

- 2) Enter a valid user ID and password for your IBM i server.
 - 3) Select **IBM Web Administration for IBM i** at the IBM i Tasks page.
- b. The IBM Web Administration for IBM i 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.

- 1) To create a new HTTP server, click the **Setup** tab.
 - 2) Expand **Common Tasks and Wizards**.
 - 3) Click **Create New HTTP Server**.
- 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.

- 1) To create a new HTTP server, click the **Setup** tab.
 - 2) Expand **Common Tasks and Wizards**.
 - 3) Click **Create New HTTP Server**.
- 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.

What to do next

You have completed step 3 of 5.

Go to Chapter 9, “Starting WebSphere Application Server on IBM i,” on page 79 to continue the installation.

Configuring Lotus Domino HTTP Server on IBM i

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

Before you begin

See the WebSphere Application Server detailed system requirements page for information on the support levels of Lotus Domino Web Server.

Refer to the Administration Help for your version of Domino for information about installing and setting up Domino servers on IBM i.

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

About this task

Configure each instance of a Domino server on your IBM i server.

Procedure

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 IBM i 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 IBM i 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/product_library.LIB/LIBDOMINO.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
```

What to do next

You have completed step 3 of 5.

Go to Chapter 9, “Starting WebSphere Application Server on IBM i,” on page 79 to continue the installation.

Chapter 9. Starting WebSphere Application Server on IBM i

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

Before you begin

This article assumes that you have configured your WebSphere Application Server for IBM i installation. See Chapter 8, “Configuring the product after installation on IBM i,” on page 69 if you have not yet configured the product.

About this task

Use this procedure to start the WebSphere Application Server environment.

Procedure

1. Start the default application server profile.
Start the default standalone application server, as described in “Starting default standalone application server profiles on IBM i.”
Choose this task if you intend to run a standalone, unfederated application server.
2. Configure the virtual host, as described in “Configuring virtual hosts on IBM i” on page 81.
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 HTTP server instances on IBM i” on page 82.
Start the HTTP server so that your application server profile can receive and respond to client requests.

What to do next

Go to “Starting default standalone application server profiles on IBM i” to continue the installation.

Starting default standalone application server profiles on IBM i

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

Before you begin

This article assumes that you have configured your WebSphere Application Server for IBM i installation. See Chapter 8, “Configuring the product after installation on IBM i,” on page 69 if you have not yet configured the product.

About this task

Use this procedure to start the default application server profile.

Procedure

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 QWAS85 subsystem if it is not already started.

2. Start the administrative console, as described in “Starting the administrative console on IBM i” on page 81.

Open the administrative console in a web browser.

What to do next

Go to “Verifying that the application server is running on IBM i” to continue the installation.

Verifying that the application server is running on IBM i

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

Before you begin

This article assumes that you are attempting to start your application server profile. See Chapter 9, “Starting WebSphere Application Server on IBM i,” on page 79 if you have not yet attempted to start the application server.

About this task

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 is ready for use.

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

Procedure

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(QWAS85)
```

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 IBM i 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 IBM i 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.

What to do next

Go to “Starting the administrative console on IBM i” to continue the installation.

Starting the administrative console on IBM i

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.

Before you begin

This article assumes that you have a running application server profile. See Chapter 9, “Starting WebSphere Application Server on IBM i,” on page 79 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 article also describes how to enable cookies.

About this task

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

Procedure

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 IBM i 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 IBM i” on page 80.

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 IBM i 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.

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.

What to do next

Go to “Configuring virtual hosts on IBM i” to continue the installation.

Configuring virtual hosts on IBM i

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.

Before you begin

This article assumes that you have started the administrative console. See “Starting the administrative console on IBM i” on page 81 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 HTTP server instances on IBM i” instead.

About this task

Use this procedure to update the Host Aliases table for the default_host virtual host from the administrative console.

Procedure

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.

What to do next

For a standalone application server, restart the application server after you update the virtual host configuration.

Go to “Starting HTTP server instances on IBM i” to continue the installation.

Starting HTTP server instances on IBM i

IBM HTTP Server for IBM i runs in the QHTTSPVR subsystem, and each HTTP Server instance starts multiple jobs. The WebSphere Application Server code that plugs into IBM HTTP Server for IBM i 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.

Before you begin

This article 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 IBM i” on page 73.

About this task

Use this procedure to start the HTTP Server instance for the HTTP Server you are using.

Procedure

- 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 IBM i” on page 73.

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 IBM i” on page 73.

You can also stop and start your HTTP server instance from the IBM HTTP Server for IBM i Configuration and Administration forms in the browser-based interface. For instructions on using the browser-based interface, see “Configuring IBM HTTP Server for IBM i” on page 73.

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 IBM i” on page 76.

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
```

Starting default application server nodes on IBM i

Start the default application server node from the deployment manager administrative console.

Before you begin

This article assumes that you have already started the HTTP server instance. If you have not yet started the HTTP server instance, see “Starting HTTP server instances on IBM i” on page 82.

About this task

Use this procedure to start the application server for a node from the administrative console of the deployment manager.

Procedure

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**.

Results

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.

Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

APACHE INFORMATION. This information may include all or portions of information which IBM obtained under the terms and conditions of the Apache License Version 2.0, January 2004. The information may also consist of voluntary contributions made by many individuals to the Apache Software Foundation. For more information on the Apache Software Foundation, please see <http://www.apache.org>. You may obtain a copy of the Apache License at <http://www.apache.org/licenses/LICENSE-2.0>.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Intellectual Property & Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
USA

Trademarks and service marks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. For a current list of IBM trademarks, visit the IBM Copyright and trademark information Web site (www.ibm.com/legal/copytrade.shtml).

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

Other company, product, or service names may be trademarks or service marks of others.

Index

A

- administrative console
 - starting
 - IBM i 81
- application server
 - install
 - environment 3
 - verification
 - IBM i 80

D

- default standalone application server
 - starting
 - IBM i 79
- directory
 - installation
 - conventions 17

H

- HTTP server
 - configuring 72
 - IBM i 74, 82
- HTTP Server
 - configuring 73

I

- IBM HTTP Server
 - *ADMIN 74
- IBM i
 - installation 51
 - planning 27
 - prerequisites 28
 - rolling back 63, 64
 - starting 79
 - uninstallation 51
 - updating 57
 - installation
 - configuration
 - IBM i 69
 - IBM i 7, 35, 43
 - learning 24
 - product 7
 - requirements 18
 - verification 67
 - installing
 - checklist 5
 - iRemoteInstall
 - installation
 - IBM i 48

L

- license
 - installation 69
- Lotus Domino HTTP Server
 - IBM i 76

M

- maintenance
 - installation 33
 - IBM i 32

N

- nodes
 - default application server
 - IBM i 83

P

- ports
 - updating
 - IBM i 19
- prerequisites 31

R

- requirements
 - installation 18
- response files
 - installation 37

S

- SQL
 - installation
 - IBM i 70

T

- TC/IP
 - IBM i 71

U

- uninstallation
 - IBM i 35, 65
 - installation manager
 - IBM i 66