



WebSphere Application Server for iSeries

Overview

Version 5.0.2





@server

WebSphere Application Server for iSeries

Overview

Version 5.0.2

Note

Before using this information and the product it supports, be sure to read the information in "Notices," on page 13.

Fifth Edition (September 2004)

This edition applies to version 5.0.2 of IBM WebSphere Application Server for iSeries (product number 5733-WS5) and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CISC models.

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WebSphere Application Server for iSeries: Overview

WebSphere Application Server allows you to implement and manage server-side Java components, such as servlets, enterprise beans, and JavaServer Pages (JSP) files. These Java components can add complex business logic and dynamic functions to static HTML Web pages.

For more information, see these topics:

“What is WebSphere Application Server?”

See this topic for an overview of WebSphere Application Server, its high-level functions, and its terminology.

“Overview of WebSphere Application Server architecture” on page 2

This topic describes the software components of the base WebSphere Application Server product and the relationships among the components.

“What’s new in Version 5.0” on page 6

This topic lists functions that are new in Version 5.0 of WebSphere Application Server.

“WebSphere Application Server documentation” on page 7

This topic describes the WebSphere Application Server for iSeries product documentation.

“Get support for WebSphere Application Server for iSeries” on page 9

This topic describes the program services, voice support, and consulting services for WebSphere Application Server for iSeries.

“Other resources” on page 10

Use the resources that are listed in this topic for more information about WebSphere Application Server.

What is WebSphere Application Server?

Simply stated, WebSphere Application Server “serves” Java programs. WebSphere Application Server works in conjunction with your HTTP server to provide dynamic function in a Web site. WebSphere Application Server for iSeries supports these HTTP servers:

- IBM HTTP Server (powered by Apache)
- Lotus Domino HTTP Server

Runtime environment

WebSphere Application Server provides a run time for server-side Java applications. The WebSphere Application Server runtime fully complies with the Java^(TM) 2 Platform Enterprise Edition (J2EE) specification, developed by Sun Microsystems, Inc.

Administrative interfaces

WebSphere Application Server provides these tools to configure and manage application servers and applications:

- The Web-based administrative console is a graphical administrative interface.
- Qshell scripts are provided for several administrative tasks.
- wsadmin is a command line administrative tool that runs in a Qshell environment.

These features are provided as technology previews:

- ws_ant is an ANT-based command line administrative tool.
- Java Management Extensions (JMX) are a set of Java administrative APIs that you can use to customize WebSphere Application Server administration.

For more information about the administrative tools, see Administrative tools.

Application development

WebSphere Application Server provides application programming interfaces (APIs) for server-side Java components, which are based on specifications published by Sun Microsystems. You can use these Java components to build complex Web applications, such as an e-commerce Web site. For more information on developing applications for WebSphere Application Server, see Application development.

Note: WebSphere Application Server does not include programming tools or a development environment for these APIs. For more information about programming tools, see Development tools for WebSphere Application Server.

Overview of WebSphere Application Server architecture

WebSphere Application Server is available in these editions:

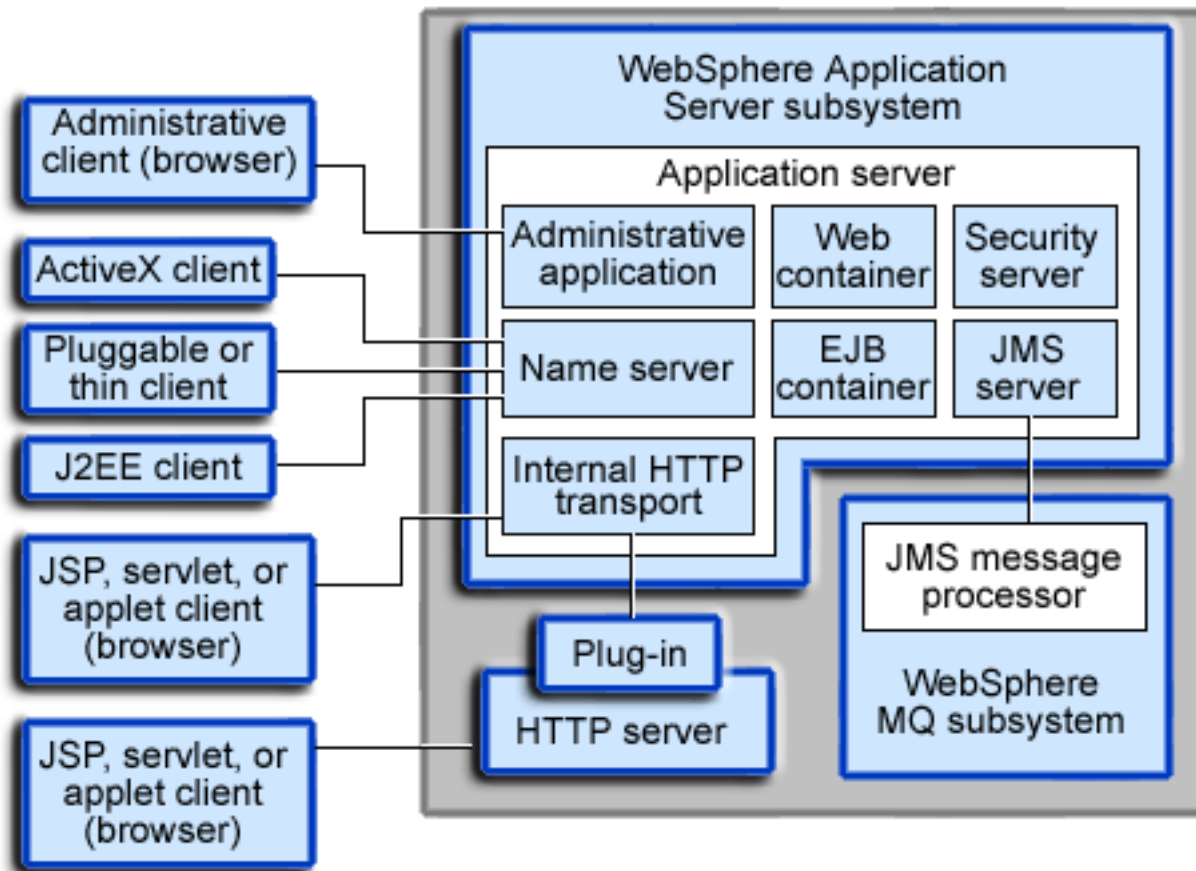
- The base WebSphere Application Server product, which is fully J2EE-compliant and supports single machine environments.
- WebSphere Application Server Network Deployment, which expands on the functionality of the base product. WebSphere Application Server Network Deployment supports advanced Web services and clustering for workload management.

This page describes the architecture for both editions of the product.

- WebSphere Application Server (page 2)
- WebSphere Application Server Network Deployment (page 4)

WebSphere Application Server

This image represents the high-level architecture of WebSphere Application Server, Version 5.0 for iSeries:



The WebSphere Application Server architecture consists of these software components:

Software components that run on the iSeries server

- **WebSphere Subsystem**

The WebSphere Application Server subsystem, QEJBAS5, contains the jobs that pertain to WebSphere Application Server. In addition to the jobs running in the QEJBAS5, your applications may also use jobs running in other subsystems. For more information on the jobs used in WebSphere Application Server, see WebSphere Application Server jobs.

- **Application Server**

- Web Container

The Web container runs within the application server and handles requests for servlets, JavaServer Pages^(TM) (JSP^(TM)) files, and the Web applications that contain them.

- EJB Container

The application server interacts with the EJB container to allow access to the enterprise beans contained within the EJB container. The EJB container provides an interface between the enterprise beans and the application server, providing many low-level services such as threading, support for transactions, and management of data storage and retrieval.

- Java Message Service (JMS) Server

WebSphere Application Server supports asynchronous messaging based on the Java Message Service (JMS) specification version 1.0.2 and supports the Application Server Facility (ASF) function defined within that specification. WebSphere Application Server provides an internal JMS provider and administration objects for MQSeries as the JMS provider. You can use the internal JMS provider, install the MQSeries JMS on top of the WebSphere internal JMS, or install and configure another JMS provider.

For an unfederated node, the internal JMS server runs within the application server. An unfederated node is an instance which is not part of a Network Deployment domain (cell). A federated node is an instance which has been added to a Network Deployment domain using the Network Deployment administrative console or the addNode script.

- **Name Server**

The Java Naming and Directory Interface, or JNDI, is used to provide access to Java components within a distributed computing environment. The WebSphere Application Server name server provides the implementation of this J2EE service, allowing you to bind WebSphere Application Server resources to JNDI names, and allowing client applications to access resources such as data sources, enterprise beans, message listeners, etc.

- **Security Server**

The WebSphere Application Server security server provides security infrastructure and mechanisms to protect sensitive J2EE resources and administrative resources and to address enterprise end-to-end security requirements on authentication, on resource access control, on data integrity, confidentiality, and privacy, and on secure interoperability.

- **MQ Series subsystem**

If you are using the embedded JMS server which comes with the WebSphere Application Server product, the MQ Series subsystem, QMQM, contains jobs that pertain to WebSphere Application Server. These jobs represent the embedded JMS server and are used to process JMS messages. For more information on the jobs running in the QMQM subsystem to support the embedded JMS server, see Other jobs used by WebSphere Application Server.

Software components that run on a client workstation

- **Browser**

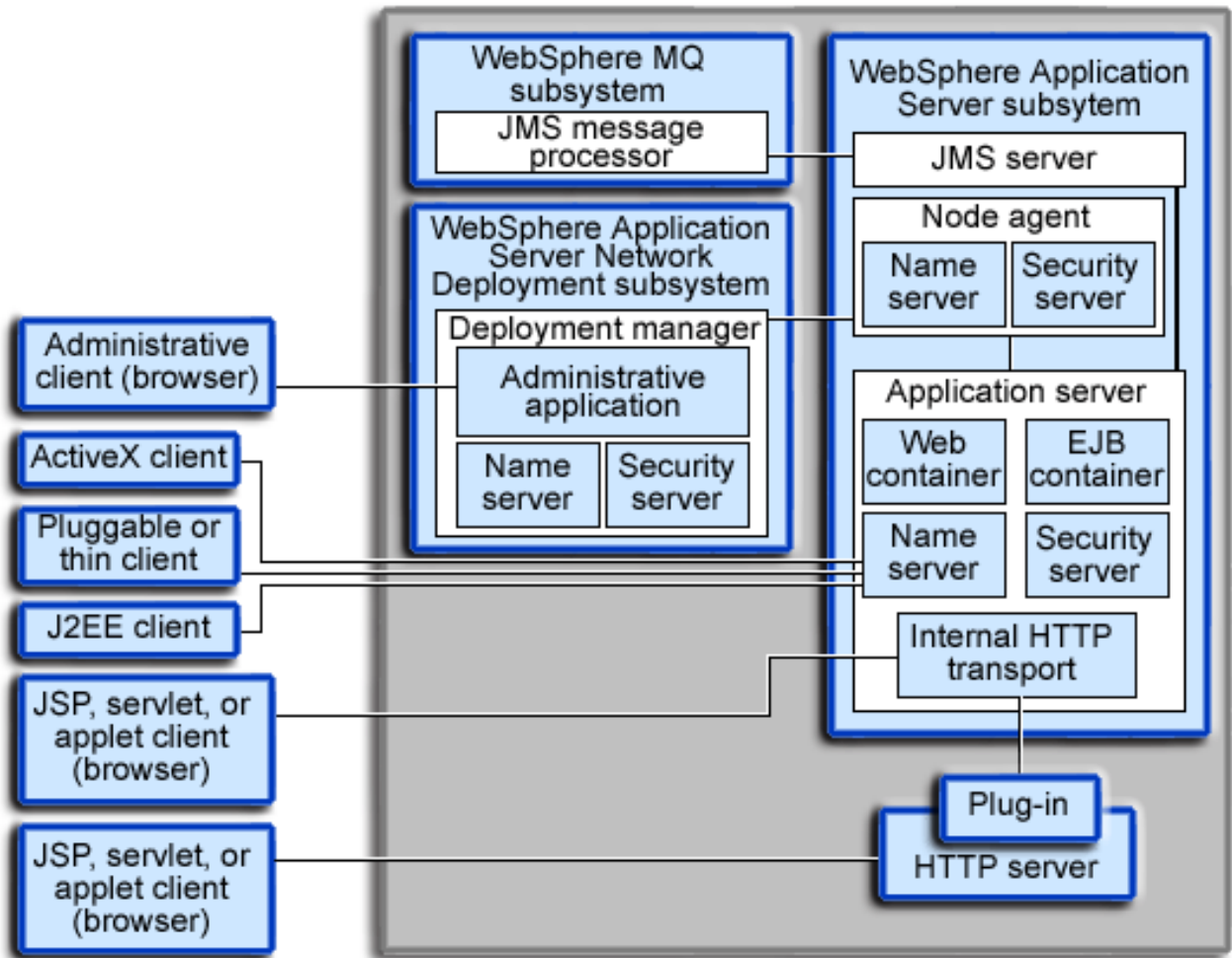
A Web browser that supports HTML 4.0 and CSS Cascading Style Sheets (CSS) and has cookies enabled.

- **Administrative Console**

The Administrative Console is a browser-based graphical interface that allows you to configure and manage WebSphere Application Server resources. For more information about the Administrative Console, see The administrative console.

WebSphere Application Server Network Deployment

This image represents the high-level architecture of WebSphere Application Server Network Deployment, Version 5.0 for iSeries:



In addition to the components that make up the WebSphere Application Server architecture, the WebSphere Application Server Network Deployment architecture includes these software components:

Software components that run on the iSeries server

- **Network Deployment Subsystem**

The WebSphere Application Server Network Deployment subsystem, QEJBASND5, contains the jobs that pertain to Network Deployment. The QEJBASND5 subsystem contains the application server job for each Deployment Manager running on your iSeries.

- **Deployment Manager**

The Deployment Manager is an administrative application which runs in a specialized application server. The application server and the administrative application are installed when you install the WebSphere Application Server Network Deployment product. The Deployment Manager allows you to manage multiple WebSphere Application Server instances, or nodes, as a group. This logical grouping of nodes, managed by a single Deployment Manager instance, form a Network Deployment cell.

Deployment managers also host logic for creating and controlling clusters, and for balancing the work load of application servers across several nodes.

Administrative tools that need to access any managed resource in a domain usually connect to the deployment manager for the domain as a central point of control. The deployment manager provides a single, central point of administrative control for all elements of the entire WebSphere distributed cell.

- **Node Agent**

Node agents are servers that monitor application servers running in a WebSphere Application Server

instance and route administrative requests to the application servers. If your WebSphere Application Server instance is not part of a Network Deployment cell, there is no node agent server for the instance. There is one node agent for each WebSphere Application Server instance which has been added to a Network Deployment cell.

The node agent is used purely for administrative functions and is not involved in application serving functions. A node agent also hosts other important administrative functions such as file transfer services, configuration synchronization, and performance monitoring.

- **JMS Server**

WebSphere Application Server supports asynchronous messaging based on the Java Message Service (JMS) of a JMS provider that conforms to the JMS specification version 1.0.2 and supports the Application Server Facility (ASF) function defined within that specification. WebSphere Application Server provides an internal JMS provider and administration objects for MQSeries as the JMS provider. You can use the internal JMS provider, install the MQSeries JMS on top of the WebSphere internal JMS, or install and configure another JMS provider.

For a federated node, the internal JMS server runs in its own job separate from application server process. A federated node is an instance which is part of a Network Deployment cell.

What's new in Version 5.0

This page describes how WebSphere Application Server Version 5.0 differs from previous versions of the product.

Product packaging

Previous versions of WebSphere Application Server for iSeries included two editions of the product: Advanced Edition and Standard Edition (in version 3) or Advanced Edition and Advanced Edition, Single Server (in version 4). The Advanced Edition products contained functions that were not available in the Standard Edition or Advanced Edition, Single Server products.

Instead of separate editions of the product, WebSphere Application Server Version 5.0 consists of a single code base, with an optional component (the Network Deployment option) that extends the functionality of the base product.

WebSphere Application Server

The base product provides an application server, which includes the runtime, administration interfaces, and application programming interfaces (APIs) for a single server installation (or single split-server installation). WebSphere Application Server Version 5.0 includes these features:

- A browser-based administrative console. The Java-based console that was used in previous versions of WebSphere Application Server is no longer available.
- All configuration data is stored in XML files.
- An integrated Java Message Service (JMS) server. JMS is part of the J2EE 1.3 specification, and enables asynchronous messaging between application components.
- Dynamic network caching.
- Java Management Extensions (JMX) systems management support (technology preview)
- An ANT-based administrative tool called `ws_ant` (technology preview)
- HTTP session state failover support.
- A session manager is integrated into each application server.
- Web services support, including Web Services Invocation Framework (WSIF), WS-Security, and a technology preview of JSR109.
- New security features, including support for JAAS, CSIV2 interoperability, Java 2 security, and third-party security providers.

- The Performance Monitoring Infrastructure (PMI) is integrated with JMX.
- Resource Analyzer has been rebranded as Tivoli Performance Viewer and includes extended functionality.
- Troubleshooting includes First Failure Data Capture (FFDC), which allows the collection of data based on the first failure in the system. The data is collected automatically by the WebSphere Application Server runtime, and stored in log files for the WebSphere Application Server instance.
- New collector tool gathers system information and packages it in a JAR file that you can send to IBM Service for analysis.

WebSphere Application Server Network Deployment

Additional function is available through the Network Deployment option. The Network Deployment option extends the base product with support for distributed systems administration, clustering and workload management, and advanced Web services.

- Clustering allows you to create a group of servers that work together to process client requests. Clustering supports these functions:
 - Workload management
 - Failover
 - Distributed security
 - Distributed naming
- With distributed systems administration, you can use a single administrative interface to manage multiple application servers in a clustered environment. The single administrative interface supports these functions:
 - Presentation of a single-system image
 - Distribution of configuration information
 - Distribution of applications throughout a Network Deployment cell
 - Monitoring for distributed systems
- WebSphere Application Server Network Deployment supports these advanced Web services features:
 - A private Universal Description, Discovery, and Integration (UDDI) registry
 - Web Services Gateway (WSGW) support

Application development

WebSphere Application Server Version 5.0 supports these application development specifications:

- JDK 1.3.1
- J2EE 1.3
 - Servlet 2.3
 - JSP 1.2
 - EJB 2.0

WebSphere Application Server documentation

For information about the WebSphere Application Server for iSeries product documentation, see these topics:

“Overview of the documentation” on page 8

This topic provides a roadmap to the WebSphere Application Server for iSeries Information Center topics.

“Documentation features” on page 8


See this topic for information about viewing and printing the documentation.

“Requirements for viewing the documentation” on page 9

This topic describes the software prerequisites for the WebSphere Application Server for iSeries Information Center.

Overview of the documentation

Use this topic as a roadmap to the WebSphere Application Server for iSeries documentation.

1. **“WebSphere Application Server for iSeries: Overview,” on page 1**
Start with this topic. The overview describes WebSphere Application Server, its features, and its architecture.
2. **WebSphere Application Server for iSeries product Web site** 
Become familiar with the product Web site. Use it to keep informed about product updates, fixes, and announcements. The product Web site also provides links to resources for WebSphere Application Server for iSeries.
3. **Release notes** 
Before you get started with WebSphere Application Server for iSeries, read the release notes. They contain important information about the product, such as special instructions and known problems.
4. **Installation**
Follow the steps in this topic to install the product, initially configure it, and test the installation.
5. **Basic configuration scenario**
If you are new to configuring WebSphere Application Server, see the basic configuration scenario next. The scenario shows you how to configure the product for a sample application, assemble the application, and deploy it in the WebSphere Application Server runtime.
6. **Administration**
After you finish the basic configuration scenario, use the other configuration and management topics to learn about advanced configuration options. These topics provide a useful reference for daily administration of WebSphere Application Server.
7. **Application development**
If you are developing applications for WebSphere Application Server, see this topic. It includes information about development tools, WebSphere Application Server application programming interfaces (APIs), tips for programming, and code examples.
8. **Security**
Security is critical for a production-level WebSphere Application Server environment. Learn about the WebSphere Application Server security model and features you can use to secure WebSphere Application Server and your applications.
9. **“Other resources” on page 10**
See this topic for links to other useful resources for WebSphere Application Server.

Documentation features

The WebSphere Application Server for iSeries Information Center provides several functions that are designed to help you access and use the documentation:

- **Printable PDF versions**
You can download or print PDF versions of the WebSphere Application Server for iSeries documentation. See [Print this information for instructions](#).
- **Downloadable ZIP package**
You can download a ZIP package of this documentation, which you can install on your local system or workstation. The ZIP package includes the iSeries-specific product documentation (in HTML and PDF format), the Web-based console help documentation, and application programming interface (API) documentation. The ZIP package also contains a full-text search function.
See [Download ZIP package](#) for instructions on downloading and installing the ZIP package.

- **Site map**

This documentation includes a site map that lists all articles in the WebSphere Application Server for iSeries Information Center. To display the site map, click **View the site map** in the navigation menu.

You can use the **Find...** function in your browser to quickly locate information in the site map:

1. Click the main content pane to select it for the search.
2. Select **Edit** —> **Find...** from your browser's menu.
3. Type your search term and click **Find next**.


- **Feedback**

Both the Web version and the downloadable ZIP version of this documentation includes a feedback utility through which you can electronically submit your comments or questions about the WebSphere Application Server for iSeries documentation. To access the feedback form, click the feedback icon in the toolbar.

The system on which you have installed the ZIP version of the documentation must have an Internet connection for the feedback utility to work. If you are unable to electronically submit your feedback, the feedback form contains instructions for contacting us by mail or fax.

- **National language versions**

The WebSphere Application Server 5.0 for iSeries documentation is available in other national language versions. The national language versions are available from these locations:

- WebSphere Application Server for iSeries product site 
- iSeries Information Center entry page

Requirements for viewing the documentation

The WebSphere Application Server for iSeries Information Center requires a browser that supports Java^(TM), JavaScript, cascading style sheets (CSS), and frames.

Minimum browser levels are Netscape Navigator 4.5 and Microsoft^(R) Internet Explorer 4.01. Optimal browser levels are Netscape Navigator 6.0 or Microsoft Internet Explorer 6.0 and later. If you use a different or earlier version of a browser, your pages may format differently and some functions may not work correctly.

To view PDF files, you need Adobe Acrobat Reader^(R) 4.0 or later. For more information, see [Print this information](#).

To install the downloadable ZIP package, you need a ZIP extraction utility and 15 MB of hard drive space. For more information, see [Download this information](#).

Get support for WebSphere Application Server for iSeries

Support services for IBM WebSphere Application Server for iSeries are provided under the usual terms and conditions for iSeries software products. Support services include program services, voice support, and consulting services. To refer to WebSphere Application Server 5.0 for iSeries, specify program number 5733-WS5. For more information, see the online information at

<http://www.ibm.com/eserver/iseries/support/>  or contact your local IBM representative.

Resolving defects of WebSphere Application Server for iSeries is supported under program services or voice support. Resolving application programming or debugging issues is supported under consulting services.

All programming assistance is supported under consulting services. This includes the program samples that are provided in the WebSphere Application Server for iSeries licensed program offering (LPO). Additional samples may be available on the Internet on an unsupported basis.


For the latest information about WebSphere Application Server, including PTF information, frequently asked questions (FAQ), and the Web-based forum, check the IBM WebSphere Application Server for iSeries product Web site at <http://www.ibm.com/eserver/iseries/software/websphere/wsappserver/>



Get fixes for IBM WebSphere Application Server for iSeries

Program fixes for 5733-WS5 (IBM WebSphere Application Server for iSeries, Version 5.0) are available through iSeries Program Temporary Fixes (PTFs). Use the online information that is provided at

<http://www.ibm.com/eserver/iseries/support/>  for more information.

For the latest information about fixes, see the IBM WebSphere Application Server for iSeries product Web site at <http://www.ibm.com/eserver/iseries/software/websphere/wsappserver/> 

Other resources

This topic provides links to additional iSeries-specific resources and other general IBM and JavaTM resources. You can use these Web sites, manuals, Redbooks, forums, and newsgroups to gain further knowledge and gather more information.

iSeries-specific resources

IBM WebSphere Application Server for iSeries product Web site

<http://www.ibm.com/eserver/iseries/software/websphere/wsappserver/> 

See this Web site for the most current information about WebSphere Application Server for iSeries, including fixes, documentation updates, forums, and FAQs. This page also contains a link for related information that includes several articles, white papers, and other resources for the product.

Other IBM resources

IBM Software: WebSphere Application Server product Web site

<http://www.ibm.com/software/webservers/appserv/> 

This is the home for IBM WebSphere Application Server on non-iSeries platforms. See this Web site for multi-platform information about the product.

IBM WebSphere Developer Domain

<http://www.ibm.com/software/websphere/developer/> 


See this Web site for WebSphere-specific resources for developers, including technical articles, tutorials, certification, and the WebSphere Application Server Zone.

IBM Application Development Software Web site

<http://www.ibm.com/software/ad/> 

Includes software product information about WebSphere Studio and VisualAge for Java.

IBM developerWorks: Java technology Web site

<http://www.ibm.com/developer/java/> 

IBM home page for Java technologies, see this Web site for IBM news, tools, education, developer programs, and resources for Java.

IBM developerWorks: XML Web site

<http://www.ibm.com/developer/xml> 

IBM home page for XML technologies, see this Web site for IBM news, tools, education, developer programs, and resources for XML.

Java resources

Sun Microsystems Java Technology Web site

<http://java.sun.com> 

Sun home page for Java technology, this Web site is a valuable resource for Java news, specifications, products, APIs, and documentation.

Sun Microsystems Java 2 Platform Enterprise Edition Web site

<http://java.sun.com/j2ee/> 

Sun home page for the J2EE specification. This Web site offers overviews, news, articles, specifications, and other resources for J2EE.

Sun Java Servlet Technology Web site

<http://java.sun.com/products/servlet/index.html> 

See this site for servlet specifications, the Java Servlet API, and Java Servlet Development Kit (JSDK) downloads.

Sun JavaServer Pages Technology Web site

<http://java.sun.com/products/jsp/index.html> 

See this site for JSP specifications, APIs, FAQs, white papers, and other resources.

Sun Enterprise JavaBeans Technology Web site

<http://java.sun.com/products/ejb/index.html> 

See this site for EJB specifications, FAQs, white papers, and other resources.

Appendix. Notices

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