IBM

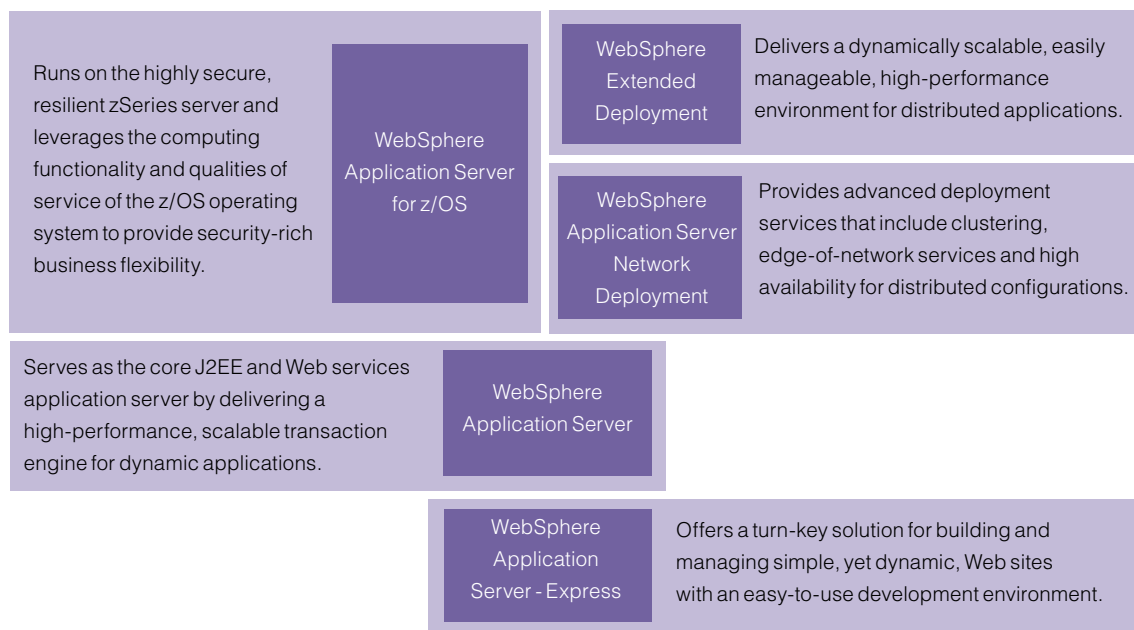**WebSphere**® software

IBM WebSphere Application Server, Version 6.0
and IBM WebSphere Application Server Network Deployment, Version 6.0

Highlights

■ *Deploys powerful Web services through integrated support for key Web services open standards and UDDI registries*

■ *Supplies full J2EE, Version 1.4 compatibility, including a native, enterprise-ready JMS provider*

■ *Delivers an advanced, security-rich infrastructure that is extensible through a pluggable architecture*

■ *Enhances flexibility through broad, cross-platform support and multiple configuration options*

■ *Enhances developer productivity with an integrated, open-standards-based development environment*

■ *Delivers a single, unified Web browser-based administration across all configuration options*

■ *Offers distributed-workload and caching capabilities to intelligently optimize performance*

■ *Provides enhanced application availability with sophisticated clustering and load-balancing capabilities*

Runs on the highly secure, resilient zSeries server and leverages the computing functionality and qualities of service of the z/OS operating system to provide security-rich business flexibility.

WebSphere Application Server for z/OS

WebSphere Extended Deployment

Delivers a dynamically scalable, easily manageable, high-performance environment for distributed applications.

WebSphere Application Server Network Deployment

Provides advanced deployment services that include clustering, edge-of-network services and high availability for distributed configurations.

Serves as the core J2EE and Web services application server by delivering a high-performance, scalable transaction engine for dynamic applications.

WebSphere Application Server

WebSphere Application Server - Express

Offers a turn-key solution for building and managing simple, yet dynamic, Web sites with an easy-to-use development environment.

The WebSphere Application Server family of products

ON DEMAND BUSINESS™

Today, building an on demand business that can extend your market reach and maximize your return on investment (ROI) means more than simply enabling content and applications to be accessed over the Web. To participate in the next chapter of on demand business, you must integrate these applications with existing data stores, other applications and Web services that exist in heterogeneous environments, in multiple programming models and on different sides of firewalls.

IBM WebSphere® Application Server, Version 6.0 is a comprehensive Java™ 2 Platform, Enterprise Edition (J2EE), Version 1.4 application server that integrates enterprise data and transactions for the on demand business world. Through a rich, application-deployment environment, you can build, manage and implement dynamic on demand applications, handle high-transaction volumes, and extend back-end business data and applications to the Web. With multiple configuration options, WebSphere Application Server enables you to choose the level of capability best suited to your current needs — with the option to expand as your business needs evolve. In this way, the WebSphere Application Server family of products supports a wide range of scenarios, from simple administration of a single server to a clustered, highly available,

high-volume environment with edge-of-network services. These specialized configuration options give you the flexibility to respond to an ever-changing marketplace — without the cost of migrating to a different technology base.

Delivering business value to support your on demand business needs
As the foundation of the WebSphere software platform and the core J2EE and Web services configuration, WebSphere Application Server, Version 6.0 is optimized to ease administration in a scalable, single-server deployment environment, and includes rich programming-model extensions designed to help you develop enterprise-quality applications. This configuration is recommended for organizations that need to build and deploy message-oriented, stand-alone, departmental applications and Web services, but don't require failure bypass or workload distribution options. This configuration is also available with a restricted, development-only license to allow enterprises using third-party development tools to effectively build and test applications for WebSphere Application Server.

Advanced management and automated performance optimization make IBM WebSphere Application Server Network Deployment, Version 6.0 the next level in application serving. Adding features such as world-class clustering, caching and high availability; advanced Web services that can operate across disparate application frameworks; and extended Web services management capabilities, WebSphere Application Server Network Deployment offers a robust solution for today's on demand business environment.

WebSphere Application Server, Version 6.0 configurations also include enhancements designed to help increase time to value and reduce total cost of ownership (TCO):

- *Enterprise archive (EAR) files enable you to create integrated test environments within IBM Rational® tools and the WebSphere Application Server toolkit, and the number of templates included with WebSphere Application Server has been increased.*
- *The rapid-deployment feature now provides an easy-to-use framework to help you quickly and easily deploy applications to WebSphere Application Server configurations. The rapid-deployment feature helps you significantly reduce the complexity of building J2EE applications by automating the most common aspects of application construction, assembly and deployment.*

- *Service Data Objects (SDOs) address the problem of disparate models and application programming interfaces (APIs) for data retrieval and representations. This data programming architecture (along with APIs) unifies data programming across data source types; provides robust support for common application patterns; and enables applications, tools and frameworks to more easily query, view, bind and update data on Java platforms. SDOs are designed to help you save development time and reduce maintenance costs through the use of this unified programming model.*

Leverage existing software assets

In today's business environment, it's more important than ever to take full advantage of your existing IT resources — from hardware to personnel. Through open standards and extensible connectivity features, WebSphere Application Server can greatly improve your ability to make the most of these vital assets. It also helps increase productivity through its close interoperability with IBM Rational tools, which provide a tightly integrated Java development environment based on open Eclipse Workbench technology. Develop,

test and deploy Java and Web services applications with easy access and minimal errors. The integrated development and deployment platform of WebSphere Application Server optimizes development resources through its ability to reuse CORBA, C++, Java and existing assets.

Application adapters that quickly and easily extend enterprise applications to on demand business can also help you use current resources. WebSphere Application Server is designed to reduce the risk, complexity and cost of using and deploying application adapters through its advanced support for J2EE Connector Architecture (JCA). JCA provides a consistent way of connecting to, and communicating with, a wide range of enterprise systems and applications — without the need for advanced programming skills or extensive coding. Reuse and integrate disparate systems and applications, while allowing broad, cross-platform support, and unparalleled connectivity and integration with a variety of back-end systems.

Rich J2EE implementations

All of the products in the WebSphere Application Server family support J2EE, Version 1.4, enabling you to use Java technology to develop more-demanding business applications with less time and effort. New functions within the J2EE, Version 1.4 platform can help eliminate the need to write custom code, enabling developers to use a single technology to develop, test and deploy end-to-end enterprise applications and solutions.

Also, WebSphere Application Server support for J2EE, Version 1.4 helps simplify enterprise applications by basing them on standardized, modular components. Comprehensive services handle many details of application behavior automatically, with little complex programming required. J2EE, Version 1.4 and WebSphere Application Server help simplify business integration through connectors and Java Message Service (JMS) support. All WebSphere Application Server configurations now have a common Java programming model, which includes a comprehensive range of Java technology-based APIs and protocols.

These include:

- *Compliance with Enterprise JavaBeans (EJB), Version 2.1*
- *Improved Java security APIs in the distributed security model*
- *An expanded programming model to include more loosely coupled integration through asynchronous messaging*
- *The ability to work with JavaServer Pages (JSP) in XML*

Besides providing support for J2EE, Version 1.4, all WebSphere Application Server configurations now deliver a range of programming model extensions that were previously available only in higher-end configurations. These enhancements can help improve development cycle times and include last-participant support, internationalization services, work-area services, activity-session services, extended Java Transaction API (JTA) support, timer services (scheduler services), object pools, dynamic query capabilities and application profiling capabilities.

Increase productivity with messaging integration

WebSphere Application Server enables dynamic application interaction through an integrated, high-performance JMS provider, and support for J2EE, Version 1.4 and EJB, Version 2.1. The JMS API increases productivity by defining a common set of messaging concepts and programming strategies. JMS further simplifies development by enabling loosely coupled, reliable, asynchronous interactions among J2EE components and core systems capable of messaging.

EJB, Version 2.1 message beans and container-managed messaging save valuable programming time and skill by enabling requests to be processed without requiring code to check for messages when they arrive. And developers can easily incorporate new behavior in a J2EE application with existing business events by adding a new message-driven bean to operate on specific business events.

Maximize ROI with Web services

WebSphere Application Server extends the J2EE, Version 1.4 programming model by providing a comprehensive infrastructure to support the production-ready deployment of Web services-based applications. It allows you to build, publish and manage integration-ready application services that can be used by other internal or external organizations or platforms. Create new business opportunities and help reduce costs by finding the least-expensive trading partners and sharing applications electronically with other organizations.

All WebSphere Application Server configurations support key Web services open standards, including Simple Object Access Protocol (SOAP); Universal Description, Discovery and Integration (UDDI); Web Services Description Language (WSDL); SOAP with attachments API for Java (SAAJ); Web Services Invocation Framework (WSIF); Web Services Security (WS-Security); XML Signature; and XML Encryption.

Support for WS-I Basic Profile, Version 1.1 gives Web services developers a head start on creating interoperability across heterogeneous environments and enterprise boundaries. And support for private UDDI registries—which act as directories of services to help users find information about Web services—enables developers to publish and test their internal on demand business applications in a security-rich, private environment.

With WebSphere Application Server, you can deploy and consume Web services with a variety of communications protocols, including SOAP and HTTP, JMS or Remote Method Invocation Internet Inter-ORB Protocol (RMI/IIOP). You can also administer virtually any Web service, whether developed with Java technology or Microsoft® .NET.

WebSphere Application Server Network Deployment provides extended Web services support through a Web services gateway. This gateway helps reduce development costs by making selected services available to different divisions within an enterprise, or to customers and trading partners

who use different protocols or are outside the firewall. Using the Web services gateway, developers and IT managers can safely externalize a Web service so that users can invoke it from outside the firewall.

Reduce costs with simplified deployment and administration features

WebSphere Application Server provides a central and open management interface, along with agile setup options and administration features, to help you deploy and manage multiple applications and components from the same environment, while lowering the complexity of application and systems management. With WebSphere Application Server Network Deployment, these capabilities are extended to help manage configurations that include large numbers of servers. And automated application-server management functions help enhance productivity and help reduce administrative costs. As your business needs change, WebSphere Application Server can help you quickly and easily move from one configuration to another by providing a single Web browser-based administration across all deployment options.

To let you effectively manage your operations and applications, WebSphere Application Server provides installation and administration capabilities through exposed Java Management Extension (JMX) interfaces and an extended command-line interface. Support for JMX allows other products (like IBM Tivoli® security software) to read and manage WebSphere software in a standardized way.

Meet the changing demands of on demand business

Dependable system availability can help you avoid costly downtime and, in turn, build customer loyalty. But as volume increases, it becomes more difficult to maintain high levels of performance. WebSphere Application Server can help you handle unpredictable volumes— without degrading user experience. Its consistent, leading-edge performance and scalability help maintain high responsiveness to constantly changing environments. Take advantage of new levels of scalability, reliability and performance through expanded database support and enhanced security to help enable continuous operation of critical enterprise Java applications.

WebSphere Application Server Network Deployment distributes workloads across multiple servers through sophisticated load-balancing and clustering capabilities, including automatic failover capability and content-based routing to deliver more-effective session management and enhanced, edge-based caching capabilities. The sophisticated load-balancing and edge-of-network components are designed to provide a scalable solution for load-balancing requests between HTTP-, FTP- or other TCP-based servers. You can define rules and requirements that can be incorporated to help the load balancer reroute requests intelligently. And you can use custom advisors to balance requests based on specific application and platform criteria.

Instill confidence with security-rich applications

It's more important than ever that you provide your employees, trading partners and customers with the most advanced levels of security and superior performance.

WebSphere Application Server offers a sophisticated security-rich infrastructure and extensive support of open-standards-based Java specifications, including:

- Java Authentication Authorization Services (JAAS).
  Authenticates new principals and manages privileged information for a principal.
- Java 2 security model.
  Helps secure system resources.
- Java Secure Socket Extension (JSSE).
  Helps secure communications channels based on transport-level security (Transaction Layer Security [TLS] and Secure Sockets Layer [SSL]).
- Java Cryptographic Extension (JCE).
  Provides a framework for security encryption and message authentication.
- Java Cryptographic Architecture.
  Provides Java cryptographic extensibility, as with public key infrastructure (PKI) integration.
- Common Secure Interoperability (CSI, Version 2).
  Supports secure interoperability between application services.

You can implement sophisticated enterprise topologies and infrastructure through the WebSphere Application Server pluggable security architecture. These include:

- *Pluggable user registries to enable you to exploit Lightweight Directory Access Protocol (LDAP) or custom registries.*
- *Web single sign-on exclusively provided with WebSphere software or through integration with front-end, authentication endpoints with Trust Association Interceptor (TAI) technology.*
- *Highly secure access to enterprise information systems through a pluggable principal- and credential-mapping facility.*

A flexible on demand business infrastructure

IBM WebSphere Application Server, Version 6.0 provides flexible options and a smooth migration path to help you develop and maintain complete solutions. WebSphere Application Server is designed to help you reach your business objectives — wherever your organization is on the path to becoming an on demand business.

Choose the level of capability best suited for today's needs and expand as your business needs change. Offerings include:

- IBM WebSphere Application Server - Express.
An easy-to-use, cost-effective on-ramp to develop and deploy dynamic Web applications with basic on demand business capabilities. WebSphere Application Server - Express provides the full J2EE programming model coupled with integrated applications, wizards and samples to help get you up and running quickly and easily.
- WebSphere Application Server.
The core J2EE, Version 1.4 certified application server, enabling industry-leading and flexible deployment options.
- WebSphere Application Server for Developers.
The functional equivalent of the core WebSphere Application Server configuration, providing an easy-to-use development environment to build and test on demand business applications (licensed for development use only).

- WebSphere Application Server Network Deployment.
A J2EE and Web services application server with advanced deployment services that include clustering, edge-of-network services and high availability for distributed configurations.
- WebSphere Application Server for z/OS.
A J2EE and Web services application server specifically designed for the IBM z/OS® operating system.

These products offer a rich, Web-based application deployment or test environment with services that can include enhanced capabilities to support transaction management of heterogeneous Web services. WebSphere Application Server is also designed to provide leading-edge, security-rich performance, availability, connectivity and scalability features.

For more information
IBM WebSphere Application Server is the foundation of the IBM WebSphere software platform — a set of integrated, award-winning on demand business solutions. No matter where you are in the on demand business cycle, the WebSphere software platform can allow you to grow at the speed your market demands. Building on this robust platform, you can integrate your current investments and leverage existing skills with a full range of server solutions from the WebSphere family of products.

To learn more about IBM WebSphere Application Server, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/software/websphere/ appserv

To learn more about how the WebSphere software platform can help you succeed in on demand business, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/websphere

To order IBM WebSphere Application Server, contact your IBM representative or IBM Business Partner, call 1 800 IBM-CALL, or visit:

ibm.com/shop

IBM WebSphere Application Server, Version 6.0 at a glance

	WebSphere Application Server, Version 6.0	WebSphere Application Server Network Deployment, Version 6.0
Java programming model		
Full J2EE, Version 1.4 support	X	X
Support for JavaServer Pages (JSP), Version 2.0 and Java servlets, Version 2.4	X	X
Full XML support	X	X
Web services		
Full Web services support	X	X
Support for private UDDI registries	X	X
Web services gateway		X
Database support and connectivity		
Java Database Connectivity (JDBC) and connection management for access to IBM DB2® Universal Database™, Microsoft SQL Server 2000, Oracle, IBM Informix® and Sybase[1]	X	X
JDBC for access to DB2 Universal Database for i5	X	X
Restricted DB2 licenses	X	X
Application development		
Sample applications	X	X
Web server support		
IBM HTTP server included	X	X
Web server plug-ins	X	X

IBM WebSphere Application Server, Version 6.0 at a glance (continued)

	WebSphere Application Server, Version 6.0	WebSphere Application Server Network Deployment, Version 6.0
Security		
Basic authentication and authorization for secure access to Web resources	X	X
Enhanced authentication and authorization through Common Secure Interoperability (CSI), Version 2.0, single sign-on and support for Lightweight Directory Access Protocol (LDAP)	X	X
Advanced authentication and authorization, such as Java Authentication and Authorization Service (JAAS) and Java Cryptographic Extension (JCE) for enhanced security	X	X
Platform support		
Broad platform support for rapid implementation on Microsoft Windows® 2000,[2] Microsoft Windows 2003, Microsoft Windows XP[2], Linux®, IBM OS/400®, IBM i5/OS™, IBM AIX® systems, Sun Solaris operating environment and HP-UX	X	X
Support for Linux on IBM @server zSeries®	X	X
Application connectivity		
Full JMS technology-supported message-driven beans, including embedded JMS transport	X	X
Microsoft component object model architecture to Enterprise ActiveX client and server resources[1]	X	X
Performance support		
Enhanced features for performance, such as dynamic caching, IBM Tivoli Performance Viewer software and integration with vendor tools	X	X
Administration and workload management		
Web browser-based remote administration	X	X
Convenient administration through an embedded administrative console	X	
Intelligent workload distribution across a cluster		X
Failure bypass		X
Clustering support		X
Simple failover and load balancing	X	X
Migration support		
Migration documentation	X	X
Migration tools and assistance	X	X

IBM WebSphere Application Server, Version 6.0 at a glance (continued)

Hardware requirements

For AIX operating systems
- IBM @server pSeries® at 375MHz or faster
- Minimum 970MB available disk space for installation (includes SDK)
- Minimum 512MB physical memory; 1GB recommended
- CD-ROM drive

For HP-UX operating systems
- PA-RISC at 440MHz or faster
- Minimum 1100MB available disk space for installation (includes SDK)
- Minimum 512MB physical memory; 1GB recommended
- CD-ROM drive

For Linux on Intel® operating systems
- Intel x86 (or equivalent) processor at 500MHz or faster
- Minimum 995MB available disk space for installation (includes SDK)
- Minimum 512MB of physical memory; 1GB recommended
- CD-ROM drive

For Linux on zSeries operating systems
- G5, G6 or IBM @server zSeries
- Minimum of 995MB available disk space for installation
- Minimum of 512MB memory; 1GB recommended
- CD-ROM drive

For Linux on @server i5 operating systems
- IBM @server i5 models that support logical partitioning (LPAR) with minimum of 450 commercial processing workload (CPW) in Linux partition
- Minimum 16GB available disk space for the OS/400 partition; 2.5GB minimum for the Linux partition
- Minimum 512MB of physical memory; 1GB recommended for the OS/400 partition
- Minimum 512MB of physical memory for the Linux partition
- CD-ROM drive

For Linux on IBM @server pSeries operating systems
- IBM @server pSeries models that support Linux
- Minimum 995MB available disk space for installation
- Minimum 512MB of physical memory; 1GB recommended
- CD-ROM drive

For Sun Solaris operating environment
- Sun Solaris operating environment SPARC workstation at 440MHz, or faster
- Minimum 1000MB available disk space for installation (includes SDK)
- Minimum 512MB physical memory; 1GB recommended
- CD-ROM drive

For Microsoft Windows 2000,[2] Windows 2003 and Windows XP[2] operating systems
- Intel Pentium® processor (or equivalent) at 500MHz or faster
- Intel EM64T, or AMD Opteron
- Minimum 990MB available disk space for installation (includes SDK)
- Minimum 512MB physical memory; 1GB recommended
- CD-ROM drive

IBM WebSphere Application Server, Version 6.0 at a glance (continued)

Hardware requirements (continued)

For OS/400 and i5/OS operating systems
- IBM AS/400® model 170 with processor feature 2385
- IBM AS/400 model 720 with processor feature 2062
- IBM @**server** i5 model 270 with processor feature 2252
- IBM @**server** i5 model 800 with processor feature 2464
- IBM @**server** i5 model 820 with one of these processor features: 2395, 2396, 2427, 2458
- IBM @**server** i5 model 520, 570, 810, 825, 830, 840, 870, 890
- For simple Web applications (no EJB), 300 CPW minimum recommended processor
- For more complex Web applications and EJB applications, 450 CPW minimum recommended processor
- Minimum 1200MB available disk space for installation
- Minimum 768MB physical memory; 1GB recommended
- 2MB Level 2 cache

Note: These requirements represent the recommended minimum requirements. Deployments that must support many users or require shorter response times might require additional resources. Use the IBM Workload Estimator for help to size system configurations. For more information, visit http://as400service.ibm.com/estimator.

Software requirements

For AIX operating systems
- IBM AIX, Version 5.1 with the 5100-05 recommended maintenance package
- IBM AIX, Version 5.2 with 5200-02 or 5200-03 recommended maintenance package
- IBM AIX, Version 5.3 (APAR IY58143 is required.)

For HP-UX operating systems
- HP-UX 11i with Quality Pack level of June 2004 and required HP-UX Java patches

For OS/400 and i5/OS operating systems
IBM OS/400, Version 5.2 or Version 5.3 with:
- IBM Developer Kit for Java, Version 1.4 (option 6)
- IBM OS/400 Qshell (option 30 required to use scripts)
- IBM OS/400 Host Servers (option 12)
- Cryptographic Access Provider 128-bit for IBM @**server** i5
- HTTP server
  - IBM HTTP server, powered by Apache server
  - IBM Lotus® Domino® for AS/400
  - Lotus Domino for @**server** i5 6.0
  - Lotus Domino for @**server** i5 6.5
- IBM @**server** i5 and AS/400 optional software
  - IBM OS/400 Digital Certificate Manager (option 34) required for SSL protocol
  - IBM DB2 Query Manager and SQL Development Kit for IBM @**server** i5 (helpful in developing client applications)

Note: For a list of current fixes, visit **ibm.com***/eserver/iseries/software/WebSphere/wsappserver/.*

For Linux operating environments on Intel processor-based systems (one of the following)
- Red Flag Advanced Server, Version 4.1 (only available and supported through IBM China support centers)
- Red Hat Enterprise Linux (RHEL) AS, Version 3.0 with Update 2 or 3; or Version 4
- RHEL ES, Version 3.0, Update 2 or 3
- RHEL WS, Version 3.0, Update 2 or 3 (supported for application design, development and testing); or Version 4
- SUSE LINUX Enterprise Server, Version 8 with Service Pack (SP) 3
- SUSE LINUX Enterprise Server, Version 9

IBM WebSphere Application Server, Version 6.0 at a glance (continued)

Software requirements (continued)

For Linux operating environments on zSeries servers
- RHEL AS, Version 3.0, Update 2 or 3; or Version 4
- SUSE LINUX Enterprise Server, Version 8 with SP3
- SUSE LINUX Enterprise Server, Version 9

For Linux operating environments on IBM @server i5 and IBM @server pSeries servers
- RHEL AS, Version 3.0, Update 2 or 3; or Version 4
- SUSE LINUX Enterprise Server, Version 8 with SP3
- SUSE LINUX Enterprise Server, Version 9

For Sun Solaris operating environment
- Sun Solaris, Version 8 with the June 2004 maintenance level
- Sun Solaris, Version 9 with the June 2004 maintenance level

For Microsoft Windows operating systems
- Microsoft Windows 2000 Advanced Server with SP4
- Microsoft Windows 2000 Server with SP4
- Microsoft Windows 2000 Professional Server with SP4 (supported for application design, development and testing only; no support for production use)
- Microsoft Windows Server 2003, Datacenter
- Microsoft Windows Server 2003, Enterprise
- Microsoft Windows Server 2003, Standard
- Microsoft Windows XP Professional with SP1a (supported for application design, development and testing only; no support for production use)

Supported HTTP server environments
- Apache Server, Version 2.0.49
- IBM HTTP Server, Version 2.0.47.1
- IBM HTTP Server, Version 6.0
- IBM HTTP Server for @server i5
- Microsoft Internet Information Services, Version 5.0 or Version 6.0
- IBM Lotus Domino Enterprise Server 6.0.3 or 6.5.1
- Sun Java System Web Server, Version 6.0 with SP7
- Sun Java System Web Server, Version 6.1 with SP1 (supported for HTTP server functionality, only for this server)

Supported Web browsers
- Microsoft Internet Explorer, Version 6.0 with SP1 on Microsoft Windows
- Mozilla, Version 1.4 or Version 1.7

*Note: Hardware and software requirements are updated frequently. For the most current requirements, please visit **ibm.com**/software/webservers/appserv/doc/latest/prereq.html.*

64-bit platform support

- 64-bit platform support delivers more memory addressability, scalability and capacity for WebSphere Application Server implementations.
- For the latest information on the 64-bit platforms supported by WebSphere Application Server, visit **ibm.com**/software/webservers/appserv/doc/latest/prereq.html.

Notes:
[1] *Not supported for IBM @server i5*
[2] *Supported for application design, development and testing only; no support for production use*