

## **ITSC 2032 WebSphere Application Server Administration**

### **Duration**

36-hours

### **Course Description**

This course will enable students to install, configure, and maintain IBM WebSphere Application Server Network Deployment V6.0, and to deploy enterprise Java applications in a single machine or clustered configuration. The course covers WebSphere Application Server V6.0 for Windows 2000, AIX, Linux, Solaris platforms. Lab exercises are only provided for Windows 2000 though the lecture material does cover differences between Windows and other platforms. Hands-on lab exercises are provided throughout the course.

### **Audience**

This is an intermediate course for webmasters and system administrators, who install, configure, and manage Web-based applications on WAS.

### **Prerequisites**

An understanding of basic Internet concepts, experience using a Web browser and basic operational skills for the Windows 2000 operating system

### **Learning Objectives**

- Relate WAS to the WebSphere family of products
- Describe architectural concepts related to WAS V6
- Install and configure WAS V6 (base and Network Deployment)
- Explain the basic concepts of the Java 2 Platform, Enterprise Edition (J2EE)
- Assemble and install server-side Java enterprise applications
- Use WAS V6 administrative tools to configure and manage enterprise applications
- Configure security for server-side application resources
- Deploy applications in clustered environments
- View performance information about server and application components
- Use problem determination tools and log files to troubleshoot problems

### **Required Materials**

IBM Course Number: SW2466 [supplied]

### **Evaluation**

Students who participate in class discussions, complete course lab work, and miss no more than two class meetings will be awarded 3.6 continuing education units.

### **Course outline**

- WAS runtime architecture

- WAS installation
- WAS administrative console
- J2EE platform technologies
- Application assembly
- Application installation
- wsadmin and command line tools
- WAS security
- Java Messaging Services (JMS) administration
- Tivoli performance viewer
- Troubleshooting
- Network Deployment installation
- Workload management

### **WebSphere family overview**

- discuss the WebSphere product family and the positioning of WAS
- discuss WAS V6 packaging
- discuss WAS V6 features and functions
- discuss WebSphere Studio products

### **WAS architecture basics**

- understand the differences between a base WAS and Network Deployment installation
- understand the architectural differences and similarities between the base WAS and Network Deployment products

### **WAS installation**

- determine desired configuration
- verify hardware requirements
- identify prerequisite software
- discuss pre-installation tasks
- describe the installation process for WAS
- verify the installation of WAS
- describe the directories and configuration files for WAS

### **WAS runtime architecture**

- understand the differences between a base and Network Deployment installation
- understand the role of the administrative console and the wsadmin administrative clients
- understand the managed processes that participate in the administrative domain
- understand the structure of the local node and master configuration repositories
- discuss the issues surrounding file synchronization between the local node and

master configuration repositories

### **WAS administrative console**

- discuss how to access the administrative console
- describe the administrative console interface
- describe the areas of the console
- describe how to set console preferences

### **J2EE platform technologies**

- discuss basic Java terminology
- discuss the importance of the J2EE platform
- discuss the J2EE object model and WebSphere's implementation
- discuss component technologies
- discuss service technologies
- discuss communication technologies

### **WAS components, resources, and services**

- review the architectural components of WAS
- describe Java Connector Architecture (JCA), JDBC providers, data sources, and persistence manager
- describe the role of virtual hosts
- describe WAS's security services implementation
- describe how Java Management Extensions (JMX) supports distributed administration
- describe Web services, Web Services Gateway, and the Universal Description, Discovery and Integration (UDDI) registry

### **J2EE packaging and roles**

- discuss the roles defined by J2EE and the tools associated with those roles
- discuss J2EE security implementation

### **Application assembly**

- discuss the application assembly process
- discuss the use of the Application Assembly Tool
- define an Enterprise JavaBeans (EJB) module
- define a Web module
- define an application client module
- define an enterprise application

### **Naming services**

- describe the naming features of WAS V6
- describe the structure of the name space
- describe the topology of the name servers in a cell
- describe how to create administratively configured bindings and how they are used

### **Application installation**

- discuss methods of installing enterprise applications in WAS V6 using the administrative console and using the command line administration tool, wsadmin
- discuss enterprise application properties

### **Command line management tools**

- understand how wsadmin works
- understand the various options for invoking wsadmin
- understand Java Application Control Language (JACL) scripting and its appropriate use
- understand how wsadmin fits into the Bean Scripting Framework (BSF)
- describe the differences in managing applications, configurations, and running objects
- demonstrate the differences between the AdminConfig, AdminApp, and AdminControl objects
- understand the functionality of the command line tools available with the product

### **Introduction to security**

- discuss what resources should be secured in an enterprise environment
- discuss authentication and authentication mechanisms available from WAS
- discuss authorization
- discuss delegation options
- discuss the role of certificates
- discuss the implications of using Secured Sockets Layer (SSL)
- discuss the concepts of principals and roles

### **WAS security**

- explain the WAS V6 security architecture and components
- describe security standards supported by WAS V6: J2EE 1.3, Java 2 platform security, Java Authentication and Authorization Service (JAAS) security, Common Security Interoperability Version 2 (CSIV2) security
- configure global security
- secure an application
- configure administrative security

## **Introduction to JMS and message-driven beans**

- describe asynchronous messaging
- explain the concept of JMS
- explain the relationship between JMS and message-driven beans

## **JMS administration**

- describe messaging support in WAS V6
- administer and configure JMS resources using the WAS administrative console
- discuss troubleshooting JMS related problems in a WAS environment

## **Network deployment installation**

- describe Network Deployment concepts
- describe the installation process for WAS Network Deployment
- verify the installation of WAS Network Deployment
- describe the directories and configuration files for WAS Network Deployment
- add a WAS node to a cell
- explain the difference between managing a standalone server and a cell

## **Troubleshooting**

- discuss problem determination issues
- identify resources for problem determination: log files, trace output, and messages
- describe tools for troubleshooting: tracing, log analyzer, Java Naming and Directory Interface (JNDI) Namespace Dump Tool, Collector Tool, First Failure Data Capture tool, and Application Server Toolkit

## **Tivoli Performance Viewer**

- describe how performance data is collected in WAS using the Performance Monitoring Infrastructure (PMI)
- describe the features of Tivoli Performance Viewer
- set data collection levels on started and stopped resources
- describe the performance data collected by Tivoli Performance Viewer and the PMI
- use the logging function for viewing and storing data
- be aware of other tools to assist in tuning efforts

(Continued in Remarks.)

## **Certification**

This course is aligned to and helps you prepare for the IBM WAS product specific

certification. For complete details, select the certification for WebSphere products our Web site: <http://ibm.com/certify>

## **Remarks**

### **Workload management**

- define workload management
- create clusters and cluster members
- compare clustered configurations
- explain how weights are used in workload management
- discuss failover scenarios
- describe the role of the HTTP plug-in in workload management
- explain session management
- configure distributed session management

### **Web services administration (optional)**

- explain what Web services are
- describe the roles and functions of Web services
- describe the WAS Web services runtime: base support, Unit Test UDDI Registry (Private UDDI), Web Services Gateway (WSGW)
- explain Web services tooling: what's new with Version 6, Unit Test UDDI Registry support
- discuss Web services problem determination
- discuss Web services security

### **WebSphere Edge components introduction (optional)**

- discuss the WebSphere Edge components
- discuss features of the Load Balancer component
- discuss features of the Caching Proxy component