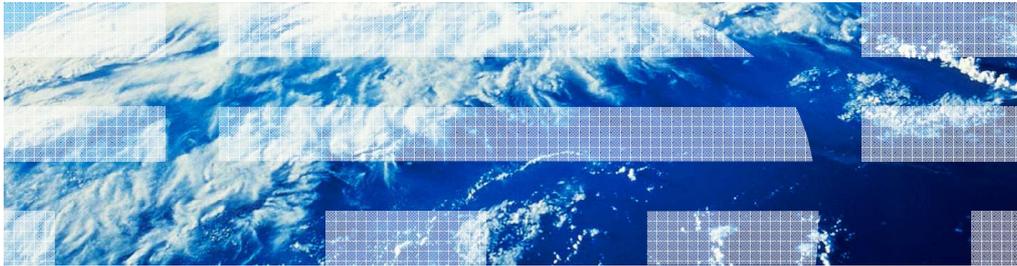

IBM WebSphere Application Server V8.5

Overview for developers



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This overview describes enhancements in WebSphere Application Server V8.5 that serve to provide a fast, flexible, and simple application development environment.



WebSphere Application Server Version 8.5 focuses on three primary goals: providing a fast, flexible, and simplified application development environment that allows your organization to quickly deliver rich experiences to your users; providing intelligent management and enhanced resiliency for your application server environment; and improving the operation, security, control, and integration of the application server.



WebSphere Application Server V8.5 portfolio

WebSphere Application Server for Developers Enables efficient development of innovative apps that will run on WebSphere Application Server in production Available as a no-charge edition for the developer desktop and includes Eclipse adapters	WebSphere Application Server Hypervisor Edition Optimized to instantly run in VMware and other server virtualization environments	WebSphere Application Server Network Deployment Delivers near-continuous availability, with advanced performance and mgmt capabilities, for mission-critical apps	WebSphere Application Server for z/OS Takes full advantage of the z/OS Sysplex to deliver a highly secure, reliable, and resource efficient server experience
WebSphere Application Server Provides secure, high performance transaction engine for moderately sized configurations with web tier clustering and failover across up to five application server profiles			
WebSphere Application Server Express A lower-cost, ready-to-go solution to build dynamic websites and applications		WebSphere Application Server Community Edition An open source-based, small footprint foundation with no up-front acquisition costs	

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Overview for developers

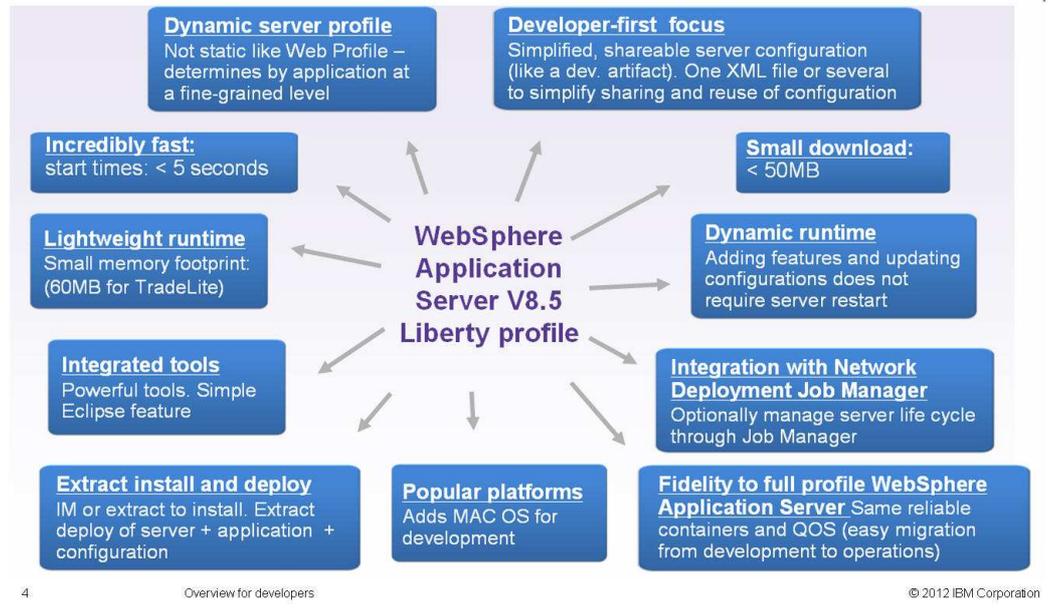
■ Built on a common code base

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The WebSphere Application Server family for Version 8.5 continues to provide offerings to fit your needs ranging from lightweight developer desktop environments to highly complex and highly available enterprise environments. As additional qualities of service are required in your environment, the WebSphere Application Server family of offerings will continue to meet those requirements. All of these products are built upon a common code base except for WebSphere Application Server Community Edition, which is built upon the open source Apache Geronimo application server.

WebSphere Application Server V8.5 introduces the Liberty profile

A highly composable, dynamic server profile



The WebSphere Application Server Version 8.5 Liberty profile provides a fast, flexible, and simplified experience for application developers.

The Liberty profile is composable and dynamic, loading only the features required by the applications that it hosts. It is extremely lightweight and starts rapidly. When hosting a web application such as the tradelite sample, a Liberty profile server consumes roughly 60MB of RAM and starts in less than five seconds on a typical developer workstation.

The Liberty profile provides a greatly simplified configuration model; you can use one configuration file or split the configuration into multiple files. It also supports the Macintosh operating system for development.

You can use IBM Installation Manager or a self-extracting JAR file to install the Liberty profile. You can also package a customized Liberty profile installation using an included tool or a zip utility of your choice. You can then manually extract the package on another system, or use the WebSphere Application Server Network Deployment job manager to deploy the package to one or more remote systems. The package can contain the runtime, server configurations, and applications.

The Liberty profile is easy to install and free of cost for development use; the WebSphere Application Server Developer Tools for Eclipse include support for the Liberty profile, without cost, in the Eclipse Marketplace. These tools are also available in supported versions of Rational Application Developer.

Code developed with the Liberty profile will run without changes on the WebSphere Application Server Version 8.5 full profile. Developers will have a great experience developing with the Liberty profile and then deploying to the WebSphere Application Server Version 8.5 full profile.

Note that in this release, the Liberty profile supports the web applications, OSGi applications, and Java Persistence API (JPA) portions of the full WebSphere Application Server programming model. For more information, see the WebSphere Application Server V8.5 information center.

You can also join discussions about WebSphere Application Server V8.5 and the Liberty profile on the WASdev community site at wasdev.net.

No hurdles to installation

- Tools and runtime are free for development. No time limit
- Eclipse feature installation for tools; 40MB zip download for server profile.
 - Installation Manager also supported → same installed result.
 - Two minutes from “Nothing” to “Done”:
- Install WebSphere Application Server Developer Tools for Eclipse feature



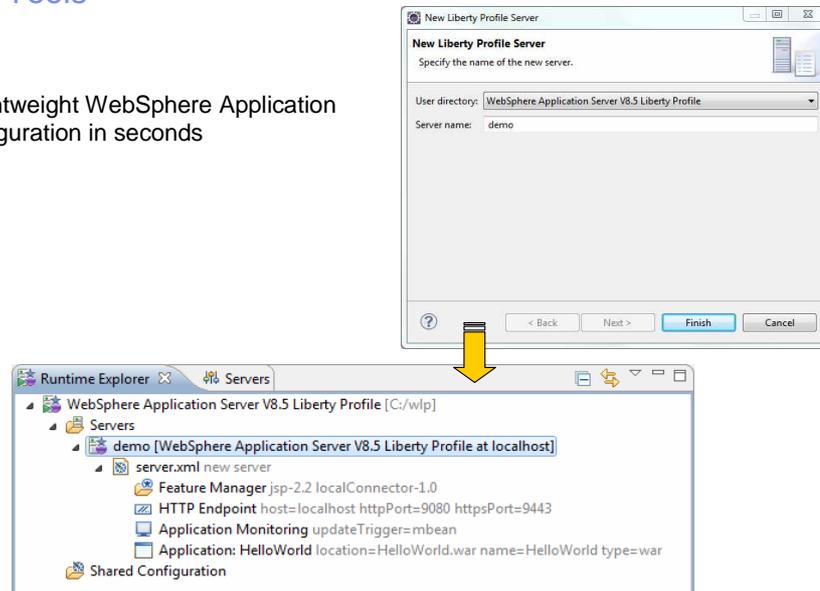
- Use the tools to download the WebSphere Application Server Liberty Profile or download 40MB zip from <http://wasdev.net/>



WebSphere Application Server Developer Tools for Eclipse is a free offering that makes it easy to build and deploy applications from the Eclipse environment to your WebSphere Application Server V8.5 installation. In addition to this free edition of the tools, there are two commercial editions: WebSphere Application Server - Tools Edition and WebSphere Application Server Network Deployment – Tools Edition. Within the tools, you can use the New Server wizard to easily download the Liberty profile runtime and create a new server. You can join discussions about WebSphere Application Server V8.5 and the Liberty Profile on the WASdev community site at wasdev.net.

Create a lightweight WebSphere Application Server in WebSphere Developer Tools

- Create a lightweight WebSphere Application Server configuration in seconds



The graphic illustrates how you can use the Liberty Profile Developer Tools to easily create a new Liberty profile server directly in Eclipse or Rational Application Developer. After the server is created, you can easily manage it by way of the Runtime Explorer and Servers views.

Simplified server configuration

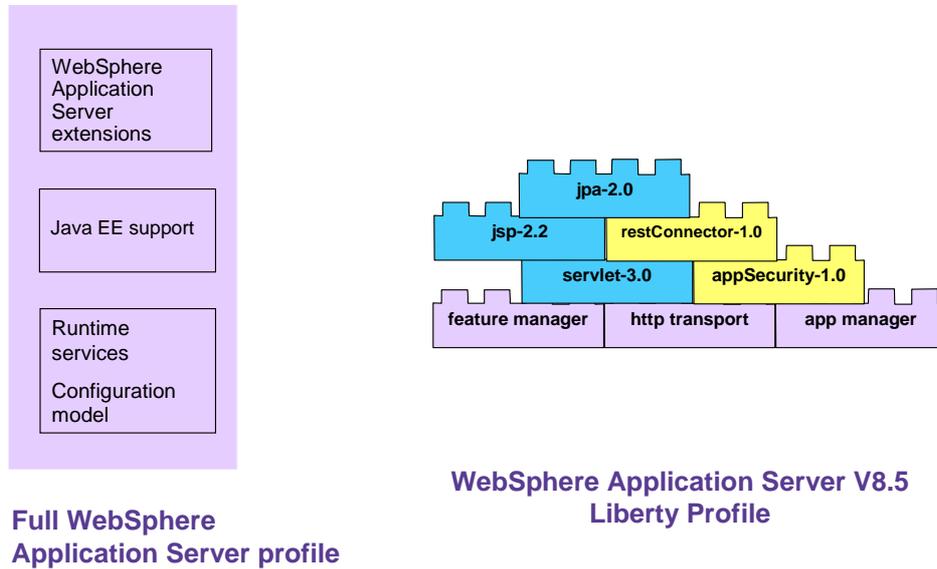
- Simplest case: One XML file for all server configuration
- Editable within the workspace
- Exportable, shareable, versionable

No need for administrative console,
wsadmin, or extended EARs

The WebSphere Application Server Version 8.5 Liberty profile requires only a single configuration file, `server.xml`. This file contains all server settings, for example, logging levels, data source configurations, application definitions, and so on. Note that the Liberty profile uses a configuration-by-exception model. The resulting configuration file is concise and uncluttered, given that it only includes settings that override default values built into each server component.

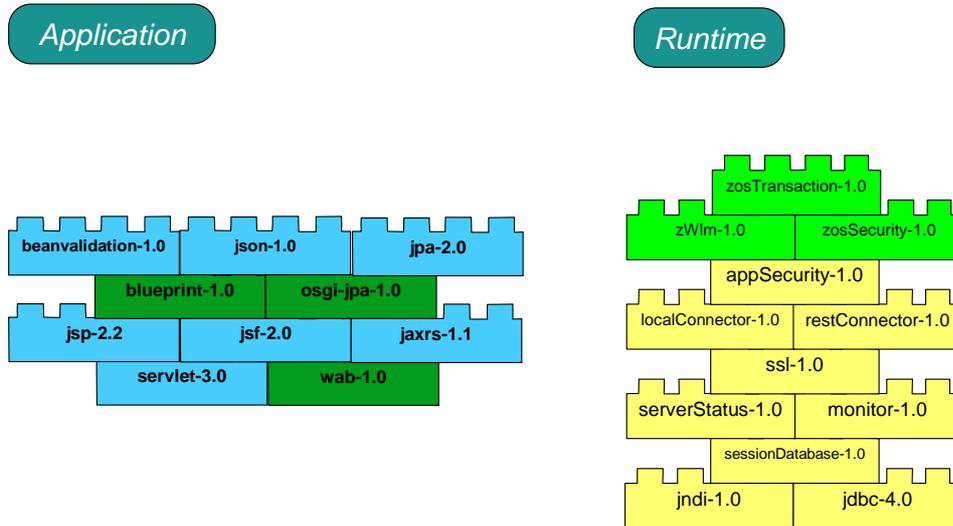
Rational Application Developer and the WebSphere Application Server Liberty Profile Developer Tools for Eclipse include a utility for editing the server configuration. The graphic illustrates the Source view of the utility. The utility also includes a Design view that provides a more graphical approach to editing the server configuration.

Highly composable runtime based on 'features'



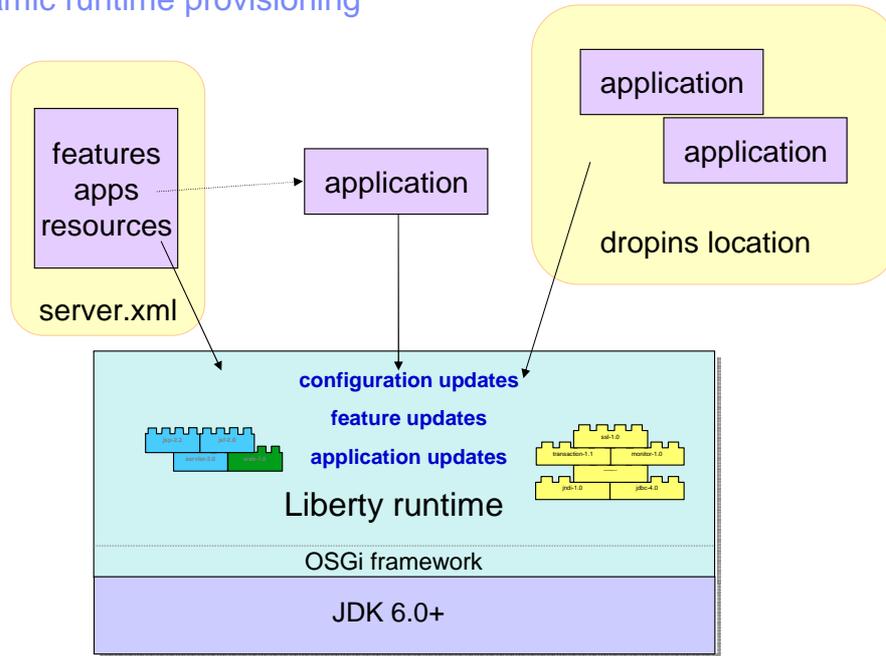
The graphic illustrates the difference between the full profile and the Liberty profile of WebSphere Application Server V8.5. In the WebSphere Application Server Version 8.5 Liberty profile, the product code is placed in a collection of OSGI bundles, or features. Selected features are added to a small kernel on an as-needed basis, which helps to significantly reduce the server memory footprint and startup time.

Dynamic enablement of feature set in application



A Liberty profile server loads only the features required to support the applications that it hosts, even in cases where the server configuration includes additional features that are not currently required by the applications.

Dynamic runtime provisioning



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Overview for developers

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The Liberty profile server process includes a single JVM, the server kernel, and any number of optional server features. The features and most of the kernel run as OSGi bundles within an OSGi framework.

You must update the server configuration to specify the features required by your applications. The feature manager component of the server maps each feature name to a list of OSGi bundles that support the feature. The bundles are installed into the OSGi framework and started.

The feature manager will dynamically add and remove features as the server configuration is changed, provided that the server is set up to monitor the server configuration for changes.

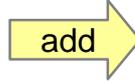
Liberty profile in production environments

- An “Embedded Server” profile is a production instance of the configured Liberty server type
 - Think of zipping up the application, configuration and server type you just tested on
 - Application centric – the server is pre-configured for one or more specific applications
- **Deployment options:**
 - Unmanaged extracted installation
 - Managed Network Deployment job manager creates “Liberty deployments” by distributing and extracting the embedded server package
 - “Light-touch” Network Deployment management: start and stop server
 - Server configuration remains the same - simplified XML configuration created in the development environment

The Liberty profile can also be used in production environments. You can package a Liberty profile installation into one or more compressed (zip) files and then manually deploy the installation to your production hosts. If you have the Network Deployment edition of WebSphere Application Server, you can also use the job manager to efficiently deploy, manage, and maintain the installation on large numbers of production hosts.

Creating the production image

Installation Manager,
Or zip download



Manually, with Eclipse, or with
Rational Application Developer

Manually, with Eclipse, or
with Rational Application
Developer



Repackage everything,
or subset needed by server

WLP = WebSphere
Application Server
Liberty profile



Manually, or
Job Manager

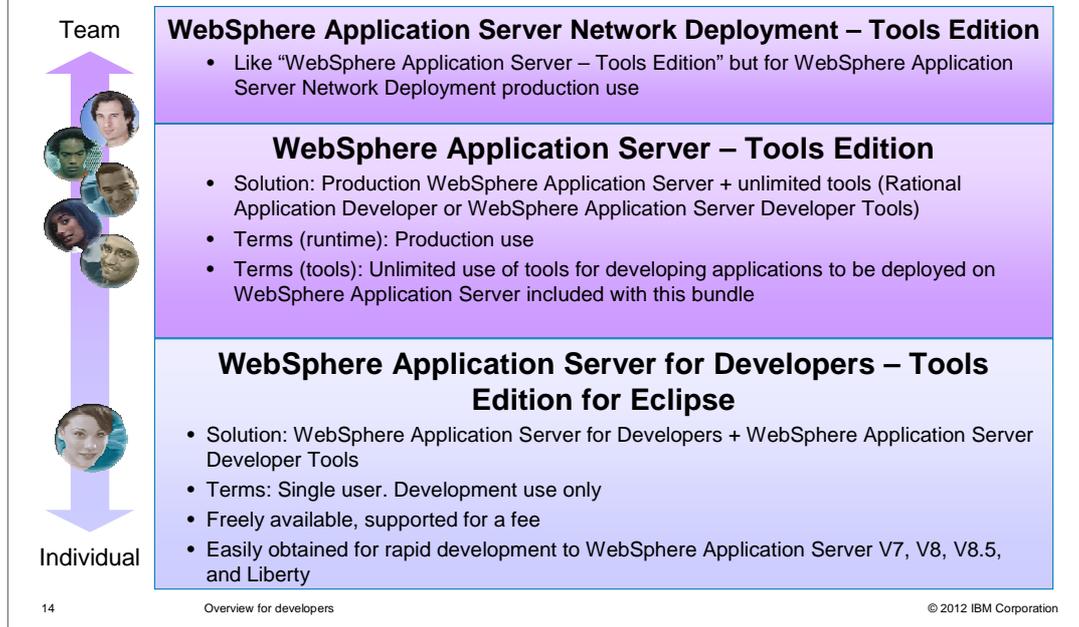


Optionally, you can manage the server life cycle through the WebSphere Application Server Network Deployment job manager. This requires one Network Deployment license. The Job manager acts as a single point of management. No agent is required on the server hosts. The job manager includes these jobs for managing Liberty profile servers: install, start, stop, uninstall, and generate merged web server plug-in configuration.

Elastic caching with the Liberty profile

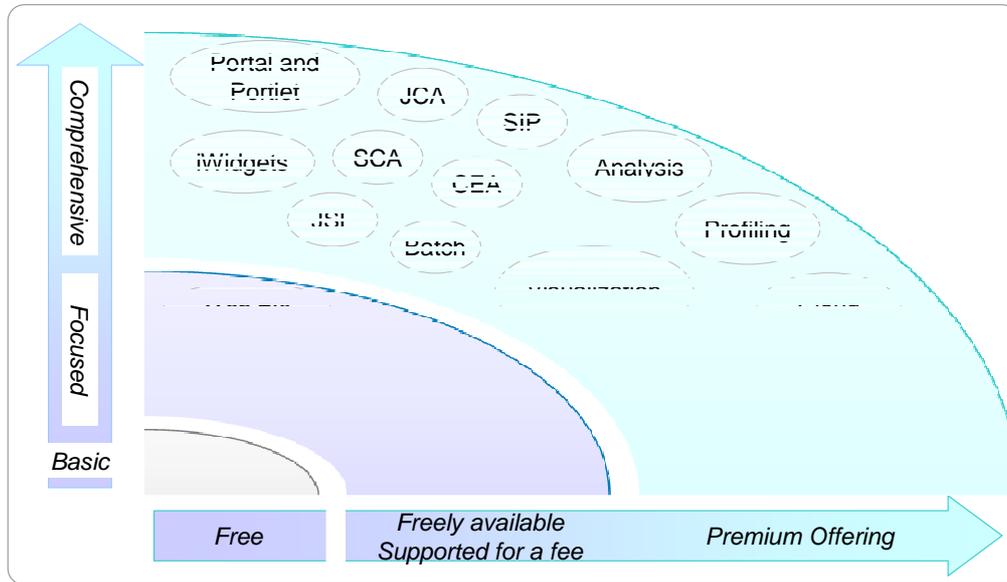
You can use WebSphere eXtreme Scale and WebSphere DataPower XC10 with the Liberty profile. You can also run eXtreme scale servers on the Liberty profile. Finally, additional development tools make it easy to develop and configure eXtreme Scale applications in Eclipse.

Introducing the WebSphere Application Server Tools Edition bundles



WebSphere Application Server for Developers – Tools Edition for Eclipse is a free offering that makes it easy to build and deploy applications from the Eclipse environment to your WebSphere Application Server V8.5 installation. In addition to this free edition, there are two commercial editions, WebSphere Application Server - Tools Edition and WebSphere Application Server Network Deployment – Tools Edition.

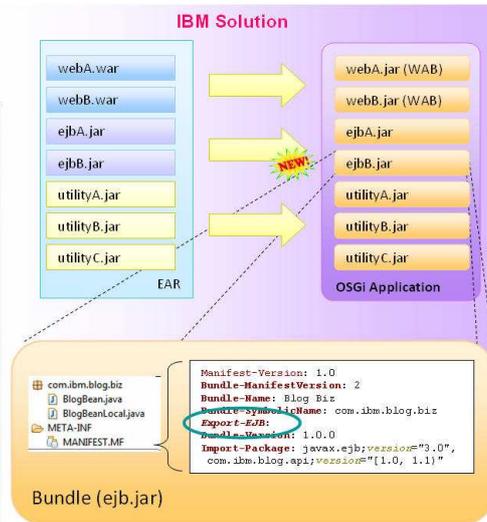
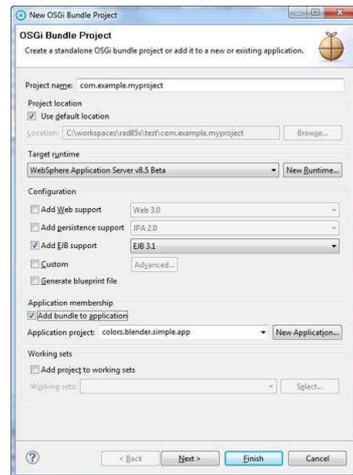
Rational Application Developer and the new developer tools



The graphic shows the features and level of support included with each server and developer tools package.

OSGi applications – New in V85

Support added for EJB Bundles, including metadata-driven publication of OSGi Services

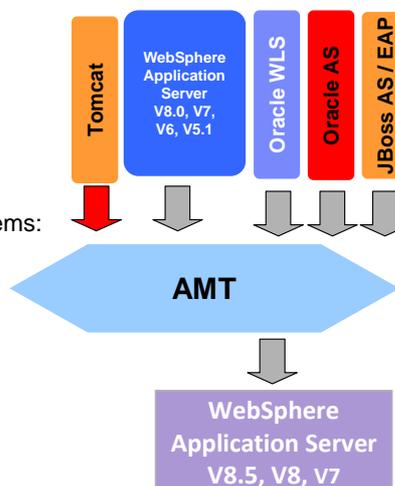


The OSGi programming model existed in WebSphere Application Server V8. The WebSphere Application Server V8.5 full profile adds support for Enterprise Java Beans (EJB's) in OSGi applications. You can now create EJB modules as OSGi bundles and add enterprise beans to existing OSGi bundles. Additionally, the developer tools make it easy to add EJB's in OSGi configuration and setup.

Application Migration Tool V3.0

Migrate applications from WebSphere Application Server and other Java EE application servers to WebSphere Application Server faster with minimized risk

- Migrate applications from older versions to WebSphere Application Server V8.5, V8, V7
- Migrate from Oracle, Tomcat, JBoss faster and easier
 - Migrate applications up to 2x as fast
 - Migrate web services up to 3x as fast
- Application Migration Tool
 - Analyzes source code to find potential migration problems:
 - Removed and deprecated features
 - Behavior changes
 - JRE 5 and JRE 6 differences
 - Java EE specification changes or enforcements
 - Capable of making some application changes
 - Provides guidance on how to make required changes
 - Works with Eclipse or Rational Application Developer



Get the tool at no charge: <http://ibm.co/hqfkdj>

The WebSphere Version-to-Version application migration tool now allows you to migrate applications to WebSphere Application Server V8.5 (in addition to V7 and V8). The tool also provides simplified and dynamic rule set selection, expanded Java SE migration support, Java 7 migration support, and Oracle/Sun Java to IBM Java migration support. Finally, you can now download and install the tool through the Eclipse Marketplace.

The new Apache Tomcat to WebSphere application migration tool allows you to easily migrate applications from Apache Tomcat to WebSphere Application Server, including the V8.5 Liberty profile. The JBoss AS to WebSphere, Oracle AS to WebSphere, and WebLogic to WebSphere tools also enable you to migrate applications to the Liberty profile and the full profile of WebSphere Application Server V8.5. In addition, these tools now detect the use of Spring, Hibernate, and SEAM open source frameworks and provide additional support for using Spring on WebSphere Application Server. Finally, the WebLogic to WebSphere tool includes an expanded set of application migration rules.



Mobile application development

Worklight takes WebSphere Application Server mobile web applications to the next level

WebSphere Application Server	WebSphere Application Server + Web 2.0 and Mobile Toolkit	Worklight
<p>Enterprise Web Applications</p> <ul style="list-style-type: none"> • Java EE programming • Build, deploy and manage Enterprise applications and services • Server-side and Client-side development 	<p>Mobile web application development based on standard web technologies:</p> <ul style="list-style-type: none"> • Run application in mobile browser • Based on HTML5, CSS3, JavaScript • Advanced mobile UI components <p>Feature Pack for WebSphere Application Server V6.1/7/8 Toolkit in WebSphere Application Server V8.5</p>	<p>Application delivery in a variety of forms:</p> <ul style="list-style-type: none"> • Hybrid application • Native • Install through App Store • Access to native services
Desktop web applications	Mobile web applications	Mobile applications

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WebSphere Application Server V8.5 includes the components of the web 2.0 and Mobile Feature Pack, a separately installable add-on for earlier releases of WebSphere Application Server. You can use these components to quickly build and deploy reliable mobile web applications using standard web technologies such as HTML 5, CSS3, and JavaScript. The resulting applications can be run on a variety of mobile platforms using each device's web browser. Supported platforms include iOS, Android, and Blackberry. User experience is close to each mobile operating system, and typical touch interactions are supported.

With the IBM Worklight offering, you can deploy applications in hybrid or native form. Additional capabilities include accessing local device resources such as cameras, microphones, GPS services, and sensors.

WebSphere Application Server V85 pluggable JDK support

Allow development and production environments to select the most appropriate version of Java for the situation (JDK 6 or 7)

- WebSphere Application Server V8.5 introduces “selectable” development kits:
 - Some of the environment can use Java 7 while the rest continues to use Java 6
 - Use Java 7 in a small subset of your topology and keep the rest on Java 6
 - Switch back and forth between Java 7 and Java 6 as necessary
- Install as feature extension to new or existing V8.5 installation
 - Use with either full WebSphere Application Server profile or Liberty profile
- Create administrative profiles for developer use
 - Use ManageSdk to set WebSphere Application Server new profile and command defaults to Java 7
 - Create administrative profile and start server
- Build and test Java 7 applications
 - Use ANT or Maven to build Java 7 applications
 - See PlantsByWebSphere sample documentation for information
 - Use Rational Application Developer to develop, test, and deploy Java 7 applications

In WebSphere Application Server V8.5, you can elect to use the Java 6 SDK or the Java 7 SDK. The Java 6 SDK is included in the standard installation and is enabled by default. To use the Java 7 SDK, first use IBM Installation Manager to add WebSphere SDK Java Technology Edition V7 to the application server installation. Then use the `managesdk` shell command to display and set the Java SDK used by profiles, nodes, servers, and script commands in the product bin directory that do not target a specified profile or a default profile. You can also use the AdminSDKCmds `wsadmin` command group to manage SDK assignments at the node and server level.

Note that you can use the Java 6 SDK and the Java 7 SDK within the same topology. In addition, the Java 6 SDK and the Java 7 SDK can be used with the full WebSphere Application Server profile and the Liberty profile.

WebSphere Application Server V8.5 – Get started today !

Developer experience	Application resiliency	Operations and control
 <ul style="list-style-type: none"> ▪ Liberty profile ▪ Expanded tools and WebSphere Application Server tool bundles ▪ OSGi programming model enhancements ▪ EJB support in OSGi apps ▪ JDK7 Support ▪ Migration toolkit ▪ Web 2.0 and Mobile Toolkit ▪ IBM Worklight Integration ▪ SCA OASIS programming model 	 <p>Intelligent management and enhanced resiliency</p> <ul style="list-style-type: none"> ▪ Application Edition Management ▪ Application Server Health Management ▪ Dynamic Clustering ▪ New Intelligent Routing capabilities ▪ Messaging infrastructure resiliency ▪ Memory leak detection and protection in WebSphere Application Server 	 <p>Improved operations, security, control, and integration</p> <ul style="list-style-type: none"> ▪ Selectable JDK ▪ WebSphere Batch enhancements ▪ Administrative Security Audit ▪ OSGi Blueprint security improvements ▪ Cross Component Trace (XCT) ▪ Enhanced IBM Support Assistant ▪ Better log and trace filtering
<p>Liberty profile download from ZIP from http://wasdev.net</p> <p>20 Overview for developers © 2012 IBM Corporation</p>		

In summary, WebSphere Application Server V8.5 provides significant improvements in the areas of developer experience and administrative productivity.

The new Liberty profile provides a highly composable, quick-starting, and ultra lightweight application server that is optimized for developer productivity and web application deployment.

The full profile of WebSphere Application Server adds support for Enterprise Java Beans (EJB's) in OSGi applications.

Version 3.0 of the WebSphere Application Migration Tools allows you to more easily migrate applications from previous versions of WebSphere Application Server and non-IBM application servers such as Apache Tomcat, Oracle AS, Oracle WebLogic Server, and JBoss AS.

In WebSphere Application Server V8.5, you can elect to use the Java 6 SDK or the Java 7 SDK, or a combination of the two.

For more information about application server resiliency and improvements in operations and control, see the overview presentations for those topics.



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