Oracle WebLogic Server 14c: JMS Administration

JAVA

DURATION	MODULES	COURSE CODE
4 Days	**7 Lectures**	**—**

Course Overview

NEW!Enterprise messaging using Java Messaging Service (JMS) provides a reliable, flexible service for the asynchronous exchange of critical business data and events throughout an enterprise. The JMS API defines a common set of messaging concepts and programming strategies that is supported by all JMS technology-compliant messaging systems. The JMS API enhances the Java EE platform by simplifying enterprise development, allowing loosely coupled, reliable, asynchronous interactions among Java components and also with other legacy systems capable of messaging.

What You Will Learn

Course Overview

- Course Objectives
- Target Audience
- Introductions
- Course Schedule
- Course Practices
- Classroom Guidelines
- For More Information
- Related Training

Java Messaging Concepts

- Objectives
- Message-Oriented Middleware: Introduction
- Why Messaging?
- Synchronous and Asynchronous
- Generic Messaging Terminology
- Messaging Examples
- Point-to-Point Model
- Point-to-Point: Example
- Publish/Subscribe Model

- Publish/Subscribe: Example
- Java Messaging Service (JMS): Introduction
- JMS Providers
- JMS Destinations
- JMS Clients
- JMS Connections
- JMS Sessions
- JMS Context
- JMS Messages
- Acknowledgments
- JMS Communication: Example
- Browsing Consumers
- Message-Driven EJBs
- Why Message-Driven EJBs?
- Quiz
- Summary

Basic Configuration

- Objectives
- JMS Server: Introduction
- JMS Server Targeting
- JMS Server: Best Practices
- Creating a JMS Server
- JMS Module: Introduction
- Basic Module Resources
- System and Application Modules
- System Module Targeting
- Creating a JMS System Module
- Custom Connection Factories
- Connection Factory Delivery Settings
- Connection Factory Targeting
- Adding a Connection Factory to a Module
- Configuring Factory Default Settings
- Destination Targeting
- JMS Subdeployment
- Subdeployment: Best Practices
- Adding a New Subdeployment to a Module
- Adding a Destination to a Module
- Configuring Destination Delivery Overrides
- Error Destination
- Configuring an Error Destination
- Quota: Introduction
- Server and Destination Quotas
- Configuring a JMS Server Quota
- Adding a Quota to a Module

- Assigning a Quota to a Destination
- Quota: Best Practices
- Thresholds and Log Messages
- JMS Template: Introduction
- Adding a Template to a Module
- Creating a Destination from a Template
- Configuring an Existing Destination’s Template
- WLST Examples
- RESTful Management Interface
- Accessing the RESTful Management Interface
- REST Example: Locking WebLogic Server for Editing Using cURL
- REST Example: Creating a Server Instance Using cURL
- REST Example: Filtering Returned Data
- REST Example: Creating a JMS Server
- REST Examples: Viewing Properties of Resources
- REST Examples: Creating a JMS Module
- REST Examples: Properties of JMS System Resources
- REST Examples: Creating JMS Subdeployment
- REST Examples: Creating a JMS Connection Factory
- Use CreateForm Requests to Obtain a List of All Fields
- Using …CreateForm for Creating Resources
- REST Example: Activating the Changes
- Quiz
- Summary
- Practice 3-1: Creating and Testing a Basic Configuration

Message Monitoring and Management

- Objectives
- Why Monitor JMS?
- JMS Monitoring Terminology
- Monitoring a JMS Server
- Monitoring Destinations on a JMS Server
- Monitoring Connections and Sessions
- Monitoring a Specific Destination
- JMS and the Monitoring Dashboard
- Monitoring Message-Driven EJBs
- WLST JMS Runtime Hierarchy
- Monitoring with WLST: Examples
- WLST MDB Runtime Hierarchy
- Viewing Messages on a Destination
- Viewing Message Details
- Message Type Considerations
- Message States
- Querying Messages
- Message Selector: Examples

- JMS Management: Overview
- Destroying Connections
- Deleting Messages
- Creating a Test Message
- Why Move Messages?
- Moving Messages
- Why Export Messages?
- Exporting and Importing Messages
- Sample Export File
- Why Pause JMS?
- Available JMS Operations to Pause
- Pausing and Resuming JMS Operations
- Management WLST Examples
- Quiz
- Summary
- Practice 4-1: Monitoring and Managing JMS

Persistence, Transactions, and Durability

- Objectives
- Roadmap
- WebLogic Persistent Store: Review
- JMS Persistence: Overview
- Producer Delivery Mode
- Configuring the Delivery Mode
- Persistent Store Options
- Why Custom Stores?
- Creating a Custom File Store
- Initializing a Database for a JDBC Store
- JDBC Data Source: Review
- Creating a JDBC Store
- Assigning a Store to a JMS Server
- Configuration Wizard: Review
- JMS Persistence and the Configuration Wizard
- Roadmap
- WebLogic Transaction Manager: Review
- Transaction Log (TLOG): Review
- Using JMS in Transactions
- Local and XA Transactions
- XA Transaction: Examples
- Default Connection Factories
- Configuring Transactions for a Custom Factory
- Monitoring JMS Transactions
- Monitoring and Managing JMS Transactions
- Roadmap
- Topics and Durable Subscribers

- Durable Subscriber: Example
- Configuring a Default Client ID
- Shared Subscriptions
- Configuring Shared Subscriptions
- Monitoring and Managing Durable Subscribers
- Quiz
- Summary
- Practice 5-1: Configuring and Testing Message Persistence

Distributed Destinations

- Objectives
- JMS Scalability Challenges
- Review: Clusters
- JMS Clustering Options
- Dynamic Cluster Limitations
- Limitations of Targeting JMS to an Entire Cluster
- Targeting JMS to a Cluster
- Clustered JMS Architecture
- Naming Conventions for Dynamic Resources
- Monitoring JMS Server Instances
- What is a distributed destination?
- Targeting Distributed Destinations to a Clustered JMS Server
- Targeting Distributed Destinations to Multiple JMS Servers
- Distributed Destination Connectivity
- JNDI Access in a Cluster
- Distributed Queue Architecture
- Message Forwarding with Distributed Queues
- Distributed Topic Options
- Partitioned Distributed Topic Architecture
- Replicated Distributed Topic Architecture
- Server Affinity
- Producer Transaction Affinity
- More Load Balancing Considerations
- Message-Driven EJBs and Distributed Destinations
- Creating a Distributed Destination
- Creating a Distributed Destination Load Balancing Policy
- Configuring Client Failover for Connection Factories
- Configuring Load Balancing for Connection Factories
- Configuring Message Forwarding for Distributed Queues
- Distributed Destinations and the Configuration Wizard
- Distributed Destination WLST: Example
- Monitoring Destination Members
- Scaling Down a JMS Cluster
- Quiz
- Summary
- Practice 6-1: Creating and Testing Distributed Destinations

Server Migration

- Objectives
- Pinned Services
- JMS High Availability (HA) Challenges
- Orphaned Message: Example
- High Availability Options for JMS Clusters
- Virtual Machine Migration for JMS HA
- What is whole server migration?
- Server Migration Prerequisites
- Server Migration Example: Before Failure
- Server Migration Example: After Failure
- Configuration Roadmap
- Configuring SUDO
- wlsifconfig[.sh|cmd]
- Node Manager Migration Settings
- Cluster Leasing Service
- Server Migration Architecture
- Leasing Types
- Initializing a Database for Leasing
- Configuring Cluster Leasing
- Targeting Distributed Destinations to Multiple JMS Servers
- Configuring Candidate Machines
- Enabling Automatic Migration for a Server
- Machine Failback
- Manual Server Migration
- Quiz
- Summary
- Practice 7-1: Migrating a Server

JMS Clustering and High Availability

- Objectives
- What is simplified JMS clustering?
- What does JMS simplified clustering provide?
- Understanding Distribution, Migration, and Failover
- Singleton Distribution Policy
- Distributed Distribution Policy
- Migration Policy and Restart
- Migration and Failure Policy
- Dynamic Cluster Resize
- Configuration and Inheritance
- Common HA Configuration Attributes
- Legal Combinations of HA Policy
- Legal Combinations of Migration Policy
- Configuring Simplified JMS Clustering

- Configuring a Distributed or Singleton Persistent Store
- Monitoring
- Best Practices
- General Restrictions and Concerns
- Path Service Restrictions
- Store and Forward Restrictions
- Quiz
- Summary
- Practice 8-1: Configuring JMS Clustering and HA

Performance Tuning

- Objectives
- Tuning JMS: Overview
- General Programming Considerations
- Tuning Tools
- Tuning Roadmap
- Symptoms of an Overloaded Provider
- Potential Solutions
- Review: Tuning Server Heap
- Quotas Review
- Example: Quota Too Low
- Example: Quota Too High
- Message Paging
- Tuning Message Paging
- Tuning Persistent Stores
- Tuning Roadmap
- Potential Solutions to Slow Producers
- Producer Timeout When Quota Is Full
- Quota Blocking Policy
- Flow Control
- Flow Control Example
- Flow Control Logic
- Tuning Thresholds
- Tuning Flow Control
- Slow Network
- Message Compression
- Tuning Message Compression
- One-Way Send Mode
- One-Way Send Exceptions
- Configuring One-Way Send Mode
- Tuning Roadmap
- Tuning the Consumer Message Pipeline
- Message-Driven EJBs and Performance
- MDB Transactions
- Tuning Transaction Batches

- Quiz
- Summary
- Practice 9-1: Tuning JMS Performance

Troubleshooting

- Objectives
- JMS Troubleshooting Tools
- JMS Logging
- Configuring JMS Logging
- JMS Lifecycle Events
- JMS Log Format
- JMS Headers
- JMS Properties
- Review: WebLogic Debug Flags
- JMS and Related Debug Scopes
- JMS Debug Flags
- MDB Debug Flags
- Debug Output Example
- Server Diagnostic Images
- JMS and Diagnostic Images
- Capturing a Diagnostic Image
- Common Configuration Problems
- Common Runtime Problems
- Delayed Messages
- Lost Messages
- Duplicate Messages
- Consumer Acknowledgment Modes
- Distributed Topics and MDBs: Review
- MDB Topic Distribution Modes
- Poison Messages
- Quiz
- Summary
- Practice 10-1: Investigating JMS Problems

Introduction to JMS Security

- Objectives
- WebLogic Security Terminology: Review
- WebLogic Roles and Policies
- JMS Security: Example
- JMS Resources and Policies
- Creating a JMS Policy
- Creating a JNDI Policy
- Summary
- Practice 11-1: Securing JMS

Introduction to JMS Integration

- Objectives
- General Integration Objectives
- Integration Roadmap
- Store and Forward (SAF)
- SAF Architecture
- SAF Configuration: Overview
- Creating an SAF Agent
- Creating a Remote SAF Context
- Creating SAF Imported Destinations
- Integration Roadmap
- What is a Java Resource Adapter?
- WebLogic JMS Resource Adapter
- JMS Adapter Architecture
- Adapter Deployment: Overview
- Integration Roadmap
- Foreign Provider Architecture
- Foreign Provider Configuration: Overview
- Creating a Foreign Server
- Integration Roadmap
- Oracle Advanced Queuing (AQ): Overview
- AQ Integration: Overview
- Creating a Foreign Server for AQ
- Summary
- Practice 12-1: Introduction to JMS Integration – Messaging Bridge
- Practice 12-2: Introduction to JMS Integration – Store and Forward

Introduction to Message Ordering

- Objectives
- Message Ordering
- What is a destination sort key?
- Creating a Destination Sort Key
- Using Sort Keys with Destinations
- Ordering Limitations
- What is Unit of Order (UOO)?
- Configuring Unit of Order
- UOO and Distributed Destinations
- UOO Routing Options
- Creating a Path Service
- Configuring the Path Service for a Distributed Destination
- Summary
- Practice 13-1: Introduction to Message Ordering
- Related Training
- A Service Migration
- Objectives A-2