IBM WebSphere Application Server V8.5.5 delivers enhanced Liberty profile capabilities and introduces a new lightweight Liberty only offering for Web Profile applications

Table of contents
2 Overview
3 Key prerequisites
3 Planned availability date
3 Description
12 Product positioning
16 Statement of direction
16 Program number
17 Publications
17 Technical information
30 Ordering information
37 Terms and conditions
41 Prices
42 Order now
43 Corrections

At a glance

WebSphere® Application Server V8.5.5 extends the capabilities provided in version 8.5, including significant enhancements to the Liberty profile, a highly composable, fast to start, and ultra lightweight profile of the application server that is optimized for developer productivity and web application deployment.

Enhancements to the Liberty profile are as follows:

- Certification to the Java™ EE 6 Web Profile, providing the assurance that applications leverage standards-compliant programming models
- Additional programming models such as web services that enable the expansion of Liberty profile applications beyond web applications
- New messaging capabilities, including support for Java Message Service (JMS) and message-driven beans, and a new single server message provider
- Ability to add Liberty features through a new system programming interface, enabling the customization of Liberty profile capabilities to meet your business needs through insertion of custom Liberty features
- Liberty support for the NoSQL database MongoDB, a scalable, well-performing, and easy-to-use document-style NoSQL database
- Enhancement to security support, such as federated repositories, custom user registry, trust association interceptor, password hashing, and encryption of passwords in server configurations, which improves security for Liberty application deployments
- High Performance Extensible Logging (HPEL) for Liberty servers, which enables better administration and serviceability
- New Liberty administration features
- Clustering of server instances
- Distributed caching with WebSphere eXtreme Scale
- Ability to install the entitled WebSphere Application Server edition on developer machines for development and unit testing purposes
- Support for WebSphere Web Cache (DynaCache)
- WebSphere Application Server V8.5.5 tooling bundles updated with Rational® Application Developer (RAD) V9 and the WebSphere Application Server Developer Tools (WDT) V8.5.5
WebSphere Application Server V8.5.5 also introduces a new Liberty profile-only solution. The WebSphere Application Server Liberty Core edition is built to leverage the lightweight and dynamic aspects of the Liberty profile. Scoped to the capabilities of Web Profile applications, the new edition is ideal for lightweight production servers.

IBM® WebSphere Application Server is the leading open standards-based application foundation, offering accelerated delivery of innovative applications and unmatched operational efficiency, reliability, administration, security, and control.

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

Overview

Your business requires fast, flexible, and efficient application development solutions paired with leading service-oriented architecture (SOA) runtime environments to succeed in today's dynamic and increasingly competitive marketplace. IBM WebSphere Application Server has provided industry-leading solutions for the past 15 years, offering a broad range of application foundation and programming model choices to support applications built for businesses of any size.

WebSphere Application Server V8.5 provided significant enhancements in terms of developer experience and high-end resiliency. For developers requiring a quick and simple development run time, the Liberty profile was introduced as a great option for building web applications that do not require the full Java Platform, Enterprise Edition (Java EE) environment of traditional enterprise application server profiles. For administrators and businesses that strive for operational excellence through management efficiency, responsiveness, and performance, Intelligent Management capabilities were included in the full profile application server, enabling resiliency, virtualization, enterprise-level batch processing, and autonomic responsiveness to problems.

WebSphere Application Server V8.5.5 continues this focus with key enhancements to Liberty profile capabilities and qualities of service, enabling clients and partners to build a strong foundation and reduce cost through:

- Fit-for-purpose application server solutions
- Rapid development and delivery of new applications and services
- Operational excellence, resiliency, and reliability

Today's rapidly evolving business environment requires that businesses provide applications and services to meet a variety of consumer needs from lightweight and dynamic web applications to resilient and highly scalable mission-critical applications. WebSphere provides a family of fit-for-purpose application servers to meet the application demands at every level. New in version 8.5.5 is a lightweight and dynamic offering of WebSphere Application Server targeted at web applications that do not require a full Java EE stack. Composed entirely of the developer-friendly Liberty profile and certified to the Java EE 6 Web Profile specification, the WebSphere Application Server Liberty Core edition enables rapid development and deployment of web-centric and mobile-centric applications, enabling businesses to quickly respond to enterprise and market needs. Highlights of the new Liberty Core offering include:

- Extremely lightweight offering, composed of the Liberty profile certified for the Java EE Web Profile
- An excellent development and production run time for web applications
- Fast time-to-value: Small download, small footprint, and fast startup
- Easily package applications (including configuration) for deployment
- Extensible through Liberty features SPI
For developers and businesses that need a lightweight, simple, and powerful application server, WebSphere Application Server V8.5.5 delivers key enhancements to the Liberty profile, further increasing its value for application developers. Optimized for fidelity to full profile WebSphere Application Server, the enhanced capabilities in version 8.5.5 broaden the scope of Liberty based applications, extending its reach into more production use cases. Highlights for developers include:

• Liberty profile programming model additions such as EJB-Lite, CDI, web services, Java Message Service, and message-driven beans
• Ability to extend the Liberty profile capabilities through feature additions
• Developer tool options to match project development needs

For administrators and businesses seeking to grow their Liberty applications into increasingly sophisticated production environments, WebSphere Application Server V8.5.5 delivers improved qualities of service for the Liberty profile. Highlights for administrators include:

• New Liberty administrative management model
• Clustering
• Security enhancements
• Integrated elastic caching through WebSphere eXtreme Scale

For businesses needing an end-to-end solution, WebSphere offers multiple tooling bundles that provide developer tools to maximize productivity and flexibility in building new applications. The IBM WebSphere Application Server for Developers - Tools Edition for Eclipse provides users with a lightweight desktop development environment to build applications for WebSphere Application Server. Other bundles include an unlimited number of licenses of IBM Rational Application Developer, providing organizations with a complete solution to develop, deliver, and manage high-quality enterprise applications.

For businesses that need to build, deploy, and manage secure and portable innovative applications that run on a multitude of mobile, server, and desktop systems, WebSphere Application Server is the flexible and efficient application platform of choice, offering fit-for-purpose application server solutions from lightweight web applications to highly resilient and scalable business-critical applications.

**Key prerequisites**

Refer to the Hardware requirements and Software requirements sections.

**Planned availability date**

• June 14, 2013: Electronic delivery
• July 19, 2013: Media packs

**Description**

IBM WebSphere Application Server is a proven, high-performance transaction engine that can help you build, run, integrate, and manage dynamic business applications. WebSphere Application Server V8.5 introduced innovative options with the lightweight Liberty profile, a broad range of development tooling options, as well as improved operations through Intelligent Management capabilities that minimize end-user outages and maximize operations monitoring and control of the production environment.
WebSphere Application Server V8.5.5 extends these foundational capabilities through significant enhancements to the Liberty profile, maintaining the developer-friendly aspects, while growing the capabilities through additional programming models, qualities of service, and extensibility.

**The Liberty profile**

First introduced in version 8.5, the Liberty profile provides a simplified and lightweight development and application-serving environment for web, OSGi, and mobile applications. Key benefits include the following capabilities:

- Free and frictionless download for development purposes
- Ultra lightweight modular runtime environment
- Extremely fast startup (Liberty profile is designed to start up in under five seconds)
- Simplified configuration for quick time to productivity
- Java and OSGi application deployment support for web applications
- LDAP registry support
- Deployment as a package of an application and configured server
- Managed, centralized deployment to many nodes of a packaged application and server
- Availability of Eclipse plug-ins for broad tooling support
- Platform support for distributed platforms, IBM z/OS®, and the Macintosh operating system (development only)
- Only includes those capabilities needed by the application that it serves, keeping each server small and agile

WebSphere Application Server V8.5.5 extends the Liberty profile capabilities through enhancements in programming models, security, manageability, and extensibility. Key capabilities include:

- Certification to the Java EE 6 Web Profile, which includes new programming models in version 8.5.5 such as EJB-Lite, Managed Beans, and Context and Dependency Injection (CDI)
- Web services support through the JAX-WS Java EE API
- New messaging capabilities, including MQ client support, support for Java Message Service (JMS) and message-driven beans and a new single server message provider
- Ability to add Liberty features through a new system programming interface
- Support for the NoSQL MongoDB client
- Enhanced Liberty profile security capabilities
- High Performance Extensible Logging (HPEL) for Liberty servers
- Encryption of passwords in server configuration
- New Liberty administration features
- Dynamic Web Cache support
- Clustering of server instances
- Asynchronous Work Management

WebSphere Application Server V8.5.5 also delivers enhancements to the full profile application server. Key capabilities include:

- Distributed caching with WebSphere eXtreme Scale
- Intelligent Management for Web Servers feature enabling On Demand Router (ODR) capabilities integrated in the WebSphere Web Server Plugin
- Integrated Service Mapping, enabling basic service invocation, routing, and transformation
- Session Initiation Protocol (SIP) serviceability improvements
Installation and deployment of the Liberty profile

The Liberty profile can be installed from the traditional IBM Installation Manager or by extracting an archive file, depending upon your requirements. To simplify end-to-end test, simple scripts are provided to create a "packaged server" consisting of an application, a Liberty profile server run time, and its configuration in a single archive for "unzip" deployment of a complete solution. The Collective Controller optionally provides the ability to centrally distribute and deploy packaged Liberty profile server applications, and provides lifecycle management of those servers. The Collective Controller introduces a new systems management paradigm called the Liberty Collective. Administration through the Collective Controller provides the following key features:

- A lightweight, highly available, management infrastructure based on the Liberty profile. This allows for easy setup, minimal resource consumption, and continuous operations for administrative operations.
- Jython scripting support for all administrative operations to enable efficient construction of customized administrative procedures.
- Support for Liberty profile clusters, including cluster-centric lifecycle operations like start/stop, configuration update, and application installation to reduce complexity of managing highly available application deployments.
- Distributed file transfer to push configuration updates, applications, and Liberty archives to any host in the Liberty Collective to simplify network security tasks.
- Distributed MBean operation and notification support across entire Liberty collective to enable centralized access to all Liberty profiles in the domain, using the same set of management interfaces available for stand-alone server operation to ensure consistency across all Liberty profile deployment styles. This ensures portable scripting among environments.
- Quick installation of the Liberty profile. You can extract the Liberty profile resource and simply run the install Liberty profile resource job. There is no requirement to run a formal installation tool, such as Installation Manager, to use Liberty profile server resources. Liberty profile resources are packaged as compressed files that are ready for use after extraction.
- Support for flexible sharing of resources such as a software development kit (SDK), runtime binary files, server configuration, and application binary files among many server instances.
- Nondestructive update enables easy installation of new versions of any resource. You can switch easily between old and new resources or run concurrent versions of resources.
- No requirement for agent on target hosts, which reduces administration overhead costs.
- The Liberty profile is built on OSGi technologies and runs on a wide range of supported Java Runtime Environments (JREs). For more information about supported Java environments and where to get them, see "Minimum supported JDK levels" in the Information Center.

Integrated tools

- IBM WebSphere Application Server Developer Tools for Eclipse, V8.5.5 is a lightweight set of tools for developing, assembling, and deploying Java EE, OSGi, Web 2.0, and mobile applications to WebSphere Application Server, including the Liberty profile.
- You can accelerate developer productivity through integrated and optimized developer tooling. Rational Application Developer V9, separately available or available in the WebSphere Tools bundles, provides a complete environment for enterprise development for Java, Java EE, web, web services, SOA, OSGi, and Portal applications. Designers and developers can use this environment to develop, assemble, and deploy your applications to WebSphere Application Server V8.5.5. You can also accelerate your application testing using a WebSphere Application Server rapid-deployment feature.
- Easily migrate your existing applications from older WebSphere Application Server releases or even from non-IBM application servers, such as Tomcat, JBoss, and WebLogic Server, using the Application Migration Toolkit,
which is separately available through no-charge web download. This tool programmatically scans your applications and identifies changes that are required. In many cases, the tool can automatically make the required changes to ease the migration process and speed time-to-value.

- In addition, the WebSphere Application Server Tools Editions are refreshed with the latest versions of the application server and associated tools. These packages provide a complete solution to develop, deliver, and manage high-quality enterprise applications. The bundles include an unlimited number of licenses of Rational Application Developer and WebSphere Application Server Developer Tools for Eclipse to be used only in support of the production server for which it was purchased, providing the greatest flexibility to match the needs of any organization.

- Now you can get WebSphere Application Server, and the corresponding tools needed to create and develop applications, fully supported on the developer desktop as part of your WebSphere Application Server support. Customers with an active support contract for their production WebSphere Application Server are allowed to install the same WebSphere Application Server edition onto developer machines for use in development and testing. These installations of WebSphere Application Server, as well as the free to download WebSphere Application Server for Developers and WebSphere Application Server Developer Tools for Eclipse, are entitled for support on the developer machine as long as an active support contract is in place for the production server. This applies to WebSphere Application Server V8.5 and later.

**Certification to the Java EE6 Web Profile, adding new features in version 8.5.5 such as EJB-Lite, Managed Beans, and Context and Dependency Injection**

The Java EE6 Web Profile is a standard specification including a common set of APIs designed to meet the needs of most modern web applications. WebSphere Application Server V8.5.5 added several programming models to the Liberty profile to complete the requirements for Web Profile. WebSphere also achieved Web Profile certification, providing you the assurance that Liberty is capable of meeting your web application requirements. Some of the new programming models added in support of the Web Profile include EJB-Lite, Managed Beans, and Context and Dependency Injection (CDI).

**Web services support through the JAX-WS Java EE API**

New in WebSphere Application Server V8.5.5 is the ability to expose Liberty profile applications as web services. The web services support for the Liberty profile provides both client and server functionality for SOAP-based web services as well as corresponding development and management capabilities. WebSphere Application Server makes the development, deployment, and publishing of web services very simple. Easily create the application as a POJO or EJB, provide the appropriate annotations, and drop into WebSphere, and the WSDL is automatically generated and the service published.

**New messaging capabilities, including support for Java Message Service (JMS) and message-driven beans and a new single server message provider**

WebSphere Application Server V8.5.5 expands the communication capabilities of the Liberty profile through added support for Java Message Service. JMS provides a common way for Java applications to create, send, receive, and read asynchronous requests as JMS messages. The Liberty profile also includes a lightweight single server message provider and supports configuring connections to alternative message providers such as WebSphere MQ and the WebSphere SIBus message provider.

**Ability to add Liberty features through a new system programming interface**

A fundamental characteristic of the Liberty profile is the composable nature in which capabilities are exposed as features or building blocks for the server. While the Liberty profile includes many features out of the box, there is significant value added in being able to extend the capabilities. WebSphere Application Server V8.5.5 allows
customers and partners to extend the Liberty profile through the addition of features using a system programming interface (SPI). The SPI supports the complete feature lifecycle that includes packaging, installing, and servicing third-party features.

**Liberty support for the NoSQL MongoDB database**

Create applications for mobile and cloud environments using the Liberty profile and new integration with a NoSQL database. An increasingly common data store for new application workloads is the NoSQL database, which is a class of database systems that is focused on storage and retrieval of unstructured documents rather than relational database and structured query languages. WebSphere Application Server V8.5.5 delivers support for the MongoDB NoSQL database with the Liberty profile, including programming model support for application access through resource injection of configured database connections.

**DynaCache support in Liberty**

The Liberty profile in WebSphere Application Server V8.5.5 enables you to build more complex and responsive applications with improved performance by supporting WebSphere dynamic web cache, which includes caching of servlet and JSP responses. The Liberty implementation includes API compatibility with full-feature WebSphere Application Server DynaCache. Leverage WebSphere web cache in both development and production scenarios, and as your caching needs grow, take the natural progression towards the adoption of WebSphere eXtreme Scale for enterprise-level application caching.

**Asynchronous work management**

New in WebSphere Application Server V8.5.5 for both the full profile and the Liberty profile, asynchronous work management allows applications to use java.util.concurrent.ExecutorService instances to perform work asynchronously, while retaining the context of the calling thread. The caller can look up the Executor service through the Java Naming and Directory Interface (JNDI) and resource injection.

**Enhanced Liberty profile security capabilities**

The Liberty profile in WebSphere Application Server V8.5.5 offers significant enhancements in the area of security, including OAuth, federated repositories, custom user registries, trust association interceptor, password hashing, and encryption in server configurations, and web services security. These enhancements enable you to more easily integrate Liberty into your existing environment, taking advantage of capabilities such as user-provided registries installed as an extension to the Liberty run time.

**High Performance Extensible Logging (HPEL) for Liberty servers**

HPEL support was first introduced in version 8.5 for full profile WebSphere Application Server for improved serviceability and operational view into the WebSphere environment. HPEL capabilities include storing log records on disk with improved performance, an ability to expand what data is stored, a common design across platforms, and tools to easily view and search through log records. Administrators can control a number of aspects of the HPEL run time, such as configuring policies to retain log information based on age of log records or total size of log data. WebSphere Application Server V8.5.5 extends the HPEL capabilities to the Liberty profile, providing developers and administrators with enhanced views into applications running in the Liberty profile.

**New Liberty administration through collectives enabling clustering of servers**

WebSphere Application Server V8.5.5 introduces a new administrative model, enabling the grouping of Liberty servers into collectives for common management. Lightweight and extremely flexible, the collectives enable highly scalable, available, and dynamic deployments, easily configured and customizable as your environment changes. Management includes notification feedback on collective member activities.
All editions of WebSphere Application Server Liberty profile servers are eligible to be members of collectives; however, WebSphere Application Server Network Deployment is required for the Collective Controller. This new administrative model enables the definition of clusters of Liberty servers, including management across the cluster through cluster-centric APIs. Only WebSphere Application Server Network Deployment Liberty servers can be cluster members.

**Integrated caching with WebSphere eXtreme Scale**

WebSphere eXtreme Scale provides distributed object caching essential for elastic scalability and next-generation cloud environments. It helps applications process massive volumes of transactions with extreme efficiency and linear scalability. The combination of WebSphere Application Server and WebSphere eXtreme Scale enables customers to improve the consumer experience through enhanced performance and responsiveness while also improving scalability and fault tolerance. Several WebSphere Application Server V8.5.5 editions include entitlement to WebSphere eXtreme Scale capabilities for both Liberty profile and full profile WebSphere Application Server.

The extent of entitled WebSphere eXtreme Scale capabilities varies depending on the WebSphere Application Server edition:

- WebSphere Application Server includes entitlement to session caching and DynaCache and can be used only in support of WebSphere Application Server.
- WebSphere Application Server for z/OS includes full entitlement to WebSphere eXtreme Scale for z/OS, which provides client APIs for connecting to distributed WebSphere eXtreme Scale servers.
- WebSphere Application Server Network Deployment includes full entitlement to WebSphere eXtreme Scale.
- WebSphere Application Server for Developers includes full entitlement to WebSphere eXtreme Scale on the developer workstation.

**Service Mapping**

WebSphere Application Server V8.5.5 provides a new Service Mapping feature to enable simple service-oriented architecture (SOA) integration and mediation capabilities in WebSphere Application Server. For the application developer, this capability simplifies common integration tasks, including basic service invocation, routing, and transformation. In addition, the administrator can take control over which service interactions are mediated. Leverage this built-in mediation capability as part of WebSphere Application Server.

**Intelligent Management for Web Servers feature enables On Demand Router (ODR) capabilities integrated in the WebSphere Web Server Plugin**

The Intelligent Management for Web Servers feature for WebSphere Application Server V8.5.5 simplifies intelligent management capabilities through integration of the On Demand Router (ODR) capability into the WebSphere Web Server plugin to reduce the need for the separate Java-based proxy server in many scenarios. The ODR is the WebSphere routing function that classifies incoming requests and then dispatches the requests across the application server environment. This integration provides significant value in terms of consolidation and simplification of the topology, resulting in fewer resources to manage and lower total cost of ownership.

**Session Initiation Protocol (SIP) serviceability improvements**

Several enhancements to WebSphere SIP serviceability are included in WebSphere Application Server V8.5.5. New PMI counters enable diagnosing issues in the areas of congestion, session replication, network issues, and configuration. In addition, integration with WebSphere HPEL logging results in SIP context being automatically enabled when HPEL is enabled. These capabilities enable improved problem determination and quicker time to resolution for SIP-related issues.
Enhancements delivered in WebSphere Application Server V8.5

Enterprise JavaBeans™ (EJB) support in OSGi applications

Take advantage of enhanced modular application development by assembling OSGi applications from reusable bundles that contain EJB assets. The enterprise beans in your OSGi bundles can be developed from scratch, or you can include existing EJB assets and migrate them to use OSGi modularity with minimal code changes. Stateful, stateless, and singleton enterprise beans are supported.

Your OSGi application can also contain message-driven beans. You deploy and configure an OSGi application that contains EJBs in a similar way to deploying and configuring a Java Platform, Enterprise Edition (Java EE) application, by using wsadmin or the administrative console.

Web 2.0 and Mobile Toolkit

This toolkit provides developers with ready-to-use components to extend SOA by connecting web services, SOA services, and Java EE objects into interactive desktop web and mobile web user interfaces. With this toolkit applications developed initially for desktop browsers can now be adapted and deployed to mobile devices such as smartphones and tablets.

Intelligent Management and enhanced resiliency

WebSphere Application Server V8.5 is designed to ensure industry-leading levels of resiliency and availability. New Intelligent Management capabilities deliver application availability, elasticity, and qualities of services programatically instrumented and executed to ensure the highest possible levels of end-user availability. Additional resiliency capabilities help to drive down total cost of ownership while improving overall qualities of service.

Intelligent Management

Intelligent Management capabilities extend the traditional application server with new technologies to enhance resiliency and virtualization capabilities. Autonomic capabilities are provided to sense and respond to problems within the application server and autocorrect or route around these problems before end users experience an outage. Previously, these enhanced resiliency capabilities were available separately by using WebSphere Virtual Enterprise. They are now included within the WebSphere Application Server Network Deployment itself.

Highlights:

- Application Edition Management enables interruption-free application rollout. Applications can be upgraded without incurring outages to your end users.
  - Upgrade applications without interruption.
  - Deploy new applications without jeopardizing application or service availability.
  - Coordinate activation of application versions and routing of requests to the application.
  - Test final preproduction level of an application version with a select group of users.
- Health Management monitors the status of your application servers and is able to sense and respond to problem areas before end users suffer an outage.
  - Proactively deal with application and application infrastructure issues before they become acute problems.
  - Monitor health conditions of your infrastructure and execute associated corrective actions.
- New Intelligent Routing improves business results by ensuring priority is given to business-critical applications. Requests are prioritized and routed based upon administrator-defined rules.
  - Manage in-bound transaction (workload) requests in real time.
– Route work to the application server that can do it best.
– Streamline processing through the system for higher priority requests.
– Ensure that in-bound requests do not overwhelm backend application resources.
• Dynamic Clustering can proactively provision and start or stop new instances of application server Java virtual machines (JVMs) based on workload demands. It provides the ability to meet service level agreements when multiple applications compete for resources.
– Allows workloads to be classified, prioritized, and intelligently routed
– Enables application performance monitoring
– Can make resource adjustments, if needed, to consistently achieve service policies

**Messaging infrastructure resiliency enhancements**

• Improvements to the recovery of messaging engine errors. When a recoverable database error is detected by the High Availability Manager, the messaging engine is stopped and the standby messaging engine is started automatically. The other applications running in the application server are not affected by the failure of the messaging engine.
• Enables the messaging engine to restart after a failure. When a messaging engine fails due to recoverable database problems, it is disabled and fails over to another messaging engine in the cluster.
• Improvements to service integration bus performance; improved messaging engine startup time by loading the destinations concurrently in a multi-core architecture.
• Recovery of the messaging engine confirmation from the message store. With the new recoverMEConfig command, the recovery of the persistent data of the messaging engine from the message store is made possible if the configuration data on which the previous messaging engine was running is not available.

**Enhanced memory leak detection and protection**

WebSphere Application Server provides top down pattern-based memory leak detection, prevention, and action by watching for suspect patterns in application code at run time. WebSphere Application Server has a robust means of protection against memory leaks when stopping or redeploying applications. It monitors application and module activity, and performs diagnostic actions when an application or an individual module stops. This feature helps by increasing application server availability.

**Improved operations, security, and control**

Capabilities delivered in WebSphere Application Server V8.5 include:

• **Support for IBM WebSphere SDK Java Technology Edition V7.0**

  IBM Software Development Kit (SDK) provides a full-function SDK for Java that is compliant with the Oracle Java Platform, Standard Edition (Java SE) 7 application programming interfaces (APIs). With IBM WebSphere SDK Java Technology Edition V7.0, 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 Java application Runtime Environment and other tools that enable developers to create Java applications.

  WebSphere Application Server supports IBM WebSphere SDK Java Technology Edition V7.0 as a pluggable JDK. With WebSphere Application Server V8.5.5, Java 6 is installed with the full profile application server and used by default, and you can optionally install and enable Java 7 support. For the Liberty profile, the installation of Java 6 and/or Java 7 is optional. Note that with the WebSphere Application Server Liberty Core edition, only Java 7 is provided.
• **Automatic Resource Management with Java V7.0**

Automatic Resource Management is a set of features in Java V7.0 in which the Java framework will automatically close statements and connections to external resources for you, which can alleviate problems with error handling and resource control in your applications. As a result, your applications can focus less on resource management tasks, and you can optimize their logic for meaningful transactions.

• **WebSphere Batch enhancements**

WebSphere Batch offers an enterprise-level managed batch execution environment that enables the entry, execution, and management of Java batch processing. It provides an infrastructure for batch processing to allow sharing of business logic with online transaction processing (OLTP) applications. This helps to lower cost by reducing risk and management effort, supplies an "always-on" business experience by eliminating offline batch windows, and delivers enterprise qualities of service required by mission-critical batch applications. Batch jobs and online transaction processing can execute concurrently. Previously, these enhanced WebSphere Batch capabilities were available separately by using WebSphere Compute Grid. They are now included within the WebSphere Application Server itself. WebSphere Batch highlights include:

- End-to-end batch management of jobs running across disparate execution environments
- An optimal OLTP uptime experience through continuous interleaving of batch and interactive (OLTP) processes
- Parallel processing using Parallel Job Manager, where large problems can be partitioned, governed, and processed in parallel across a collection of server resources while hiding the complexities of multithreading and management
- Near real-time batch processing with ad hoc and event-driven batch invocation, in addition to scheduled batch invocation
- Integration with enterprise schedulers, such as Tivoli® Workload Scheduler
- Goal-oriented service level agreement (SLA) management with workload manager integration

• **Configuring bean security in the OSGi Blueprint XML file**

You can configure bean security in the Blueprint XML file by including an access-constraint element in a bean declaration. Only users that are in the role specified by the access-constraint element can access the methods of the bean.

• **High Performance Extensible Logging (HPEL) log viewer tool enhances filtering using log and trace record extensions**

Use the LogViewer command-line tool to filter records based on the content of log and trace record extensions. The application server automatically creates an appName extension for each log and trace record related to a Java EE application, indicating the name of that application. The application server also automatically creates a request ID extension when cross-component trace is enabled for each log and trace record created during the processing of certain types of requests (for example, HTTP or JMS requests), indicating the unique ID of that request. You can add custom extensions to HPEL log and trace entries using the LogRecordContext API.

• **Cross-component trace (XCT)**

XCT enables correlation of log and trace entries. Use the cross-component trace facility to identify the root cause of problems across components. XCT annotates log and trace entries so that log entries that are related to a request that is serviced by more than one thread, process, or even server are identified as belonging to the same unit of work. This enhancement enables administrators and support teams to follow the flow of a request from end-to-end as it traverses thread or process boundaries.
• **Improved troubleshooting using IBM Support Assistant Data Collector**

The IBM Support Assistant Data Collector for WebSphere Application Server tool focuses on automatic collection of problem data. It also provides symptom analysis support for the various categories of problems encountered by IBM software products. Information pertinent to a type of problem is collected to help identify the origin of the problem under investigation. The tool assists you by reducing the amount of time it takes to reproduce a problem with the proper RAS tracing levels set, as well as by reducing the effort required to send the appropriate log information to IBM Support.

• **Enhanced administrative audit options**

WebSphere Application Server V8.5 enables you to audit any changes made to your application server configuration using repository checkpoints. When enabled, a security audit record is created for every change to your configuration. Repository checkpoints represent saved images of the repository before configuration changes are made. You can configure a checkpoint to back up copies of files from the master configuration repository. A full checkpoint is a complete copy of the entire configuration repository. A delta checkpoint is a subset snapshot of the configuration repository that is made when you change a product configuration. Use a checkpoint to restore the configuration repository back to a prior state.

**Accessibility by people with disabilities**

The following features support use by people with disabilities:

• Operation by keyboard alone
• Optional font enlargement and high-contrast display settings
• Screen readers and screen magnifiers tested for use by people with visual impairment

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on the products accessibility compliance can be requested at


**Section 508 of the US Rehabilitation Act**

WebSphere Application Server V8.5.5 is capable as of June 14, 2013, when used in accordance with IBM's associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it.

**Product positioning**

The WebSphere Application Server family offers multiple configuration options and support for multiple business models and deployment platforms. It also supports a wide range of scenarios, from projects with no upfront budget, to simple administration of a single server environment, to a clustered, highly available, high-volume environment with Intelligent Management services.

WebSphere Application Server V8.5.5 configurations are built on a common server foundation that delivers the same Java EE and broad programming model support, and proven transactional engine, with increasingly higher qualities of service available across product configurations. Furthermore, the Liberty profile is included across the various configurations, delivering a highly composable, fast to start, and ultra lightweight profile of the application server optimized for developer and operational productivity for web applications. This offers unparalleled flexibility to incrementally add higher quality of service to applications as business needs change without the cost of rearchitecting, reprogramming, or migrating to different technology bases.
Configuration options

WebSphere Application Server Liberty Core V8.5.5

WebSphere Application Server Liberty Core V8.5.5 is a new lightweight and dynamic offering of WebSphere Application Server targeted at applications that do not require a full Java EE stack. Composed entirely of the developer-friendly Liberty profile and certified to the Java EE6 Web Profile specification, the WebSphere Application Server Liberty Core edition enables rapid development and deployment of web-centric and mobile-centric applications, enabling businesses to quickly respond to enterprise and market needs. Liberty profile servers can be members of collectives, enabling them to be managed by a collective controller from a Network Deployment installation. The capabilities provided in the Liberty Core edition are a subset of the capabilities provided in the WebSphere Application Server and Network Deployment editions. Highlights of the new Liberty Core offering include:

- Extremely lightweight offering, composed of a subset of the Liberty profile certified for the Java EE Web Profile
- An excellent development and production runtime for web applications
- Fast time-to-value: Small download, small footprint, and fast startup
- Easily package applications (including configuration) for deployment
- Extensible through Liberty features SPI

WebSphere Application Server - Express® V8.5.5

An affordable, ready-to-go application foundation for single-server, smaller-scale deployments of dynamic web applications, which can be effortlessly migrated to more advanced versions of the WebSphere Application Server family as business needs change. Centralized administration of WebSphere Application Server - Express is available through the Flexible Management feature of WebSphere Application Server Network Deployment. WebSphere Application Server - Express is limited to single-server implementations and up to a maximum of 480 Processor Value Units per server. Larger servers representing more than 480 PVUs may be segmented into smaller virtual servers, but Express may not be installed on more than 480 PVUs on a single (physical) server. See the Planning information section for more details on deployment options. Both the Liberty profile and full profile WebSphere Application Server are included. Liberty profile servers can be members of collectives, enabling them to be managed by a collective controller from a Network Deployment installation.

WebSphere Application Server for Developers V8.5.5

WebSphere Application Server for Developers V8.5.5 is the optimal development environment for building and testing applications on a developer's desktop, which will eventually run on WebSphere Application Server in production. Licensed for development use, WebSphere Application Server for Developers offers functional equivalence to the core WebSphere Application Server configuration to help developers reduce testing effort, develop with confidence, and deliver innovative applications faster. This configuration is also available at no charge, with optional paid support, in order to lower the barrier for developers building for WebSphere Application Server environments. Customers with an active support contract for their production WebSphere Application Server (V8.5 or later) are entitled for support for WebSphere Application Server for Developers.

WebSphere Application Server V8.5.5

This application foundation is tailored for single server to moderately sized configurations of departmental or large-scale, dynamic web applications requiring web tier clustering and failover across up to five application server instances, and a variety of pricing alternatives. Centralized administration of WebSphere Application Server is available through the Flexible Management feature of WebSphere Application Server Network Deployment. It includes both the Liberty profile and the full profile WebSphere Application Server. The Liberty Profile capabilities include a superset of those found in WebSphere Application Server Liberty Core, providing
additional programming models such as Web Services and Java Message Service. Liberty profile servers can be members of collectives, enabling them to be managed by a collective controller from a Network Deployment installation. It enables load balancing across five servers, and includes WebSphere eXtreme Scale with support for session caching and DynaCache.

**WebSphere Application Server Network Deployment V8.5.5**

For enterprises that need near-continuous availability, advanced management, and automated performance optimization for their mission-critical applications, WebSphere Application Server Network Deployment delivers an environment that is highly available, dynamically scalable, and easily managed. It includes both the Liberty profile and the full profile WebSphere Application Server. The Liberty Profile capabilities include a superset of those found in WebSphere Application Server Liberty Core, providing additional programming models such as Web Services and Java Message Service. Building on the core WebSphere Application Server configuration, WebSphere Application Server Network Deployment offers:

- World-class clustering and high-availability management to help eliminate the cost of system downtime
- Intelligent Management capabilities that deliver breakthrough levels of resiliency and reliability, including capabilities formerly available from WebSphere Virtual Enterprise
- Enterprise-level Java batch capabilities, such as parallel job processing, job checkpoints and restart, workload management, and shared OLTP and batch processing
- Edge components, which offer sophisticated load balancing, caching, and centralized security for enhanced performance at the edge of the network
- Advanced centralized management and administration to make management of more complex environments less time-consuming and resource-consuming
- Enterprise-proven, leading security capabilities to safeguard your business
- Industry-leading performance that maximizes business competitiveness while minimizing total cost of ownership (TCO)
- Liberty profile collective cluster admin
- Distributed caching through WebSphere eXtreme Scale

**WebSphere Application Server for z/OS, V8.5**

WebSphere Application Server for z/OS, V8.5 is an application foundation optimized to take advantage of the unique qualities of service of IBM System z® hardware and the z/OS operating system. WebSphere Application Server for z/OS offers functional equivalence to WebSphere Application Server Network Deployment, along with additional capabilities such as prioritized workload management, advanced transactional integrity, intense scalability, and data and workload collocation, made possible through tight integration with IBM System z and z/OS. It includes both the Liberty profile and the full profile WebSphere Application Server, enables unlimited load balancing across servers, and includes WebSphere eXtreme Scale for z/OS, which provides client APIs for connecting to distributed eXtreme Scale servers. The Liberty profile for z/OS includes optional extensions to leverage System z capabilities such as z/OS security, transactions, and workload management.

**WebSphere Application Server Tools Editions**

In addition to the server runtime options, you get three new bundled offerings that accelerate development and deliver high-quality, innovative applications for WebSphere Application Server:

- WebSphere Application Server - Tools Edition
- WebSphere Application Server Network Deployment - Tools Edition
- WebSphere Application Server for Developers - Tools Edition for Eclipse

The WebSphere Application Server - Tools Edition and WebSphere Application Server Network Deployment - Tools Edition bring together a server version of WebSphere
Application Server (the leading open standards-based application foundation offering), and IBM Rational Application Developer (the industry-leading and top-rated development environment) to provide organizations with a complete solution to develop, deliver, and manage high-quality enterprise applications.

WebSphere Application Server for Developers and the WebSphere Application Server Developer Tools for Eclipse, which is a subset of Rational Application Developer plug-ins that can easily be installed on top of your client's existing Eclipse environment, provides support for the development of simple applications, including WebSphere Application Server support, and core application programming support (Java EE, OSGi, and Web 2.0) to quickly deploy to a WebSphere Application Server environment. The content of this bundle is offered as a no-charge download with an optionally purchased support package.

**Related products**

**WebSphere Application Server Hypervisor Edition**

WebSphere Application Server Hypervisor Edition includes all the robust features of WebSphere Application Server and is optimized to run in server virtualized environments. Designed to reduce installation and configuration time, WebSphere Application Server Hypervisor Edition helps reduce time-to-value during development, test, and production of WebSphere based applications. Each WebSphere Application Server Hypervisor Edition offering is a preconfigured package that integrates WebSphere Application Server and associated feature packs, IBM HTTP Server, and an operating system compatible with each supported hypervisor.

Enhanced operational cost reduction and business agility can be gained through the use of WebSphere Application Server Hypervisor Edition with IBM Workload Deployer, a cloud computing appliance that manages IBM products in a cloud environment. It dispenses patterns of virtual images into a pool of virtualized resources running a supported hypervisor. WebSphere Application Server Hypervisor Edition also supports IBM PureApplication™ Systems, expert integrated systems that combine the flexibility of a general-purpose system and the simplicity of an appliance.

**WebSphere Application Server Community Edition V3.0**

WebSphere Application Server Community Edition V3.0 delivers a lightweight Java EE application server built on open source Apache Geronimo technology. WebSphere Application Server Community Edition is backed by optionally available, world-class support from IBM, ensuring that clients receive assistance and timely problem resolution from the IBM team of expert support professionals and developers. Simple socket-based pricing is also optionally available.

**WebSphere Adapters**

WebSphere Adapters help accelerate business integration projects with rapidly deployable, enterprise-ready connections based on best practices. The WebSphere Adapters portfolio provides a comprehensive set of capabilities to reuse and extend your client's packaged and legacy applications. WebSphere Adapters includes enhanced adapters for SAP software, Siebel Business Applications, Oracle E-Business Suite, JD Edwards EnterpriseOne, and PeopleSoft Enterprise.

A separate license entitlement for the appropriate WebSphere Adapter must be purchased when deploying WebSphere Adapter components to WebSphere Application Server for production use.

**WebSphere Real Time**

WebSphere Real Time is a Java Runtime Environment (JRE) designed to provide more consistent performance for Java applications. It enables customers to develop applications with low latency and highly predictable response times. A development and unit testing license for WebSphere Real Time is provided with WebSphere Application Server. A separate license entitlement for WebSphere Real Time must be purchased to use the Real Time capability in a production environment.
Rational Application Developer

Rational Application Developer is the development environment that is optimized for WebSphere Application Server V8.5.5 and the Liberty profile, to help improve the productivity of your client's development team, from novice developers just getting up to speed, to experienced senior professionals.

Rational Application Developer provides capabilities to accelerate development of applications that leverage the latest programming models, such as Java EE 6, Java 7, SOA, OSGi, Cloud, Web 2.0, Mobile Web, Portal, Service Component Architecture (SCA), and WebSphere Batch, and includes tight integration with application server test environments to test, debug, fix, and maintain in an environment that mimics your production systems.

Rational Application Developer also provides developer test and analysis tools to ensure delivery of high-quality applications that are easily maintained to provide value and time savings across the entire life span of your client's software projects.

Statement of direction

IBM intends in the future to enhance IBM WebSphere Service Registry and Repository to support IBM WebSphere Application Server Version 8.5.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Reference information

For information about WebSphere Application Server for z/OS, V8.5 environments, refer to Software Announcement 213-174, dated April 23, 2013.


For information about WebSphere Application Server Community Edition V3.0, refer to Software Announcement 211-083, dated September 27, 2011.

For information about WebSphere Application Server Hypervisor Edition V8.5.5, refer to Software Announcement 213-163, dated April 23, 2013.

For information about the WebSphere Application Server Family, visit

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

Program number

<table>
<thead>
<tr>
<th>Program number</th>
<th>VRM</th>
<th>Program name</th>
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<tr>
<td>5724-J08</td>
<td>8.5.5</td>
<td>WebSphere Application Server</td>
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<tr>
<td>5725-L29</td>
<td>8.5.5</td>
<td>WebSphere Application Server Liberty Core</td>
</tr>
</tbody>
</table>
Offering Information

Product information is available via the Offering Information website

http://www.ibm.com/common/ssi

Also, visit the Passport Advantage® website

http://www.ibm.com/software/passportadvantage

Publications

The primary delivery and latest product documentation for WebSphere Application Server V8.5.5 can be found in the online information center available from the library web page at

http://www.ibm.com/software/webservers/appserv/was/library/

No hardcopy publications are shipped with this product. You can find links to information on installing and getting started with WebSphere Application Server in the readme files (readme_ locale .html) located in the locale-specific subdirectories of the doc/readme directory on the root of the installation image. The readme file is located at:

doc/readme/ locale /readme_ locale .html

For example:
/readme/readme.html.

Help for the WebSphere Application Server administrative console is shipped with the product. The total set of product documentation is available in HTML and PDF format from the following web page

http://www.ibm.com/software/webservers/appserv/was/library/

For optimal viewing of this documentation, browser support for JavaScript™ and related technologies is required. For more information about compatible browsers, refer to the Software requirements section of this document.

Technical information

Specified operating environment

Hardware requirements

WebSphere Application Server (All supported operating systems):

- WebSphere Application Server Full profile installation requires minimum 2 GB of available disk space for installed image and temporary space. Multiplatform product repository is 3 GB and may be locally hosted if not using the IBM-hosted web-based repository; 1 GB of physical memory recommended.
- WebSphere Application Server Liberty profile installation using Installation Manager requires minimum 112 MB of available disk space for installed image
and temporary space. Multiplatform product repository size is minimally 132 MB for WebSphere Application Server Liberty Core edition and may be locally hosted if not using the IBM-hosted web-based repository. The Liberty profile in other editions has additional capability and requires more disk space; 256 MB physical memory recommended.

- WebSphere Application Server Liberty profile installation using Archive install procedure requires minimum 67 MB of available disk space for installed image. Minimum archive size is 52 MB for WebSphere Application Server Core edition. The Liberty profile in other editions has additional capability and requires more disk space; 256 MB physical memory recommended.

**WebSphere Application Server** (Specific operating system requirements):

**AIX®**

For AIX (32-bit WebSphere Application Server)

IBM Power® family of processors supported by the corresponding release of AIX

- Supported hardware for AIX V6.1
- Supported hardware for AIX V7.1

**HP-UX**

For HP-UX (64-bit WebSphere Application Server)

- Intel® Itanium™ 2 processor
- Intel Itanium processor 9300 Series

**Linux™**

For Linux (32-bit WebSphere Application Server)

- Intel Pentium™ IV, or later, processor at 1.2 GHz, or faster
- Intel x86-64 or AMD x86-64 processor at 1.2 GHz, or faster
- IBM Power family of processors supported by the Linux distribution
- Any IBM System z supported by the required Linux operating systems

For Linux (64-bit WebSphere Application Server)

- Intel x86-64 or AMD x86-64 processor (64-bit kernel support only)
- Any IBM System z supported by the required Linux operating systems
- IBM Power family of processors supported by the Linux distribution

**Solaris**

For Solaris (32-bit WebSphere Application Server)

- Oracle Solaris operating environment compatible SPARC workstation at 1.0 GHz, or faster

For Solaris (64-bit WebSphere Application Server)

- Oracle Solaris operating environment compatible SPARC workstation at 1.0 GHz, or faster
- Intel x86-64 or AMD x86-64 processor at 1.2 GHz, or faster

**Windows™**

For Windows (32-bit WebSphere Application Server)

- Intel Pentium IV, or later processor, at 1.2 GHz, or faster
• Intel x86-64 or AMD x86-64 processor at 1.2 GHz, or faster

For Windows (64-bit WebSphere Application Server)
• Intel x86-64 or AMD x86-64 processor at 1.2 GHz, or faster

For more information on WebSphere Application Server, visit
http://www.ibm.com/support/docview.wss?rs=180&uid=swg27038218

Software requirements
Supported operating systems

For each supported platform, WebSphere Application Server and WebSphere Application Server Network Deployment editions are available in both a 32-bit and 64-bit version. The 32-bit versions are supported on a 64-bit version of the listed operating systems. On HP-UX IA64 and Solaris x86, only a 64-bit version is provided.

• AIX V6.1 TL5 on Power Systems
• AIX V7.1 TL6 on Power Systems
• AIX V7.1 on Power Systems
• HP-UX 11i V2 IA64
• HP-UX 11i V3 IA64
• IBM System i V7.1 on Power Systems
• IBM System i V6.1 on Power Systems
• Macintosh OS 10.6 Snow Leopard, 10.7 Lion, and 10.8 Mountain Lion
• Asianux Linux 3.0 x86-32
• Asianux Linux 3.0 x86-64
• Red Hat Enterprise Linux (RHEL) 5.0 Update 6 Advanced Platform POWER System
• Red Hat Enterprise Linux (RHEL) 5.0 Update 6 Advanced Platform System z
• Red Hat Enterprise Linux (RHEL) 5.0 Update 6 Advanced Platform x86-32
• Red Hat Enterprise Linux (RHEL) 5.0 Update 6 Advanced Platform x86-64
• Red Hat Enterprise Linux (RHEL) 5.0 Update 6 Desktop editions x86-32
• Red Hat Enterprise Linux (RHEL) 5.0 Update 6 Desktop editions x86-64
• Red Hat Enterprise Linux (RHEL) 5 Update 6 Server x86-64
• Red Hat Enterprise Linux (RHEL) 6.0 on Power Systems
• Red Hat Enterprise Linux (RHEL) 6.0 System z
• Red Hat Enterprise Linux (RHEL) 6.0 x86-32
• Red Hat Enterprise Linux (RHEL) 6.0 x86-64
• SUSE Linux Enterprise Desktop (SLED) 10.0 SP3 x86-32
• SUSE Linux Enterprise Desktop (SLED) 10.0 SP3 x86-64
• SUSE Linux Enterprise Desktop (SLED) 11.0 x86-32
• SUSE Linux Enterprise Desktop (SLED) 11.0 x86-64
• SUSE Linux Enterprise Server (SLES) 10.0 SP3 on Power Systems
• SUSE Linux Enterprise Server (SLES) 10.0 SP3 System z
• SUSE Linux Enterprise Server (SLES) 10.0 SP3 x86-32
• SUSE Linux Enterprise Server (SLES) 10.0 SP3 x86-64
• SUSE Linux Enterprise Server (SLES) 10.0 on Power Systems
• SUSE Linux Enterprise Server (SLES) 11.0 System z
• SUSE Linux Enterprise Server (SLES) 11.0 x86-32
• SUSE Linux Enterprise Server (SLES) 11.0 x86-64
• Solaris 10 x86-64
• Solaris 10 SPARC
• Solaris 11 SPARC
• Windows 8 Enterprise x86-64
• Windows 8 Enterprise x86-32
• Windows 8 Professional x86-64
• Windows 8 Professional x86-32
• Windows 8 Standard x86-64
• Windows 8 Standard x86-32
• Windows 7 Enterprise x86-64
• Windows 7 Enterprise x86-32
• Windows 7 Professional x86-64
• Windows 7 Professional x86-32
• Windows 7 Ultimate x86-64
• Windows 7 Ultimate x86-32
• Windows Server 2012 Datacenter Edition x86-64
• Windows Server 2012 Enterprise Edition x86-64
• Windows Server 2012 Standard Edition x86-64
• Windows Server 2008 Datacenter Edition x86-32
• Windows Server 2008 Datacenter Edition x86-64
• Windows Server 2008 R2 Datacenter Edition x86-64
• Windows Server 2008 Enterprise Edition x86-32
• Windows Server 2008 Enterprise Edition x86-64
• Windows Server 2008 R2 Enterprise Edition x86-64
• Windows Server 2008 Standard Edition x86-32
• Windows Server 2008 Standard Edition x86-64
• Windows Server 2008 R2 Standard Edition x86-64
• Windows Vista Business x86-32
• Windows Vista Business x86-64
• Windows Vista Enterprise x86-32
• Windows Vista Enterprise x86-64
• Windows Vista Ultimate x86-32
• Windows Vista Ultimate x86-64
• Windows XP SP3 Professional x86-32
• Windows XP SP3 Professional x86-64

1 AIX V6.1 recommended minimum maintenance package - 6100-00-04. Clients are 32-bit applications only.
2 AIX 7.1 recommended minimum maintenance package - 7100-01-02.
3 Macintosh is only for development use with the IBM WebSphere Application Server Liberty profile.
4 Supported on client. Server supported for application design, development, and testing; no support for production use.
5 Windows XP will only be supported as described under the "Other configuration support statement" here
   http://www-01.ibm.com/support/docview.wss?rs=180&uid=swg27004311

WebSphere Application Server - Express is only supported on 32-bit systems.
Supported databases

- Apache Derby 10.8 and future releases, modification levels, and fix packs
- DB2® 9 for z/OS V9.1 and future releases, modification levels, and fix packs
- DB2 10 for z/OS V10.1 and future releases, modification levels, and fix packs
- DB2 Advanced Enterprise Server Edition 10.1
- DB2 Connect™ Application Server Advanced Edition 10.1
- DB2 Connect Application Server Edition 10.1
- DB2 Enterprise Server Edition 9.1, 10.1, and future releases, modification levels, and fix packs
- DB2 Express 9.1, 10.1, and future releases, modification levels, and fix packs
- DB2 Express Edition FTL 10.1
- DB2 for i5/OS™ V5R4 and future releases, modification levels, and fix packs
- DB2 for i V6.1 and V7.1 and future releases, modification levels, and fix packs
- DB2 pureScale® Feature for Enterprise Server Edition 9.8 and future releases, modification levels, and fix packs
- DB2 pureScale Feature 10.1
- DB2 UDB for z/OS, V8.1 and future releases, modification levels, and fix packs
- DB2 Workgroup Server Edition 9.1, 10.1, and future releases, modification levels, and fix packs
- IBM Informix® Dynamic Server 11.10 and future releases, modification levels, and fix packs
- Oracle Database 11g Standard and Enterprise Editions Release 1 and future releases, modification levels, and fix packs
- Oracle Database 10g Standard and Enterprise Editions Release 2 and future releases, modification levels, and fix packs
- Sybase Adaptive Server Enterprise 15.0.3 and future releases, modification levels, and fix packs

JDBC drivers

- Apache Derby 10.8 and future releases, modification levels, and fix packs
- DataDirect Connect for JDBC SQL Server Driver 4.1 and future releases, modification levels, and fix packs
- DB2 Connect Enterprise Edition 9.1 and future releases, modification levels, and fix packs
- IBM Data Server Driver for JDBC and SQLJ V3.4, V3.63, V4.13, and V4.2 and future releases, modification levels, and fix packs
- IBM Developer Kit for Java JDBC driver V5.4.x, V6.1.x, V7.1.x, and future releases, modification levels, and fix packs
- IBM Toolbox for Java and JTop JDBC Drive V6.0 and V7.0 and future releases, modification levels, and fix packs
- Informix Java Database Connectivity Driver 3.10.JC1
- Microsoft SQL Server JDBC Driver V2.0 and V3.1, and future releases, modification levels, and fix packs
- Oracle JDBC Driver 11g 11.1 and future releases, modification levels, and fix packs
- Sybase jConnect 6.05 EBF 14466 and future releases, modification levels, and fix packs

JMS providers

- WebSphere MQ V6.0.2, V7.0, V7.0.1, V7.1, and V7.5 and future fix packs
- WebSphere MQ for z/OS, V6.0 and V7.0 and future fix packs
Java SDK

- Java SDK 6.0.5.1 (J9 2.6) and future modification levels, and fix packs
- Java SDK/JRE V7.0.4.1
  - Any JDK V6.0, or later, is supported

For IBM i only, IBM J2SE 6.0 32-bit JVM (5761-JV1 option 11) is required and must be installed with fixes applied. IBM J2SE 6.0 64-bit JVM (5761-JV1 option 12) is optional supported software. For details, see the WebSphere Application Server Information Center at [http://pic.dhe.ibm.com/infocenter/wasinfo/v8r0/index.jsp](http://pic.dhe.ibm.com/infocenter/wasinfo/v8r0/index.jsp)

For HP-UX, the supported Java technology is HP JDK for J2SE HP-UX 11i platform, adapted by IBM for IBM Software, Version 6.0.

For Solaris, the supported Java technology is IBM SDK for Solaris, Java 2 Technology Edition, Version 6.0.

LDAP servers:

- All LDAP Servers that support the LDAP V3 Specification - All versions
- IBM Lotus® Domino® LDAP Server 7.0 and future releases, modification releases, and fix packs
- IBM Tivoli Directory Server V6.0 and future releases, modification releases, and fix packs
- IBM Tivoli Directory Server for IBM System i® V6.1 and V7.1 and future releases, modification releases, and fix packs
- IBM z/OS Integrated Security Services V1.8 and future releases, modification releases, and fix packs
- IBM z/OS .e Integrated Security Services V1.8 and future releases, modification releases, and fix packs
- Microsoft Active Directory Application Mode (ADAM) 1.0 SP1 and future releases, modification releases, and fix packs
- Novell eDirectory 8.7.3 SP9 and future releases, modification releases, and fix packs
- Sun Java System Directory Server 6.0, 6.1 and future releases, modification releases, and fix packs

Security

- IBM Tivoli Access Manager for eBusiness V6.1 and future fixpacks

Virtualization Management

- VMWare vSphere 4.1
- VMWare vSphere 5.0
- VMWare vSphere 5.1
- Oracle LDOMs version 11, or later, on SPARC only
  - No testing on x86-64

Virtualization support

AIX

- IBM PowerVM® Hypervisor (LPAR, DPAR, Micro-Partition); any supported version and future fix packs
- Live Application Mobility (LAM) for Workload Partition (WPAR) for AIX V6.1 and V7.1 and future modification levels, and fix packs
- Application Workload Partition (WPAR) AIX V6.1 and V7.1 and future modification levels and fix packs
WPAR: Product installed in System Workload Partition for AIX V6.1 and V7.1 and future modification levels and fix packs

**Windows**
- VMware ESXi V4.0 and future releases, modification levels, and fix packs
- VMware ESX V4.0 and future releases, modification levels, and fix packs
- VMware ESXi V4.1 and V5.0 and future modification levels, and fix packs
- VMware ESX V4.1 and future modification levels and fix packs
- KVM in SUSE Linux Enterprise Server (SLES) 11

**Linux**
- IBM z/VM® Hypervisor V5.4, V6.1, and V6.2 and future modification levels and fix packs
- IBM PR/SM™; any version and future releases, modification levels, and fix packs
- IBM PowerVM Hypervisor (LPAR, DPAR, Micro-Partition); any supported version and future fix packs
- Red Hat KVM as delivered with Red Hat Enterprise Linux (RHEL) 5.6 and 6.0, and future modification levels and fix packs
- KVM in SUSE Linux Enterprise Server (SLES) 11
- VMware ESXi V4.0, V4.1, V5.0, and V5.1 and future releases, modification levels, and fix packs
- VMware ESX V4.0 and future releases, modification levels, and fix packs
- VMware ESX V3.5.5, V4.0, and V4.1 and future modification levels and fix packs

**Solaris**
- Sun and Oracle Logical Domains (LDoms); any version and future fix packs X86-64
- Sun Solaris 10 Global and Local Zones (x86-64) 10 and future modification levels and fix packs X86-64
- Sun Solaris 11 Global and Local Zones (x86-64) 11 and future modification levels and fix packs X86-64

**Note:** Using a whole-root zone in a Solaris Zones environment is a supported environment to run the IBM WebSphere Application Server product.

**Web browsers**
- Microsoft Internet Explorer 9.0 and 10.0 and future fix packs
- Mozilla Firefox ESR 10 and ESR 17 and future modification levels and fix packs

**Web servers**
- Apache Server 2.2 and future modification levels and fix packs
- Domino 8.0 and future fixpacks
- Microsoft Internet Information Services 6.0, 7.0, 7.5, and 8.0 and future modification levels and fix packs
- Sun Java System Web Server 6.1 SP12 and 7.0 Update 1 and future modification levels and fix packs
- IBM HTTP Server for i5/OS ; any version and future releases, modification levels, and fix packs
- IBM HTTP Server V7.0, V8.0, and V8.5 and future modification levels and fix packs

Past or future releases of IBM HTTP Server are only supported by the corresponding release of the Web Server Plugin. The listed previous releases of IBM HTTP Server are for
transitional purposes only when IBM HTTP Server cannot be updated in parallel with the Application Server.

The program’s specifications and specified operating environment information may be found in documentation accompanying the program, if available, such as a readme file, or other information published by IBM, such as an announcement letter. Documentation and other program content may be supplied only in the English language.

**Companion products**

IBM Tivoli Composite Application Manager for WebSphere Application Server is offered as a separate download for WebSphere Application Server V8.5.5.

IBM Tivoli Composite Application Manager for WebSphere Application Server, which was formerly provided within the application server offering, is now made available as a separate web download from the Integrated Service Management Library as follows:

https://www-304.ibm.com/software/brandcatalog/ismlibrary/

Search in the Integrated Service Management Library using the NavCode 1TW10CD07.

It provides additional request-based PMI metrics to help you understand the performance of your application server and more quickly identify issues. Also, because it uses the same data collector used by IBM Tivoli Composite Application Manager for Application Diagnostics, which provides advanced monitoring and deep diagnostics capability, it makes upgrade quick and easy for licensed users of that product, and provides further integration with Tivoli’s Application Performance Monitoring solutions.

**Limitations**

The following features are either not supported by WebSphere Application Server V8.5.5 or are being deprecated in V8.5.5:

- The Load Balancer for IPv4 component is being deprecated.

**Planning information**

**Standby or backup systems**

For programs running or resident on backup machines, IBM defines three types of situations: cold, warm, and hot. In the cold and warm situations, a separate entitlement for the copy on the backup machine is normally not required and typically no additional charge applies. In a hot backup situation, the customer needs to acquire another license or entitlements sufficient for that server. All programs running in backup mode must be solely under the customer’s control, even if they are running at another enterprise’s location.

As a practice, the following are definitions and allowable actions concerning the copy of the program used for backup purposes.

**Cold**

A copy of the program may reside, for backup purposes, on a machine as long as the program is not started. There is no additional charge for this copy.

**Warm**

A copy of the program may reside for backup purposes on a machine and is started, but is idling, and is not doing any work of any kind. There is no additional charge for this copy.
**Hot**

A copy of the program may reside for backup purposes on a machine, is started, and is doing work. The customer must acquire a license or entitlements for this copy and there will generally be an additional charge.

Doing work includes, for example, production, development, program maintenance, and testing. It also could include other activities such as mirroring of transactions, updating of files, synchronization of programs, data, or other resources (for example, active linking with another machine, program, database, or other resource, and so on), or any activity or configurations that would allow an active hot switch or other synchronized switch over between programs, databases, or other resources to occur.

In the case of a program or system configuration that is designed to support a high-availability environment by using various techniques (for example, duplexing, mirroring of files or transactions, maintaining a “heartbeat,” active linking with another machine, program, database, or other resource, and so on), the program is considered to be doing work in the hot situation and a license or entitlement must be purchased.

**Non-IBM WebSphere back-end servers**

**Edge components:** Users seeking to use Edge components with non-IBM WebSphere back-end servers may be entitled to warranty support for such usage, provided the problem is common to both the IBM WebSphere and non-IBM WebSphere back-end servers or, if otherwise, you agree to re-create the problem in an IBM WebSphere Application Server environment.

**Proxy Server components:** Users seeking to use Proxy Server components and DMZ Secure Proxy Server components with non-IBM WebSphere back-end servers may be entitled to warranty support for such usage, provided the problem is common to both the IBM WebSphere and non-IBM WebSphere back-end servers or, if otherwise, you agree to re-create the problem in an IBM WebSphere Application Server environment.

**WebSphere Application Server Express planning information**

**Processor Value Unit (PVU) license**

The maximum allowed PVU capacity on a single server is 480 PVUs. WebSphere Application Server Express is eligible for Virtual Capacity Licensing, so virtual partitions of up to 480 PVUs could be allocated on a physical server with greater than 480 PVU capacity to enable use of WebSphere Application Server Express on that physical server. Server capacity available to WebSphere Application Server Express on any one physical server cannot exceed 480 PVUs. WebSphere Application Server Express PVU licenses can be utilized on any number of servers.

20 **Intranet User licenses**

Intranet User licenses are acquired in packs of 20 Authorized (named) users, and those users are authorized for that specific WebSphere Application Server Express server. The server maximum PVU capacity considerations above apply to WebSphere Application Server Express implementations acquired through Intranet User licenses. Multiple Intranet User packs can be purchased for a single server to increase the server capacity beyond 20 authorized users. However, there is a limitation of a single WebSphere Application Server Express server acquired through the Intranet User option per customer location.

**WebSphere Application Server Liberty Core planning information**

20 **Intranet User licenses**

Intranet User licenses are acquired in packs of 20 Authorized (named) users, and those users are authorized for that specific WebSphere Application Server Liberty Core server. Multiple Intranet User packs can be purchased for a single server to increase the server capacity beyond 20 authorized users. However, there is a limitation of a single WebSphere Application
Server Liberty Core server acquired through the Intranet User option per customer location.

**WebSphere Application Server V8.5.5 planning information**

**Web 2.0 and Mobile**

The functionality delivered as the Web 2.0 and Mobile Feature Pack is delivered for WebSphere Application Server V8.5.5 as the Web 2.0 and Mobile Toolkit and included as an option within the base product itself.

**Direct customer support**

For technical support or assistance, contact your IBM representative or visit [http://www.ibm.com/support](http://www.ibm.com/support)

**Packaging**

**WebSphere Application Server Liberty Core V8.5.5 contents:**

- Quick Start
- IBM WebSphere Application Server Liberty Core
- IBM WebSphere SDK Java Technology Edition V7.0
- WebSphere Application Server Liberty Core supplements (includes IBM HTTP Server, Web Server Plug-ins, and WebSphere Customization Toolbox)
- IBM Installation Manager V1.6.2 - includes IBM Packaging Utility V1.6.2
- DB2 Workgroup Server Edition Limited Use V10.1
- DB2 Enterprise Server Edition Limited Use for Linux on System z, V10.1
- IBM WebSphere Application Server Web 2.0 and Mobile Toolkit V1.1.0.4

**WebSphere Application Server - Express V8.5.5 contents:**

- Quick Start
- IBM WebSphere Application Server - Express
- IBM WebSphere SDK Java Technology Edition V7.0
- IBM WebSphere Application Server Supplements (includes IBM HTTP Server, Web Server Plug-ins, Application Client, Pluggable Application Client, and WebSphere Customization Toolbox)
- IBM Installation Manager V1.6.2 - includes IBM Packaging Utility V1.6.2
- IBM Rational Agent Controller V8.3.6
- IBM Tivoli Directory Server V6.3
- DB2 Workgroup Server Edition Limited Use V10.1
- DB2 Enterprise Server Edition Limited Use for Linux on System z, V10.1
- IBM Rational Application Developer for WebSphere Software Trial, V9.0
- IBM Assembly and Deploy Tools for WebSphere Administration V8.5.1
- IBM WebSphere Application Server Web 2.0 and Mobile Toolkit V1.1.0.4
- WebSphere Adapters V7.5.0.1

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- IBM WebSphere Application Server Web 2.0 and Mobile Toolkit V1.1.0.4
- IBM WebSphere Adapters V7.5.0.1
- IBM WebSphere eXtreme Scale V8.6.0.2
- Mozilla Firefox V3.6.25 (AIX 64 bit)

**WebSphere Application Server Network Deployment V8.5.5 contents:**

- Quick Start
- IBM WebSphere Application Server Network Deployment
- IBM WebSphere SDK Java Technology Edition V7.0
- IBM WebSphere Application Server Supplements (includes IBM HTTP Server, Web Server Plug-ins, Application Client, Pluggable Application Client, and WebSphere Customization Toolbox)
- IBM Installation Manager V1.6.2 - includes IBM Packaging Utility V1.6.2
- IBM DMZ Secure Proxy Server
- IBM WebSphere Edge Components: Load Balancer for IPv4 and IPv6, Load Balancer for IPv4, and Edge Caching Proxy
- IBM Rational Agent Controller V8.3.6
- IBM Tivoli Directory Server V6.3
- IBM Tivoli Access Manager for e-business V6.1.1
- IBM Tivoli Federated Identity Manager for WebSphere Application Server Network Deployment V6.2.2
- IBM DB2 Workgroup Server Edition Limited Use V10.1
- IBM DB2 Enterprise Server Edition Limited Use for Linux on System z, V10.1
- IBM Rational Application Development for WebSphere Software Trial, V9.0
- IBM Assembly and Deploy Tools for WebSphere Administration V8.5.1
- IBM WebSphere Application Server Web 2.0 and Mobile Toolkit V1.1.0.4
- IBM WebSphere Adapters V7.5.0.1
- IBM WebSphere eXtreme Scale V8.6.0.2
- Mozilla Firefox V3.6.25 (AIX 64 bit)

**WebSphere Application Server for Developers V8.5.5 contents:**

- Quick Start
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**WebSphere Application Server - Tools Edition V8.5.5 contents:**

• IBM WebSphere Application Server Quick Start
• IBM Rational Application Developer for WebSphere Quick Start
• IBM WebSphere Application Server
• IBM WebSphere Application Server Developer Tools for Eclipse V8.5.5
• IBM Rational Application Developer for WebSphere Software V9.0
• IBM Assembly and Deploy Tools for WebSphere Administration V8.5.1
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• IBM WebSphere eXtreme Scale V8.6.0.2
• Mozilla Firefox V3.6.25 (AIX 64 bit)

**IBM WebSphere Application Server for Developers - Tools Edition for Eclipse V8.5.5 contents:**

• IBM WebSphere Application Server for Developers Quick Start
• IBM WebSphere Application Server Developer Tools for Eclipse Quick Start
• IBM WebSphere Application Server for Developers
• IBM WebSphere Application Server Developer Tools for Eclipse V8.5.5
• IBM Assembly and Deploy Tools for WebSphere Administration V8.5.1
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• IBM WebSphere eXtreme Scale V8.6.0.2
IBM WebSphere Application Server Network Deployment - Tools Edition V8.5.5 contents:

- IBM WebSphere Application Server Network Deployment Quick Start
- IBM Rational Application Developer for WebSphere Quick Start
- IBM WebSphere Application Server Network Deployment
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- IBM WebSphere Adapters V7.5.0.1
- IBM WebSphere eXtreme Scale V8.6.0.2
- Mozilla Firefox V3.6.25 ( AIX 64 bit)

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Security, auditability, and control

WebSphere Application Server V8.5.5 provides automated authorization checking and a strong security implementation for authentication and authorization. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Software Services

IBM Software Services has the breadth, depth, and reach to manage your services needs. You can leverage the deep technical skills of our lab-based, software services team and the business consulting, project management, and infrastructure expertise of our IBM Global Services team. Also, we extend our IBM Software Services reach through IBM Business Partners to provide an extensive portfolio of capabilities. Together, we provide the global reach, intellectual capital, industry insight, and technology leadership to support a wide range of critical business needs.

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Passport Advantage

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<th>Part number</th>
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<tbody>
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<td>WebSphere Application Server</td>
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Per Processor Value Unit
- License + SW Subscription & Support 12 Months D5SW8LL
- Annual SW Subscription & Support Renewal E02SQLL
- SW Subscription & Support Reinstatement 12 Months D5SW9LL

WebSphere Application Server
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Below is a list of precursor products for which you must have already acquired a license, in order to be eligible to acquire equivalent licenses using the trade-up part numbers.

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Consult your IBM representative if you have any questions.

**Passport Advantage customer: Media pack entitlement details**

Customers with active maintenance or subscription for the products listed are entitled to receive the corresponding media pack.

<table>
<thead>
<tr>
<th>Media packs description</th>
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<tbody>
<tr>
<td>WebSphere Application Server V8.5.5 for Multiplatforms Multilingual DVD Media Pack</td>
<td>BA16AML</td>
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</table>
### Cross-platform product for use on System z Integrated Facility for Linux (IFL) engines

Order the part numbers that follow when the product is intended to run on zEnterprise BladeCenter Extension or the Linux operating system on System z IFL engines. If the product is not intended to run in these environments, order from the other set of part numbers in this announcement. This set of part numbers provides the identical supply and authorization as the other set in this announcement.

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<thead>
<tr>
<th>Program name/Description</th>
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## On/Off Capacity on Demand (CoD)

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**Authorized User**

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An activated processor core is a processor core that is available for use in a physical or virtual server, regardless of whether the capacity of the processor core can be or is limited through virtualization technologies, operating system commands, BIOS settings, or similar restrictions.

Notes:

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- Some programs may be licensed on a managed basis only. In that case, the following applies. Instead of the entitlements required for the program directly, licensee must obtain PVU entitlements for this program sufficient to cover the processor cores managed by the program.
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- On Demand Router component: You must have a WebSphere Application Server Network Deployment Program license for each machine on which the On Demand Router Component is installed.
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**License Information form number**

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**Corrections**

(Corrected on May 6, 2013)
In the Software requirements section, corrected the Java SDK requirements. In the Packaging section, under the headings WebSphere Application Server - Tools Edition V8.5.5, WebSphere Application Server for Developers - Tools Edition for Eclipse V8.5.5, and WebSphere Application Server Network Deployment - Tools Edition V8.5.5, the version number of IBM Assembly and Deploy Tools for WebSphere Administration was revised to version 8.5.1.

(Corrected on April 25, 2013)
In the At a Glance section, the version number of WebSphere Application Server Developer Tools was corrected. In the Hardware requirements section, a web address was corrected. In the Description section, another list item was added under the Integrated tools heading. In the Software requirements section, added additional supported operating systems.