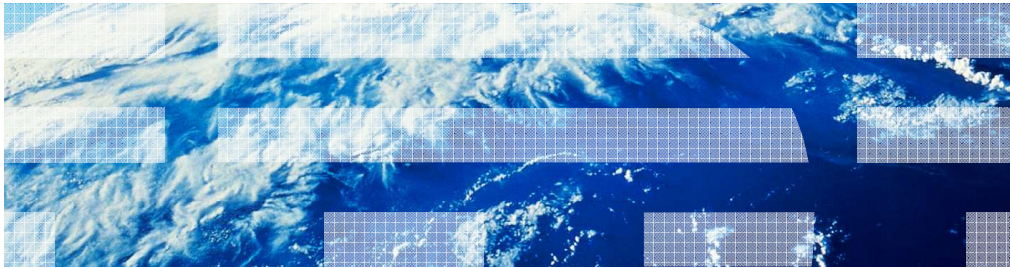

IBM WebSphere Application Server V8.5

Operations overview



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WebSphere Application Server V8.5 includes new features that improve operations, security, control, problem determination, and integration. Highlights include the new Liberty profile that provides a small installation footprint, rapid server start-up, and a simplified and shareable server configuration. In addition, you can now configure application servers to use either Java 6 or Java 7. Finally, intelligent management functions make the application server even more resilient.



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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Operations overview

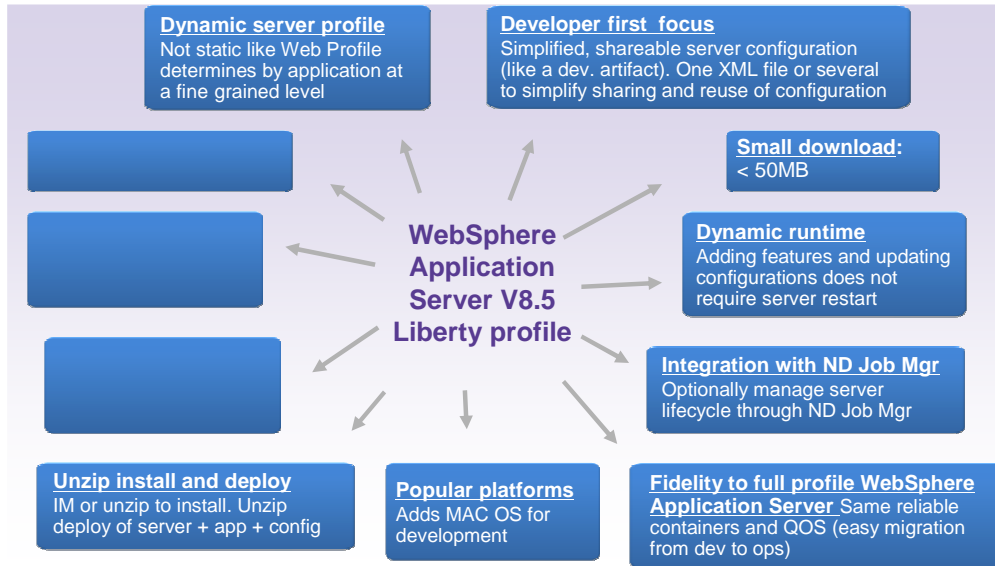
■ Built on a common code base

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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



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Operations overview

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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.

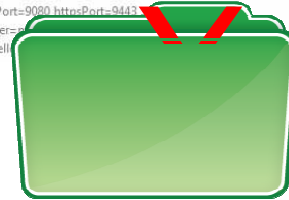
Note that in this release, the Liberty profile supports the web applications, OSGi applications, and Java Persistence API (JPA) portions of the full WebSphere Application Server programming model. For more information, see the WebSphere Application Server V8.5 information center.

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

Simplified server configuration

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

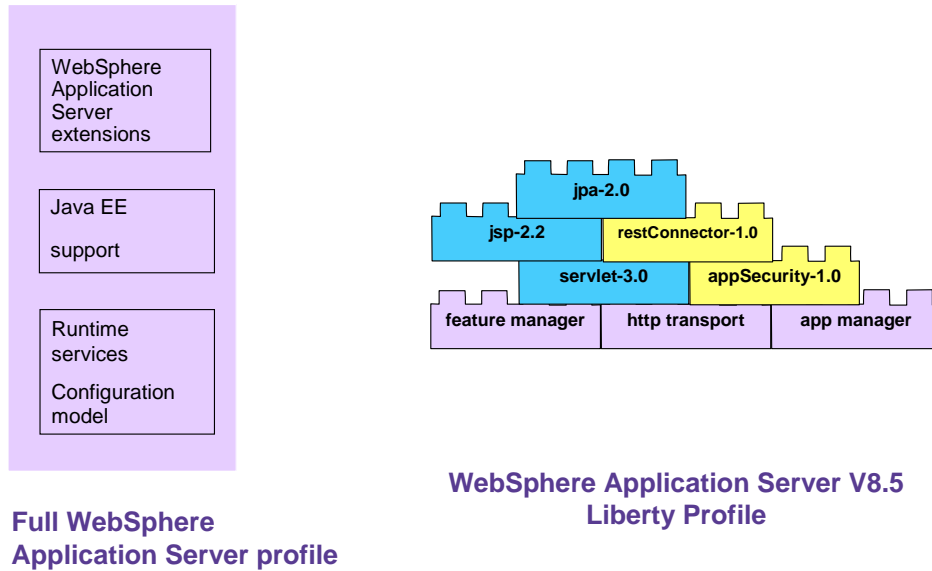
No need for administrative console,
wsadmin, or extended EARs



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'



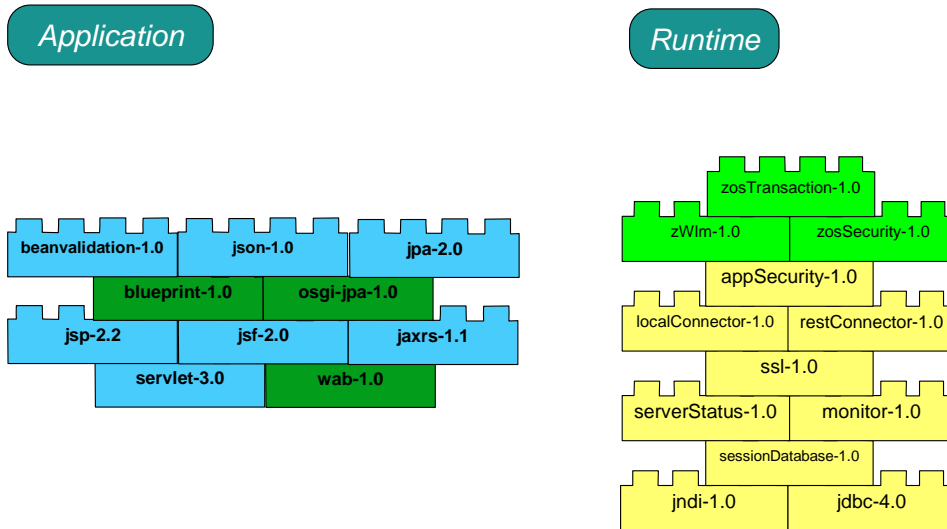
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Operations overview

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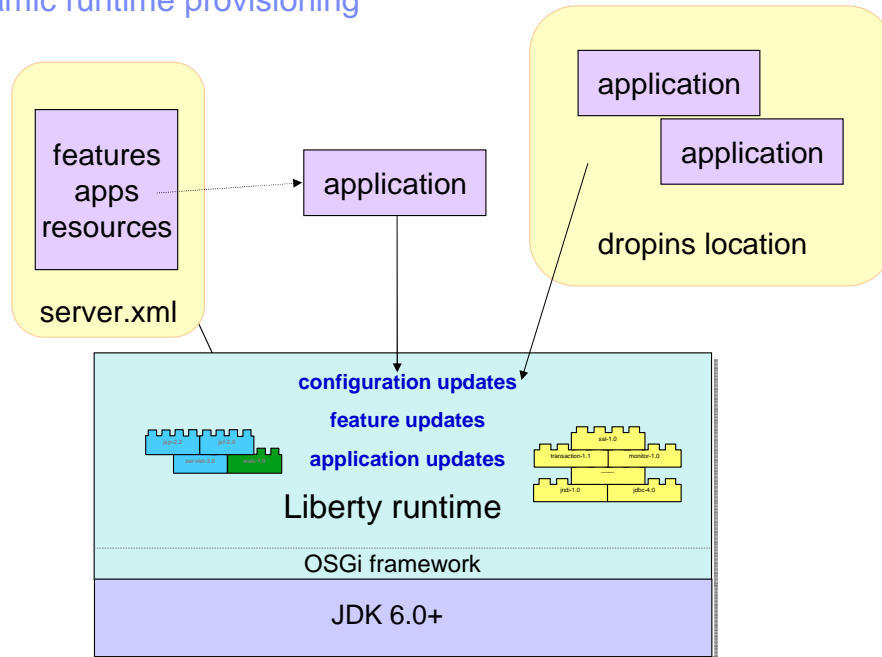
The graphic illustrates the difference between the full profile and the Liberty profile of WebSphere Application Server V8.5. In the WebSphere Application Server Version 8.5 Liberty profile, the product code is placed in a collection of OSGI bundles, or features. Selected features are added to a small 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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Operations overview

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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 archive extract 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

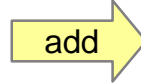
The Liberty profile can also be used in production environments. You can package a Liberty profile installation into one or more compressed (zip) files and then manually deploy the installation to your production hosts. If you have the Network Deployment edition of WebSphere Application Server, you can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

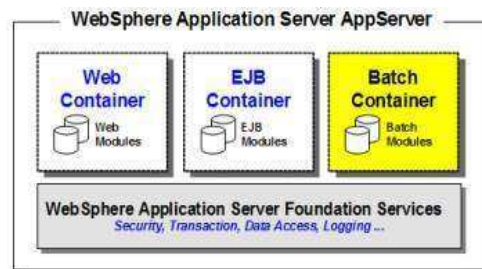


Optionally, you can manage the server life cycle through the WebSphere Application Server Network Deployment job manager. This requires one Network Deployment license. The Job manager acts as a single point of management. No agent is required on the server hosts. The job manager includes these jobs for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

WebSphere batch

Quickly develop and deploy batch applications and dramatically reduce infrastructure and operational costs

- **Lower TCO:** Concurrent execution of batch and online transaction processing (OLTP) workloads using shared business logic on a shared infrastructure; Higher throughput and lower resource consumption on z/OS when collocated with data subsystems
- **Enhanced Developer Productivity:** Pre-integrated application framework, Java batch programming model and tools
- **Automation and administration :** Container managed services for checkpoint and restart capabilities. Integrated administration of OLTP applications and batch jobs
- **Packaging utility:** Utility to package batch application that can be deployed using Java EE runtime



“Batch” is asynchronous bulk processing that dramatically increases workload efficiency. WebSphere Application Server V8.5 adds powerful new efficiency and operational features that satisfy developer and administrator requirements for Java batch applications. You can concurrently run batch and online transaction processing (OLTP) workloads using shared business logic on a shared infrastructure, lowering total cost of ownership. Developer productivity is also enhanced through the use of an integrated application framework, a Java batch programming model, and several tools. In addition, the included batch container provides checkpointing, result processing, and batch data stream management. Finally, a packaging utility enables you to prepare a batch application for deployment.

OSGi Blueprint security enhancements

Ensure the application server environment complies with OSGi security improvements and improve the ability to audit and track changes

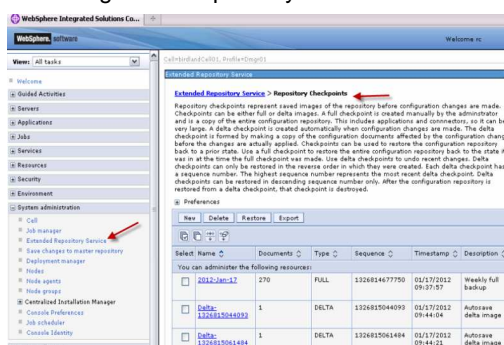
- OSGi Blueprint security improvements:
 - Configure bean security in the Blueprint xml file
 - Configure bean-level security in OSGi apps
 - Configure method level security in OSGi apps

WebSphere Application Server V8.5 includes OSGi Blueprint security enhancements. You can configure bean security in the Blueprint XML file, and in the bean and method level security in OSGi applications.

Repository checkpoint and administrative audit

Simplify restoration of earlier configuration checkpoints and record all configuration updates in the security audit log

- The repository service is consolidated from WebSphere Virtual Enterprise
- Provides “full” and “delta” checkpoints of the master configuration repository
- Simplifies restoration to a previous configuration state
- Full checkpoint created manually
- Delta checkpoints, when enabled, are created automatically in checkpoint repository on every configuration-save
- New Security Audit event – ADMIN_REPOSITORY_SAVED refers to corresponding delta checkpoint records.
 - The delta checkpoint can be exported to review configuration changes when needed



WebSphere Application Server V8.5 provides security auditing of administrative configuration changes. When enabled, this feature saves a security audit log whenever configuration changes are made. This allows auditing of changes, and allows you to rollback any change to a previous checkpoint.

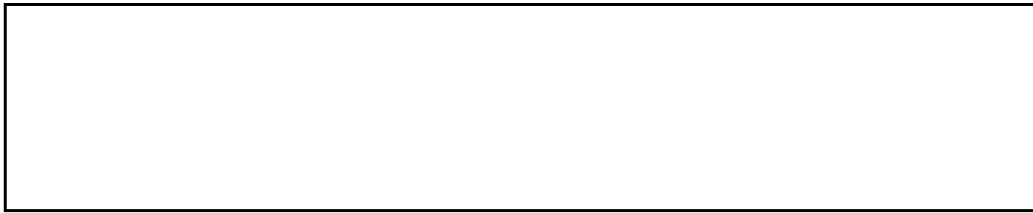
Cross-component trace (XCT) for problem determination

Improve your ability to diagnose and debug software problems in order to minimize and eliminate application downtime

- XCT log viewer - available for the IBM Support Assistant, can render log and trace content from multiple log and trace files grouped by request
 - View that detailed information on HTTP and JMS requests and responses to easily debug complicated application problems.
- High Performance Extensible Logging (HPEL) now has log / trace entry extensions
 - Filter entries by application name, by request ID or by other custom fields




Cross component trace in WebSphere Application Server V8.5 allows correlation of log and trace entries created by multiple threads or processes on behalf of the same request. Cross component trace can augment log or trace entries with a requestID, which you can view and filter using High Performance Extensible Logging, or HPEL. The Cross Component Trace Log Viewer, available for the IBM Support Assistant, can render log and trace content from multiple log and trace files grouped by request. The requestID helps you see the request log or trace entries even when they span multiple threads and processes.

High Performance Extensible Logging log and trace entry extensions



You now have the ability to extend HPEL traces with name/value pairs to add custom filtering and viewing options. The chart shows an example where an “AppName” and “ACMESHovels” name/value pair was added to the logs. The name/value pair can then be included in a custom filter so that log viewer displays only messages related to the application “ACMESHovels”.

WebSphere Application Server V8.5 operations summary

| 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 tools zip from http://wasdev.net</p> | | |
| 16 | Operations overview | © 2012 IBM Corporation |

In summary, WebSphere Application Server V8.5 provides improvements in administrative productivity and in operations and control.

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.

Enterprise Batch Workload support uses your existing Java online transaction processing (OLTP) infrastructure to support new Java batch workloads. Java batch applications can run across multiple Java Enterprise Edition (Java EE) environments.

Security enhancements enable you to:

- Configure bean security in the Blueprint XML file, and in the bean and method level security in OSGi applications.

- Closely audit and track WebSphere Application Server configuration changes.

Finally, logging enhancements allow you to:

- Use the Cross Component Trace feature to correlate log and trace entries created by multiple threads or processes on behalf of the same request.

- Extend HPEL traces with name/value pairs to enable more precise, customized filtering and viewing of log files.

For more information about the improvements in developer experience and application resiliency, see the overview presentations for those topics.

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