WebSphere Application Server V9 Administration

WA590 (Classroom)

ZA590 (Self-paced)

Course description

This course teaches you the skills that are needed to administer IBM WebSphere Application Server V9.

This release of IBM WebSphere Application Server provides enhanced support for standards (notably Java 7 EE), emerging technology, and a choice of development frameworks.

In this course, you learn how to configure and maintain IBM WebSphere Application Server V9 in a single-server environment. You learn how to deploy enterprise Java applications in a single computer configuration. In addition, you learn how to work with features of WebSphere Application Server V9, such as the wsadmin scripting interface, security, and performance monitoring.

Hands-on exercises throughout the course give you practical experience with the skills you develop in the lectures.

For information about other related courses, see the IBM Training website:

http://www.ibm.com/training

General information

Delivery method

Classroom or self-paced virtual classroom (SPVC)

Course level

ERC 1.0

Product and version

WebSphere Application Server version 9.0

Audience

This course is designed for administrators who configure and manage web-based applications on WebSphere Application Server. Web administrators, application developers and deployers, security specialists, and application architects can also benefit from this course.

Learning objectives

After completing this course, you should be able to:

* Relate WebSphere Application Server to the WebSphere family of products
* Describe the features and standards in WebSphere Application Server V9
* Describe the use of WebSphere Application Server in cloud, hybrid cloud, and on-premises environments
* Describe the architectural concepts that are related to WebSphere Application Server
* Assemble and install server-side Java enterprise applications
* Use WebSphere administrative tools to configure and manage enterprise applications
* Use wsadmin scripting
* Configure WebSphere Application Server security
* View performance information about server and application components
* Troubleshoot problems by using problem determination tools and log files

Prerequisites

* Basic operational skills for the Linux operating system
* Administrative skills for a web server, such as IBM HTTP Server or Apache
* Basic understanding of cloud concepts, private, public, and hybrid clouds, and traditional on-premises environments

Duration

2.5 days

Skill level

Intermediate

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| Classroom (ILT) setup requirements |
| Processor | Intel Pentium 2.6 GHz or faster |
| GB RAM | 8 |
| GB free disk space | 80 |
| Network requirements | LAN / Internet / Fixed IP |
| Other requirements | None |

Notes

The following unit and exercise durations are estimates, and might not reflect every class experience. If the course is customized or abbreviated, the duration of unchanged units will probably increase.

This course is an update of portions of the following previous courses:

* WA855: *WebSphere Application Server V8.5.5 Administration*

Course agenda

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| Course introductionDuration: 15 minutes |

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| Unit 1. WebSphere product family overviewDuration: 1 hour |
| Overview | This unit describes the products in the WebSphere product family and their relationship to WebSphere Application Server V9. |
| Learning objectives | After completing this unit, you should be able to:* Describe the WebSphere family of products
* Describe the relationships between various products in the WebSphere family
* Describe the WebSphere Application Server V9 offerings
* Describe how WebSphere Application Server is used in cloud, on-premises, and hybrid cloud environments
* Describe the standards that are supported in this release
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| Unit 2. WebSphere Application Server architecture - stand-aloneDuration: 1 hour |
| Overview | This unit provides an architectural overview of WebSphere Application Server V9 at run time. |
| Learning objectives | After completing this unit, you should be able to:* Describe a typical e-business application architecture
* Describe the architectural differences between WebSphere Application Server packages
* Describe what is running in a WebSphere Application Server node
* Describe the architectural implications of the web server plug-in
* Describe the use of Java Database Connectivity (JDBC) providers and data sources
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| Exercise 1. Profile creationDuration: 45 minutes |
| Overview | In this introductory exercise, you use the Profile Management Tool to create an application server profile. |
| Learning objectives | After completing this exercise, you should be able to:* Use the Profile Management Tool to create a profile
* Verify the profile creation
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| Unit 3. WebSphere Application Server administrative consoleDuration: 30 minutes |
| Overview | This unit describes the features in the administrative console for WebSphere Application Server. |
| Learning objectives | After completing this unit, you should be able to:* Describe how to access the administrative console
* Describe the administrative console in a cell topology
* Describe the administrative console interface
* Describe the use of the following administrative tools:
	+ Help
	+ Preferences
	+ Filters
	+ Guided Activities
	+ Troubleshooting
* Describe user and group administrative roles
* Describe the Tivoli Performance Viewer
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| Exercise 2. Exploring the administrative consoleDuration: 45 minutes |
| Overview | This exercise provides a guided tour of the administrative console interface by examining various resources and configuration information. |
| Learning objectives | After completing this exercise, you should be able to:* Verify that WebSphere Application Server is started
* Start the administrative console
* Explore the navigation and functions of the administrative console
* Use the administrative console to examine configuration information, resources, and properties
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| Unit 4. Introduction to the PlantsByWebSphere applicationDuration: 15 minutes |
| Overview | This unit introduces the PlantsByWebSphere application architecture, and explains how it is used to demonstrate WebSphere Application Server concepts and functions. |
| Learning objectives | After completing this unit, you should be able to:* Describe the architecture and components of the PlantsByWebSphere application
* Explain how the application is used as a case study for WebSphere Application Server
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| Unit 5. Application assemblyDuration: 1 hour |
| Overview | In this unit, you learn how to use the WebSphere Developer Tools for Eclipse to prepare and export an enterprise application for deployment to WebSphere Application Server. |
| Learning objectives | After completing this unit, you should be able to:* Describe the functions of the WebSphere Developer Tools for Eclipse
* Describe the application assembly process
* Describe the use of the WebSphere Developer Tools for Eclipse, including:
	+ Importing and examining application components
	+ Preparing and exporting an enterprise application for deployment on WebSphere Application Server
	+ Explaining how annotations work and describing their benefits for programmers
	+ Showing the metadata that annotations generate
	+ Explaining the relationship between annotations and deployment descriptors
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| Exercise 3. Assembling an application Duration: 45 minutes |
| Overview | In this exercise, you learn how to assemble the Enterprise JavaBeans (EJB) Java archive (JAR) files, the web archive (WAR) files, and auxiliary files into an enterprise archive (EAR) file for deployment to WebSphere Application Server. |
| Learning objectives | After completing this exercise, you should be able to:* Explore the WebSphere Developer Tools for Eclipse
* Import and examine enterprise application components
* Define application-scoped resources: data source and authentication alias
* Export an enhanced EAR file that is ready for deployment
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| Unit 6. Application installation Duration: 45 minutes |
| Overview | In this unit, you learn ways to install and update enterprise applications on WebSphere Application Server. |
| Learning objectives | After completing this unit, you should be able to:* Describe methods of installing enterprise applications in WebSphere Application Server
* Explain how fine grained application updates work
* Describe enterprise application properties
* Enable monitored directories
* Deploy an application by using the monitored directory
* Use a properties file-based configuration with monitored directories to deploy an application
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| Exercise 4. Installing an application Duration: 1 hour |
| Overview | In this exercise, you complete the tasks to install various enterprise applications in WebSphere Application Server by using the administrative console and the monitored directory features. |
| Learning objectives | After completing this exercise, you should be able to:* Use the administrative console to install an application
* Use a web browser to test the application
* Use the drag function to deploy an application
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| Unit 7. Problem determinationDuration: 45 minutes |
| Overview | This unit introduces you to resources and basic methods for problem determination. |
| Learning objectives | After completing this unit, you should be able to:* Describe a basic approach for problem determination
* List resources for completing a problem investigation
* Locate relevant log files
* Examine log activity
* Enable tracing on specific components
* Enable High Performance Extensible Logging (HPEL) and use the Log Viewer
* Describe features of the IBM Support Assistant
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| Exercise 5. Problem determinationDuration: 1 hour and 45 minutes |
| Overview | In this exercise, you configure and view log and trace files by using both the Basic mode of logging and tracing and the High Performance Extensible Logging (HPEL) mode. In addition to log and trace data, you learn how to gather Java virtual machine (JVM)-related dump files. |
| Learning objectives | After completing this exercise, you should be able to:* Use the administrative console to configure and view log data
* Enable a server to use HPEL
* Enable tracing on application server components
* Use the HPEL Log Viewer to examine log and trace data
* Enable verbose garbage collection for an application server
* Enable memory leak detection for an application server
* Describe features of IBM Support Assistant tools
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| Unit 8. Introduction to wsadmin and scripting Duration: 1 hour |
| Overview | This unit introduces you to the capabilities of wsadmin as an administrative tool for WebSphere Application Server. |
| Learning objectives | After completing this unit, you should be able to:* Use wsadmin to enter administrative commands
* Create Jython scripts to run wsadmin commands
* Customize the wsadmin environment with profiles and property files
* Use property file-based configurations to modify an environment
* Configure and use command assist to develop wsadmin scripts
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| Exercise 6. Using wsadminDuration: 1 hour |
| Overview | In this exercise, you learn how to use wsadmin to run administrative commands and scripts. You also learn how to write a simple script in Jython. |
| Learning objectives | After completing this exercise, you should be able to:* Use wsadmin to run administrative commands interactively and with scripts
* Create a simple administrative script
* Use console command assistance
* Use property file-based configuration to modify your settings
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| Unit 9. WebSphere securityDuration: 1 hour and 30 minutes |
| Overview | In this unit, you learn basic security concepts and architecture that apply to WebSphere Application Server. You learn how to configure administrative security and application security. |
| Learning objectives | After completing this unit, you should be able to:* Explain basic security concepts
* Describe WebSphere Application Server security
* Describe enhancements to certificate management
* Configure fine-grained administrative security
* Configure application security
* Describe auditing features and functions
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| Exercise 7. Configuring WebSphere Application Server securityDuration: 30 minutes |
| Overview | In this exercise, you learn how to enable WebSphere Application Server security and configure fine grained administrative access |
| Learning objectives | After completing this exercise, you should be able to:* Enable WebSphere Application Server security
* Configure administrative security by configuring access to administrative functions
* Configure fine-grained administrative security
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| Exercise 8. Configuring application securityDuration: 30 minutes |
| Overview | In this exercise, you learn how to configure access to application resources and administrative functions. |
| Learning objectives | After completing this exercise, you should be able to:* Define Java EE security roles
* Define access for resources in an application
* Enable and verify application security
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| Unit 10. Performance monitoring Duration: 45 minutes |
| Overview | This unit describes performance monitoring methods and tools that are available through the administrative console. |
| Learning objectives | After completing this unit, you should be able to:* Describe performance monitoring and tuning methods
* Use the Tivoli Performance Viewer to monitor application server resources
* Use the performance servlet to generate performance data
* Configure the Request Metrics tool to generate performance data about the end-to-end request flow
* Use Performance Advisors to generate suggested tuning actions
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| Exercise 9. Using the performance monitoring tools Duration: 30 minutes |
| Overview | In this exercise, you use the performance tools that are available in WebSphere Application Server to monitor various application and server resources, and generate performance-tuning advice. |
| Learning objectives | After completing this exercise, you should be able to:* Enable various levels of Performance Monitoring Infrastructure (PMI) statistics for an application server
* Monitor an application server by using Tivoli Performance Viewer
* Configure user settings for Tivoli Performance Viewer
* Examine summary reports and performance modules in Tivoli Performance Viewer
* View performance messages from the Tivoli Performance Viewer Advisor
* Enable and configure the Request Metrics tool
* View Request Metrics messages in the standard logs of an application server
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| Unit 11. Course summaryDuration: 5 minutes |
| Overview | This unit summarizes the course and provides information for future study. |
| Learning objectives | After completing this unit, you should be able to:* Explain how the course met its learning objectives
* Access the IBM Training website
* Identify other IBM Training courses that are related to this topic
* Locate appropriate resources for further study
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For more information

To learn more about this course and other related offerings, and to schedule training, see **ibm.com**/training

To learn more about validating your technical skills with IBM certification, see **ibm.com**/certify