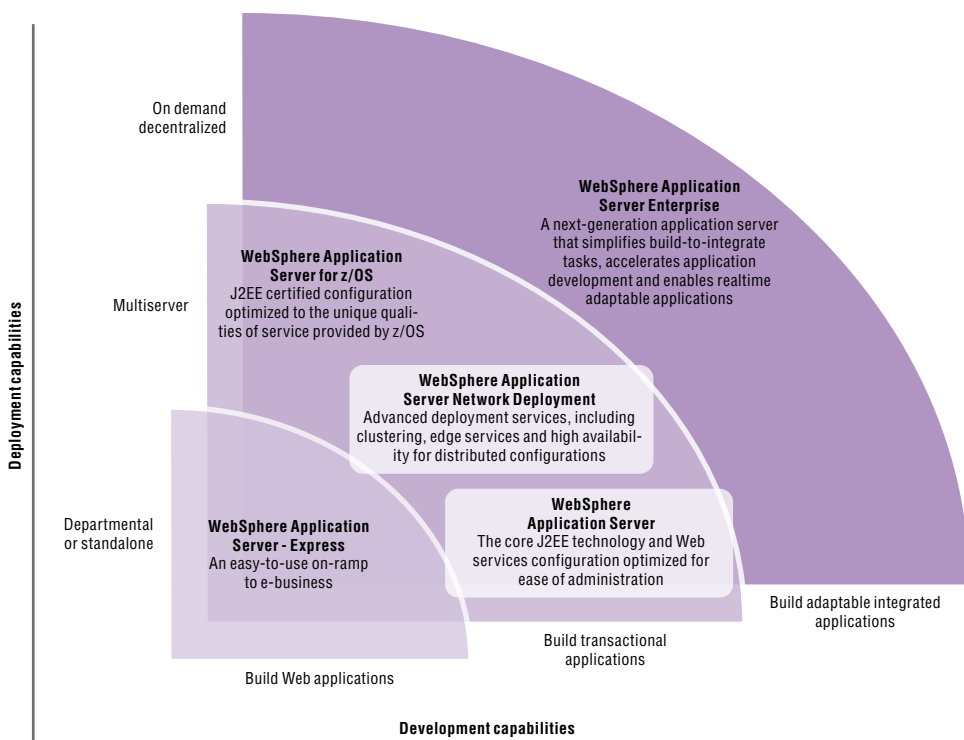# IBM WebSphere Application Server, Version 5
and IBM WebSphere Application Server Network Deployment, Version 5

Highlights

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

- *Provides full J2EE 1.3 compatibility, including enterprise-ready Java Message Service*

- *Delivers an advanced security-rich infrastructure extensible through pluggable architecture*

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

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

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

- *Delivers a single browser-based administration across all deployment options*

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

WebSphere Application Server provides the foundation of the WebSphere platform with J2EE technology and Web services-based configurations to deploy, integrate and manage dynamic e-business applications.

Today, building an e-business on demand™ that can extend your market reach and maximize your return on investment (ROI) means more than simply Web-enabling content and applications. To participate in the next chapter of e-business, it is vital to 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 5 is a comprehensive Java™ 2 Platform, Enterprise Edition (J2EE) 1.3 and Web services technology-based application server that integrates enterprise data and transactions with today's e-business world. Through a rich, application-deployment environment, you can build, manage and deploy dynamic e-business applications, handle high-transaction volumes and extend back-end business data and applications to the Web. IBM WebSphere Application Server Network Deployment offers advanced Web services that can operate across disparate application frameworks and business-to-business (B2B) applications, and provides virtually any-to-any connectivity with transaction management and application adaptivity.

With multiple configuration options, WebSphere Application Server 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.

As the foundation of the WebSphere platform and the core J2EE and Web services configuration, IBM WebSphere Application Server, Version 5 is optimized for ease of administration in a scalable, single-server deployment environment. 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. 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 5 the next level in application serving, with features that include world-class clustering, caching and high availability, combined with extended Web services management capabilities.

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 leverage these existing assets. WebSphere Application Server helps increase productivity through its close interlock

with IBM WebSphere Studio, 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, Microsoft, C++, Java and legacy assets.

Application adapters that quickly and easily extend enterprise applications to e-business also help you leverage current resources. WebSphere Application Server helps reduce the risk, complexity and cost of using and deploying application adapters through its advanced support for J2EE Connector Architecture. Java Connector Architecture gives you 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.

Increase productivity with messaging integration
WebSphere Application Server enables dynamic application interaction through a native, high-performance Java Message Service (JMS) provider based on market-leading IBM WebSphere MQ technology and support for J2EE 1.3, Enterprise JavaBeans (EJB) 2.0. The JMS application programming interface (API) increases productivity by defining a common set of messaging concepts and programming strategies. JMS further simplifies development by allowing loosely coupled, reliable, asynchronous interactions among J2EE components and legacy systems capable of messaging. EJB 2.0 message beans and container-managed messaging save valuable programming time and skill by allowing 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 1.3 programming model by providing a comprehensive infrastructure to support the production-ready deployment of Web services-based applications. 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 reduce costs by finding the least expensive trading partners and sharing applications electronically with other organizations. WebSphere Application Server supports key Web services open standards, including Simple Object Access Protocol (SOAP), Universal Description, Discovery and Integration (UDDI) and Web Services Description Language (WSDL). Deploy and consume Web services with a variety of communication protocols, including SOAP and HTTP, JMS or Remote Method Invocation Internet Inter-ORB Protocol (RMI/IIOP). Administer virtually any Web service, whether developed with Java technology or Microsoft®.NET.

WebSphere Application Server Network Deployment provides extended Web services support with a private IBM UDDI Registry and IBM Web Services Gateway. UDDI Registry — which acts as a directory of services to help users find information about Web services — enables developers to publish and test their internal e-business applications in a security-rich, private environment. Web Services 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 Web Services Gateway, developers and IT managers can safely externalize a Web service so users can invoke it from outside the firewall.

Reduce costs with simplified deployment and administration features

Deploy applications and transactions efficiently and effectively to increase productivity and reduce costs. WebSphere Application Server provides a central and open management interface to help you administer multiple applications and components from the same environment and lower the complexity in application and systems management. Agile setup options and administration features help you administer, deploy and manage applications with ease. 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 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 third-party products (like Tivoli® security software from IBM) to read and manage WebSphere software in a standard way.

Meet the changing demands of e-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. Leverage 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 workload across multiple servers through sophisticated load balancing and clustering capabilities, including automatic failover capability, content-based routing to deliver more effective session management and enhanced, edge-based caching capabilities. The sophisticated load balancing

and edge-of-network components provide a scalable solution for load balancing requests between HTTP, FTP or other TCP-based servers. Customer-defined rules and requirements can be incorporated to help the load balancer reroute requests intelligently. And custom advisors can be used to load balance requests based on unique 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 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 communication channels based on transport level security (TLS/SSL).*
- *Java Cryptographic Extension (JCE). Provides a framework for security encryption and message authentication.*
- *Java Cryptographic Architecture. Provides Java cryptographic extensibility, as with PKI integration.*
- *Common Secure Interoperability (CSIv2). Supports secure interoperability between application services.*

Sophisticated enterprise topologies and infrastructure can be implemented through WebSphere 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 e-business infrastructure

IBM WebSphere Application Server, Version 5 provides flexible options and a smooth migration path to help you develop and maintain complete solutions. WebSphere Application Server meets you wherever you are on the path to e-business to help reach your business objectives.

Choose the level of capability best suited for today's needs and expand as your business needs change. An extensive list of offerings includes:

- *WebSphere Application Server - Express.* An easy-to-use, cost-effective on-ramp to develop and deploy dynamic Web applications with basic e-business capabilities.
- *WebSphere Application Server.* The core Web services J2EE 1.3 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 e-business applications (licensed for development use only).

- *WebSphere Application Server Network Deployment. A J2EE and Web services Web application server with advanced deployment services that include clustering, edge-of-network services and high availability for distributed configurations.*
- *WebSphere Application Server Enterprise. An extended J2EE and Web services, build-to-integrate platform to create, compose and choreograph dynamically adaptable networked application flows and behaviors.*
- *WebSphere Application Server for z/OS. A J2EE and Web services application server specifically optimized for the IBM z/OS® environment.*

For more information

IBM WebSphere Application Server is the foundation of the IBM WebSphere software platform for e-business on demand—a set of integrated, award-winning e-business solutions. No matter where you are in the e-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, visit:

ibm.com/software/websphere/ appserv

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

ibm.com/websphere

To order IBM WebSphere Application Server, contact your IBM representative or IBM Business Partner, or call 1800 IBM-CALL. Or visit the IBM Web site:

ibm.com/shop

IBM WebSphere Application Server, Version 5 configurations

	WebSphere Application Server, Version 5	WebSphere Application Server Network Deployment, Version 5
Java programming model		
Support for JavaServer Pages 1.2 and Java Servlets 2.3	x	x
Full J2EE 1.3 support	x	x
Support for some features planned for J2EE 1.4[1]		x
Full XML support	x	x
Web services		
Full Web services support	x	x
Support for private UDDI registries		x
Web Services Gateway		x
Database support and connectivity		
Java Database Connectivity (JDBC) and Connection Management for access to IBM DB2®, Structured Query Language (SQL) Server 2000, Oracle 9i, IBM Informix® and Sybase	x^2	x^2
JDBC for access to DB2 400	x	x
Restricted DB2 license		x
Application development		
Sample applications[3]	x	x
Web server support		
Embedded HTTP server	x	x
IBM HTTP server included[4]	x	x
Web server plug-ins	x	x
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 LDAP	x	x
Advanced authentication and authorization, such as JAAS and Java Cryptographic Extension (JCE) for enhanced security	x	x
Convenient security administration through embedded admin console	x	x
Platform support		
Basic platform support for rapid implementation on Microsoft Windows, Windows NT®, Windows 2000, Linux and IBM OS/400®	x	x
Extended platform support for IBM AIX®, Solaris operating environment, HP-UX	x	x

[1] Features that are currently planned for the J2EE 1.4 specification to be released in 2003

[2] Not supported for IBM @server iSeries™

[3] Samples integrated with the tool for quick-start development

[4] IBM HTTP Server included with IBM OS/400

IBM WebSphere Application Server, Version 5 configurations (continued)

	WebSphere Application Server, Version 5	WebSphere Application Server Network Deployment, Version 5
Application connectivity		
Full JMS technology-supported message-driven beans, including embedded JMS transport	x	x
Microsoft component object model architecture to EJB support for integration with ActiveX client and server resources	x	x
Performance support		
Enhanced features for performance, such as dynamic caching, IBM Tivoli Performance Viewer, integration with third-party tools	x	x
Administration and workload management		
Browser-based administration for remote administration across firewalls	x	x
Intelligent workload distribution across a cluster		x
Failure bypass		x
Clustering support		x
Migration support		
Migration documentation	x	x
Migration tools and assistance	x	x

IBM WebSphere Application Server, Version 5 at a glance

Hardware requirements with supported operating environments*

Windows NT and Windows 2000

- An Intel® technology-based PC running Windows NT Server, Version 4.0, Service Pack 6a; or Windows 2000 Server or Windows 2000 Advanced Server with Service Pack 3
- Intel Pentium® processor at 500MHz or faster
- CD-ROM drive
- Minimum of 520MB available disk space for installation (including IBM Software Developer Kit)
- Minimum of 256MB memory, 512MB recommended
- Support for a communications adapter

AIX

- IBM RS/6000® or RS/6000 SP™ running IBM AIX, Version 4.3.3 with the 4330-10 recommended maintenance package, IBM AIX, Version 5.1 with the 5100-02 recommended maintenance package or 5100-03 and APAR IY36884, or IBM AIX, Version 5.2
- IBM RS/6000 604e workstation at 375MHz or faster
- CD-ROM drive
- Minimum of 512MB available disk space for installation (including IBM Software Developer Kit)
- Minimum of 256MB memory, 512MB recommended
- Support for an appropriate network interface

*   Note: Hardware requirements are updated frequently. For the most current requirements, please visit: www-3.**ibm.com**/software/webservers/appserv/doc/latest/prereq.html.

IBM WebSphere Application Server, Version 5 at a glance (continued)

Hardware requirements with supported operating environments*

HP-UX

- HP-UX 11i with Quality Pack level of December 2002
- HP 9000 at 440MHZ or faster
- CD-ROM drive
- Minimum of 552MB available disk space for installation (including IBM Software Developer Kit)
- Minimum of 256MB memory, 512MB recommended
- Support for TCP/IP and an appropriate communications adapter

Red Hat Linux operating environment on Intel

- Red Hat Linux Advanced Server 2.1, SuSE 7.3 or SLES 7.0, based on kernel 2.4
- Red Hat 8.0
- UnitedLinux 1.0
- Connectiva Linux Enterprise Edition, powered by UnitedLinux 1.0
- SCO Linux Server 4.0, powered by UnitedLinux 1.0
- SuSE SLES 8.0, powered by UnitedLinux 1.0
- Intel x86 processor at 500MHz or faster
- CD-ROM drive
- Legacy application support RPMs installed (provided on SuSE and Red Hat distribution CD-ROMs)
- Minimum of 300MB available disk space (including IBM Software Developer Kit)
- Minimum of 256MB memory, 512MB recommended
- Support for TCP/IP and an appropriate communications adapter

Red Hat Linux on IBM zSeries operating environment

- IBM @server zSeries® server running Linux distribution SuSE SLES 7.0 or Red Hat Linux 7.2 , based on kernel 2.4
- G5, G6 or higher processor
- Legacy application support RPMs installed (provided on SuSE and Red Hat distribution CD-ROMs)
- CD-ROM drive
- Minimum of 512MB available disk space for installation
- Minimum of 256MB memory, 512MB recommended

Solaris operating environment

- A workstation running Solaris operating environment, Version 8 at a maintenance level of July 2002
- Sparc workstation at 440MHz or faster
- CD-ROM drive
- Minimum of 532MB available disk space for installation (including IBM Software Developer Kit)
- Minimum of 256MB memory, 512MB recommended
- Support for TCP/IP and an appropriate communications adapter

* Note: Hardware requirements are updated frequently. For the most current requirements, please visit: www-3.**ibm.com**/software/webservers/appserv/doc/latest/prereq.html.

IBM WebSphere Application Server, Version 5 at a glance (continued)

Software requirements with supported operating environments *

Windows NT and Windows 2000

- Windows NT Server 4.0, Service Pack 6a; or Windows 2000 or Windows 2000 Advanced Server with Service Pack 3
- Netscape Navigator, Version 4.7.9 or Microsoft Internet Explorer, Version 5.5, Service Pack 2
- Web browser that supports HTML 4 and CSS

AIX

- IBM AIX, Version 4.3.3 with the 4330-10 recommended maintenance package, IBM AIX, Version 5.1 with the 5100-02 recommended maintenance package or 5100-03 and APAR IY36884, or IBM AIX, Version 5.2
- Netscape Navigator, Version 4.7.9
- Web browser that supports HTML 4 and cascading style sheets (CSS)

HP-UX

- HP-UX 11i with Quality Pack level of December 2002
- Netscape Navigator, Version 4.7.9
- Web browser that supports HTML 4 and CSS

Red Hat Linux operating environment on Intel

- Red Hat Linux Advanced Server 2.1, SuSE 7.3 or SLES 7.0, based on kernel 2.4
- Red Hat 8.0
- UnitedLinux 1.0
- Connectiva Linux Enterprise Edition, powered by UnitedLinux 1.0
- SCO Linux Server 4.0, powered by UnitedLinux 1.0
- SuSE SLES 8.0, powered by UnitedLinux 1.0
- Netscape Navigator, Version 4.7.9
- Web browser that supports HTML 4 and CSS

Red Hat Linux on zSeries operating environment

- zSeries server running Linux distribution SuSE SLES 7.0 or Red Hat Linux 7.2 , based on kernel 2.4
- Netscape Navigator 4.79
- Web browser that supports HTML 4 and CSS

Solaris operating environment

- Solaris operating environment, Version 8 at a maintenance level of July 2002
- Netscape Navigator, Version 4.7.9
- Web browser that supports HTML 4 and CSS

Supported HTTP servers
- Apache Server, Version 1.3.26 for AIX, Solaris, Windows NT, Windows 2000, Red Hat Linux on Intel and Red Hat Linux on zSeries
- Web Server Enterprise Edition 6.0.4 for Solaris, Windows NT and Windows 2000
- Microsoft Internet Information Server, Version 4.0 for Windows NT
- Microsoft Internet Information Server, Version 5 for Windows 2000
- IBM Lotus® Domino™ Enterprise Server, Release 5.5 and Release 5.6 for AIX, Solaris and Windows NT
- IBM HTTP Server, Version 1.3.26 or Version 2.0 for AIX, Solaris, Windows NT, Windows 2000 and Red Hat Linux on Intel and Red Hat Linux on zSeries

** Note: Software requirements are updated frequently. For the most current requirements, please visit: www-3.**ibm.com***/software/webservers/appserv/doc/latest/prereq.html.*

IBM WebSphere Application Server for iSeries at a glance*

Hardware requirements

Systems hosting applications using enterprise beans:

- AS/400e server 170 with processor feature 2385
- AS/400e server 720 with processor feature 2062
- iSeries server 270 with processor feature 2252
- iSeries server 820 with processor feature 2396
- Minimum of 1GB recommended

Systems hosting applications using servlets and JavaServer Pages components only:

- iSeries server 270 with processor feature 2250
- iSeries server 820 with processor feature 2395
- Minimum of 750MB recommended

For either system:

- CD-ROM drive
- Minimum of 500MB available disk space for installation
- Support for TCP/IP and an appropriate communications adapter

  *Note: These requirements represent the recommended minimum requirements. Deployments that must support many users or require shorter response times may require additional resources. Use the IBM AS/400® Workload Estimator for help with sizing all system configurations. Visit: http://as400service.**ibm.com**/estimator.*

Software requirements

- IBM OS/400, Version 5.1 or higher
- IBM Developer Kit for Java, Version 1.3
- IBM OS/400 QShell Interpreter
- IBM OS/400 TCP/IP Connectivity Utilities for iSeries
- IBM OS/400 Directory Services

Supported HTTP servers

- IBM HTTP Server (powered by Apache)
- Lotus Domino for iSeries HTTP Server
- IBM OS/400 Digital Certificate Manager
- WebSphere MQ Classes for Java and JMS, Version 5.3 for iSeries
- WebSphere MQ, Version 5.3 for iSeries
- Apache HTTP Server and the WebSphere Application Server Cryptographic Access Provider for secure sockets layer (SSL) protocol

  Note: For advanced data mapping to database tables in container-managed, persistent entity beans, WebSphere Studio Application Developer is required.

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* *Note: Hardware and software requirements change frequently. For the most current hardware and software requirements for supported operating environments for WebSphere Application Server for iSeries, please visit: http://publib.boulder.**ibm.com**/iseries/v1r1m0/websphere/ic2924/index.htm?info/rzaiz/50/install/iicprrqi.htm*

*For the most current hardware and software requirements for supported operating environments for WebSphere Application Server Network Deployment for iSeries, please visit: http://publib.boulder.**ibm.com**/iseries/v1r1m0/websphere/ic2924/index.htm?info/rzaiz/50/install/ndiicprrq.htm*

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