Oracle WebLogic Server 14c: Administration II

JAVA

DURATION	MODULES	COURSE CODE
5 Days	**2 Lectures**	**—**

Course Overview

This Oracle WebLogic Server 14c: Administration II training is a continuation of Oracle WebLogic Server 14c: Administration I. It teaches you how to perform important administrative tasks, employing best practices that enable you to make the most of your WebLogic applications.

What You Will Learn

Course Introduction

- Course Objectives
- Target Audience
- Course Prerequisites
- Introductions and Setting Expectations
- Course Schedule
- Course Practices
- For More Information
- Related Training

WebLogic Server Review

- Objectives
- Agenda
- Oracle WebLogic Server: Overview
- WebLogic Server Domain
- Administration Server
- Managed Servers
- Machines and Clusters
- WebLogic Server Application Services
- WebLogic Server Application: Example
- Agenda
- Start Scripts

- Node Manager
- WebLogic Tools: Administration Console
- WebLogic Tools: WebLogic Scripting Tool (WLST)
- Deployment
- Summary

Upgrading WebLogic Server

- Objectives
- Agenda
- Definition of Upgrade
- Patch
- Minor Upgrade
- Major Upgrade
- Quiz
- Agenda
- What Is a Rolling Upgrade?
- Multiple Installation and Domain Locations
- Leverage WebLogic Clusters to Avoid Down Time
- Quiz
- Agenda
- Rolling Upgrade Process: Overview
- Backup
- Shutdown
- Upgrade
- Restart
- Quiz
- Summary
- Practice 3-1 Overview: Setting Up the Course Practice Environment
- Practice 3-2 Overview: Performing a Rolling Upgrade

Creating and Using Domain Templates

- Objectives
- Agenda
- Domain Template Review
- Agenda
- Template
- Template Exclusions
- Script Replacement Variables
- Agenda
- Extension Template: Concepts
- Agenda
- Fusion Middleware (FMW) Templates
- Quiz
- Agenda
- Why Use Custom Templates

- Template Builder
- Selecting the Template Domain Source
- Review Configuration and Create Template
- SQL Scripts and LDAP Data
- Creating an Extension Template
- Using a Custom Template with the Configuration Wizard
- Post Domain Creation Tasks
- Using a Custom Extension Template with the Configuration Wizard
- Summary
- Practice 4-1 Overview: Creating and Using a Custom Domain Template

WebLogic Server Startup and Crash Recovery

- Objectives
- Agenda
- Node Manager Architecture
- Node Manager Default Behavior
- Configure Java-Based Node Manager
- Agenda
- Starting the Node Manager at System Startup
- Configuring the Node Manager as a Windows Service
- Configuring the Node Manager on UNIX Systems
- Primer on Linux systemd and systemctl
- Example NodeManager Service Unit File
- Control and Check Service Status
- Configuring NodeManager with systemd
- Configuring the Node Manager as an inetd Service
- Registering and Managing inetd Services
- Configuring the Node Manager as an xinetd Service
- Agenda
- How the Node Manager Restarts an Administration Server
- How the Node Manager Restarts a Managed Server
- RestartInterval and RestartMax
- Crash Recovery
- CrashRecoveryEnabled
- Quiz
- Summary
- Practice 5-1 Overview: WebLogic Server Startup and Crash Recovery
- Solaris-Specific Configuration
- Solaris
- Example SMF Manifest File
- Set Up and Start Node Manager with SMF

WebLogic Scripting Tool (WLST)

- Objectives
- Agenda

- WebLogic Scripting Tool (WLST)
- Agenda
- Jython
- Using Jython
- Variable Declaration
- Conditional Expressions
- Loop Expressions
- I/O Commands
- Exception Handling
- Quiz
- Agenda
- WLST Modes
- WLST Example
- Running WLST Scripts
- WLST Development Tools
- configToScript()
- Script Recording Using the Administration Console
- Oracle Enterprise Pack for Eclipse
- WLST Command Tips
- General WLST Commands
- Offline WLST Commands
- Online WLST Commands
- Quiz
- Agenda
- WebLogic JMX Overview
- Configuration MBeans
- Runtime MBeans
- WebLogic Server MBean Examples
- MBean Properties in the Administration Console
- Browsing MBean Documentation
- Referencing MBeans in WLST
- Quiz
- Agenda
- Creating a Domain Using a Standard Template
- Creating a Domain Using a Custom Template
- Connecting to a Server
- Password Management
- WLST Variables
- Password Management
- Configuring a Server
- Monitoring a Server
- Adding a Server to a Cluster
- Creating a Data Source
- Monitoring a Data Source
- Creating an LDAP Authentication Provider
- Modifying a Domain Offline

- Deploying an Application
- Creating a Dynamic Cluster
- Scaling Up a Dynamic Cluster
- Dynamic Cluster Scaling
- Scaling Down a Dynamic Cluster
- Script Interceptors
- Quiz
- Agenda
- Some FMW Commands
- Summary
- Practice 6-1 Overview: Creating and Modifying a Domain with WLST
- Practice 6-2 Overview: Monitoring a Domain with WLST

RESTFul Management Services

- Objectives
- Agenda
- What Is REST?
- WebLogic Server and REST
- What Can Be Monitored Using WebLogic REST?
- Clients and WebLogic REST
- Enabling REST Management
- Supported Representations
- REST Resource Access Roles
- Agenda
- WebLogic RESTFul Interfaces
- REST Operations Flow
- Example: Returning Server Information Using cURL
- Typical REST Operations
- Common WebLogic REST Results
- WebLogic REST Error Handling
- Understanding WebLogic REST Requests
- WebLogic REST MBean Hierarchy
- WebLogic Legacy REST Resources
- WebLogic REST Response Bodies
- Example: Listing Server Information by Name
- Invoking Operations
- Create Forms
- Creating Resources
- Agenda
- Common Workflows
- Summary
- Quiz
- Practice 7-1 Overview: Creating and Managing Servers Using REST

Secure Sockets Layer (SSL)

- Objectives
- Agenda
- What Is SSL?
- SSL Terminology
- Symmetric Encryption and Decryption
- Asymmetric Encryption and Decryption
- Digital Certificates
- Digital Certificate: Example
- Certificate Authorities
- SSL Communication
- One-Way SSL Handshake
- Two-Way SSL Handshake
- Quiz
- Agenda
- WebLogic and SSL
- Demo Certificates
- WebLogic SSL Requirements
- WebLogic SSL Connections
- Agenda
- What Is a Keystore?
- keytool Utility
- Working with a Keystore
- Configuring WebLogic Keystores
- Quiz
- Agenda
- Configuring SSL for WebLogic
- SSL and WebLogic Proxy Plug-Ins
- SSL and Hardware Load Balancers
- SSL and Oracle HTTP Server
- Quiz
- Summary
- Practice 8-1 Overview: Setting Up SSL

Application Work Managers

- Objectives
- Agenda
- WebLogic Server Threads
- Monitoring a Server Thread Pool
- Monitoring Server Threads
- Stuck Thread Handling
- Configuring Stuck Thread Handling
- Application Stuck Thread Handling
- Quiz

- Agenda
- Work Managers
- Work Manager Scope
- Work Manager Architecture
- Quiz
- Agenda
- Request Classes
- Creating a Work Manager
- Creating a Request Class
- Constraints and Stuck Threads
- Creating a Constraint
- Work Manager WLST Example
- Work Managers and Stuck Threads
- Assigning Work Managers to Applications
- Quiz
- Summary
- Practice 9-1 Overview: Creating and Using Work Managers

Working with the Security Realm

- Objectives
- Agenda
- Security Realm: Review
- Default Security Configuration
- Agenda
- How WebLogic Resources Are Protected
- Examples of WebLogic Resources to Protect
- Users and Groups
- Group Membership
- Roles
- Policies
- Configuring New Users
- Configuring New Groups
- Configuring Group Memberships
- Configuring New Roles
- What Is Role Mapping?
- Configuring Role Mapping
- Configuring Roles Using WLST
- Configuring New Policies
- Configuring Policies Using WLST
- Security Configuration Sources
- Configuring Sources Using WLST and weblogic.Deployer
- Deployment Descriptor Security Example: weblogic.xml
- Deployment Descriptor Security Example: web.xml
- Embedded LDAP Server
- Configuring the Embedded LDAP Server

- Quiz
- Practice 10-1 Overview: Creating Users, Groups, Roles, and Policies
- Agenda
- Auditing
- Sample Auditing Output
- Security Audit Events
- WebLogic Auditing Architecture
- Custom Versus Default Auditing Provider
- Creating the Default Auditing Provider
- Configuring the Default Auditing Provider
- Configuration Auditing
- Quiz
- Summary
- Practice 10-2 Overview: Configuring WebLogic Auditing

Disaster Recovery and Migration

- Objectives
- Agenda
- Disaster Recovery Concepts
- Site Symmetry
- Recommended Architecture
- General Best Practices
- Hosts File: Example
- Quiz
- Agenda
- Administration Server Review
- Impact of Administration Server Failure
- Backing Up a Domain Configuration
- Recovery of the Administration Server Configuration
- Restarting an Administration Server on a New Computer
- Quiz
- Agenda
- Java Transaction API (JTA) Review
- What Is Service Migration?
- Service Migration Prerequisites
- Service Migration Architecture: Database Leasing
- Service Migration Architecture: Consensus Leasing
- What Is a Migratable Target?
- Service Migration Policy Options
- Configuration Roadmap
- JTA Service Migration: Before Failure
- JTA Service Migration: After Failure
- Configuring JTA Service Migration
- Set Up Automatic JTA Service-Level Migration
- Quiz

- Practice 11-1 Overview: Configuring JTA Service-Level Migration
- Agenda
- Pinned Services
- Pinned Services High Availability (HA) Challenges
- High Availability Options for Pinned Services Clusters
- Whole-Server Migration
- Automatic Server Migration Architecture: Before Failure
- Automatic Server Migration Architecture: Machine Failure
- Configuration: Overview
- Quiz
- Summary

Managing Data Sources

- Objectives
- Agenda
- Review: JDBC
- Data Source: Review
- XA Data Source Review
- Agenda
- Why Manage a Data Source?
- Suspend a Data Source
- Resume a Data Source
- Data Source Interceptors
- Data Source Interceptor
- Practice 12-1 Overview: Controlling a Data Source
- Agenda
- Oracle Real Application Clusters (RAC): Overview
- Oracle GridLink for RAC
- Agenda
- Multi Data Sources
- Multi Data Source Architecture
- Comparison of GridLink and Multi Data Sources
- Failover Option
- Load Balancing Option
- Quiz
- Agenda
- Connection Testing
- Agenda
- Creating a Multi Data Source
- Configuring a Multi Data Source
- Multi Data Source WLST Example
- Managing Multi Data Source Members
- Quiz
- Summary
- Practice 12-2 Overview (Optional): Creating and Using a Multi Data Source

Diagnostic Framework

- Objectives
- Agenda
- WebLogic Diagnostics Framework (WLDF)
- WLDF Architecture
- Diagnostic Archives
- Configuring Server Diagnostic Archives
- Diagnostic Modules
- Dynamic Diagnostic Modules
- Resource Descriptors
- Creating a Diagnostic Module
- WLST: Example
- WLST Commands for WLDF
- Quiz
- Agenda
- What Is a Diagnostic Image?
- Capturing a Server Diagnostic Image
- WLST: Example
- Quiz
- Agenda
- What Is a Harvester?
- Metric Collectors
- Configuring a Metric Collector
- WLST: Example
- Quiz
- Agenda
- Policies and Actions
- Policy Types
- Configuring Policies
- Configuring Actions
- Elastic Actions and Scaling
- Scale Up Action
- Scale Down Action
- Quiz
- Summary
- Practice 13-1 Overview: Using a Built-in Diagnostic Module

WebLogic and Coherence Integration

- Objectives
- Agenda
- Oracle Coherence: Overview
- Agenda
- Types of Session Persistence
- Coherence*Web

- Coherence*Web and WebLogic Clusters
- Coherence*Web Session Failover
- Configuring Coherence*Web in WebLogic
- Quiz
- Practice 14-1 Overview: Configuring Coherence*Web
- Agenda
- Coherence and WebLogic Server
- WebLogic Managed Coherence Servers Operations
- What Is a Grid Archive (GAR)?
- Coherence Application Deployment on WebLogic
- Coherence Container: Benefits
- Coherence Cluster
- Managed Coherence Server
- Quiz
- Summary
- Practice 14-2 Overview: Configuring Managed Coherence Servers

Application Staging and Deployment Plans

- Objectives
- Agenda
- Review: Java EE Applications
- Review: Deployment
- Agenda
- Server Staging Modes
- Staged Mode Example
- No Stage Mode Example
- External Stage Mode Example
- Configuring the Staging Mode
- Quiz
- Agenda
- Development to Test to Production
- Examples of Deployment Descriptor Values That Can Change
- Agenda
- Java EE Deployment Descriptors
- Annotations
- appmerge and appc
- Managing Precedence
- Quiz
- Agenda
- What Is a Deployment Plan?
- Using Deployment Plans for Different Environments
- Deployment Plan Example
- Staging Deployment Plans
- Quiz
- Agenda

- Creating a Deployment Plan
- Creating a New Deployment Plan
- Using the Administration Console to Generate a Deployment Plan
- Modifying and Saving Data to Create a New Plan
- New Deployment Plan Shows Changed Values
- Using an Existing Deployment Plan to Configure an Application
- Using an Existing Deployment Plan
- WLST createPlan
- weblogic.PlanGenerator
- Using Plan Generator
- Oracle Enterprise Pack for Eclipse
- Managing Deployment Plans
- Summary
- Practice 15-1 Overview: Creating and Using a Deployment Plan

WebLogic, Docker, and Kubernetes

- Objectives
- Agenda
- Traditional System Architecture
- History and Multi-Dimensional Evolution of Computing
- Container Use Case: Ready to Run Application Stack
- Container Use Cases: Microservices and One-Time Jobs
- Container Use Cases: Automation and Consolidation
- Virtual Machines Versus Containers
- Agenda
- Docker Architecture and Terminology
- Docker Images
- Docker Hub
- Why Docker Is Popular?
- Agenda
- Kubernetes: What Is It?
- Why Kubernetes?
- Basic Principles
- Applications in Kubernetes
- Deployments and Pods
- Accessing Applications in Kubernetes
- Other Kubernetes Terminology
- K8s Dashboard and Kubectl Output Examples
- Agenda
- Docker WebLogic Domain Image and Configuration Overrides
- Domain Introspection and Config Override Generation
- Supported User Configuration Overrides
- Unsupported User Configuration Overrides
- Configuration Overrides
- WebLogic Operator Lifecycle Management
- WebLogic Lifecycle Management

- Oracle Fusion Middleware Images
- Agenda
- Oracle Linux Container Services
- Host Resource Requirements
- Time Synchronization and Request Forwarding for Kubernetes
- Kubernetes Port Use
- Docker Container Registry
- Oracle Registry Mirror Servers
- Using Private Docker Registry
- Local Container Registry
- Consider Using minikube Tool
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