

# Frequently Asked Questions on WebSphere Application Server z/OS



## Note

For any adhoc questions which you may come across with the prospects and do not find in this FAQ, please send a note to [lsfrazie@us.ibm.com](mailto:lsfrazie@us.ibm.com) to get it included.

## Questions included in this FAQ:

### Basics about WebSphere Application Server z/OS:

- What is “WebSphere Application Server z/OS?”
- How does Liberty relate to WebSphere Application Server?
- What Liberty “features” does Liberty z/OS include?

### Basics about Liberty z/OS:

- Is Liberty z/OS good for development environments?
- Can developers use Liberty on their workstation operation system and deploy the application on Liberty z/OS?
- Is Liberty z/OS ready for production workloads?
- What is the “Angel Process” that is mentioned with Liberty z/OS?
- Does Liberty z/OS support offload to the zIIP specialty engines?
- Can Liberty z/OS take advantage of the IBM Z crypto hardware facility for encryption?
- Does Liberty run inside a CICS region as well?
- Does Liberty z/OS include the implementation of the JSR-352 standard for Java Batch processing?

### Questions on Liberty and WAS traditional on z/OS:

- Is Liberty z/OS good for development environments?
- Can my WAS traditional application port over to Liberty?
- What z/OS functions can Liberty z/OS take advantage of?

### For current WAS customers:

- Is Liberty z/OS included in my current WAS z/OS license?

## Q What is “WebSphere Application Server z/OS”?

A WebSphere Application Server is IBM’s solution for application hosting of Java applications. IBM offers WebSphere Application Server on a range of supported platforms, including AIX, HP-UX, Linux, Solaris, Windows, and z/OS.

On z/OS, WebSphere Application Server is designed to provide the same application programming interfaces as the other operating system platforms. That provides application portability across platforms and give you the ability to design your application architecture according to “best fit” principles. Further, WebSphere Application Server z/OS has the ability to take advantage of key z/OS functions such as SAF for security, WLM for workload management, SMF for activity recording, and cross-memory

## Q How does Liberty relate to WebSphere Application Server?

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A The phrase “WebSphere Application Server,” or “WAS” for short, refers to two separate application server models offered by IBM. The first is “WAS traditional,” which is the original WebSphere Application Server design that’s been available for a decade or more. WAS traditional is a Java Enterprise Edition (Java EE) server runtime that has a long, proven record of usage in development, test, and production environments.

The second is “Liberty,” which was first introduced about five years ago and is growing steadily in popularity. Liberty was designed to be lightweight and dynamic. It is lightweight because it is designed to be “composable,” which means you may configure it to load and run only those components your application requires. It is dynamic because it is based on the OSGi programming model, which allows configuration changes and application changes to be incorporated without a server restart. Liberty is now Java EE 7 compliant, just as WAS traditional is Java EE 7 compliant.

Liberty is available on z/OS as well as the distributed operating system platforms. On z/OS Liberty is started as a Started Task (STC) and can be managed like any other started task. It can take advantage of z/OS SAF for security, WLM for workload management, SMF for activity recording, and cross-memory communications in a way very similar to how WAS traditional provides those functions. From a programming perspective, Liberty z/OS is identical to Liberty on the other platforms. There is nothing different from a development design, application packaging, or application deployment perspective.

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## Q What Liberty “features” does Liberty z/OS include?

A All Liberty features are available with Liberty z/OS. On the distributed platform there are different acquisition levels of Liberty that limit certain features, but Liberty z/OS does not limit features; it includes all available features.

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**Q** Is Liberty z/OS good for development environments?

**A** Liberty is an outstanding choice for development environments on z/OS. It is very easy to create servers for developers to use, and when the developers are finished with their development the servers can be easily removed. In fact, it is possible to create a “Liberty z/OS cloud” environment using z/OSMF workflows that automate the provisioning and de-provisioning of Liberty z/OS servers. Liberty z/OS has a relatively small memory footprint, so your developers can stand up many Liberty z/OS servers without consuming excess real storage in the process. Further, with secure FTP and SSH access, your developers can deploy applications, debug applications, and operate their server all from their familiar UNIX shell environment, without having to even know they’re on a z/OS mainframe. There’s also support in WebSphere Developer Tools (WDT), our eclipse based IDE that comes with Liberty, to remotely start/stop/deploy/step applications that are running in a Liberty server on z/OS right from your laptop!

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**Q** Can developers use Liberty on their workstation operation system and deploy the application on Liberty z/OS?

**A** Yes, in fact that is a very common practice. The application programming interfaces for Liberty is common and consistent across all supported operating system platforms. This assumes the Liberty servers on the distributed platform and z/OS are at the same version and release level. It also assumes the servers on the distributed platform and z/OS are configured with the same “features,” which is what provides the loading of the desired programming functions and interfaces.

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**Q** Is Liberty z/OS ready for production workloads?

**A** Yes. Liberty is fully Java EE 7 compliant, and as such has the same programming interface support as WAS traditional. This includes Liberty z/OS.

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**Q** What is the “Angel Process” that is mentioned with Liberty z/OS?

**A** The “Angel Process” is a started task that provides a means of securing access to z/OS authorized services for a running instance of Liberty z/OS. Examples of z/OS authorized services include cross-memory functions including WOLA, RRS for transaction coordination, SAF security calls for application role enforcement, and access to WLM for transaction classification. Those functions should only be available to Liberty z/OS servers you specifically authorize to use those functions. The Angel Process plays an important role in this authorized access control mechanism.

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**Q** Does Liberty z/OS support offload to the zIIP specialty engines?

**A** Yes. Java work in general is eligible for offload to zIIP specialty engines, and work running in Liberty z/OS is no exception. Further, in controlled benchmark testing IBM found Liberty z/OS averaged 80% offload. Your results may vary based on what the applications are doing. In general, Liberty z/OS will see a better offload rate.

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**Q** Can Liberty z/OS take advantage of the IBM Z crypto hardware facility for encryption?

**A** Yes.

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**Q** Does Liberty run inside a CICS region as well?

**A** Yes. That is another operational model for Liberty on z/OS. In that case, Liberty is provided with the CICS license and installation, and operates inside the CICS region address space. This is an attractive option when you have a well-developed process for operating CICS regions, and when the Java applications that run in Liberty z/OS are accessing CICS transactions exclusively.

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**Q** Does Liberty z/OS include the implementation of the JSR-352 standard for Java Batch processing?

**A** Yes. Liberty on all supported platforms includes IBM's implementation of the JSR-352 standard specification for Java Batch processing. This includes a number of operational enhancements IBM added to make using JSR-352 easier. If you're interested in IBM Java Batch,

see <http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102544>.

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**Q** Is Liberty z/OS faster than WAS traditional?

**A** In controlled benchmark testing using the DayTrader 3 benchmark application, IBM found Liberty z/OS to be approximately 35% faster than WAS traditional z/OS. This is due to various improvements in the Liberty code to make processing requests more efficient. Your results may vary, depending on many factors.

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**Q** Can my WAS traditional application port over to Liberty?

**A** The answer is a qualified "yes." The qualification has to do with whether your current application running on WAS traditional is making use of any deprecated or removed Java EE function, or if the application is taking advantage of certain WAS traditional application APIs not found in Liberty.

See the "IBM WebSphere Application Server Migration Toolkit" page at <https://www.ibm.com/developerworks/library/mw-1701-was-migration/index.html> for more on analyzing your application to determine what changes, if any, are needed.

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**Q** What z/OS functions can Liberty z/OS take advantage of?

**A** Liberty z/OS can take advantage of the following on z/OS:

- **Security Access Facility (SAF)**  
For accessing a security product such as IBM RACF or a comparable vendor product.
- **IBM Workload Manager (WLM)**  
For classifying work into WLM service and reporting classes
- **Resource Recovery Services (RRS)**  
For transaction management coordination across resource managers such as IBM CICS, DB2, or IMS.
- **z/OS cross-memory**  
This includes the WebSphere Optimized Local Adapters (WOLA) function, as well as resource manager cross-memory such as JDBC Type 2 and MQ BINDINGS mode.
- **MODIFY**  
Liberty z/OS has a MODIFY interface for initiating server DUMPs

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**Q** Is Liberty z/OS included in my current WAS z/OS license?

**A** If you have a valid license for WebSphere Application Server z/OS Version 8.5 or above, you are entitled to Liberty z/OS as well.

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#### Important Resources :

- [IBM z/OS Product Page link](#)
- [WebSphere Application Server Marketplace link](#)
- [WebSphere Application Server on z/OS Infographic link <link to come>](#)