

# ORACLE

in 📵

Oracle WebLogic Server 14c: JMS Administration



# Titulo: Oracle WebLogic Server 14c: JMS Administration

Clave: D1102675GC10

Duración: 04 días

# **Contents**

#### 1 Course Overview

Course Objectives 1-2

Target Audience 1-3

Introductions 1-4

Course Schedule 1-5

Course Practices 1-6

Classroom Guidelines 1-7

For More Information 1-8

Related Training 1-10

# 2 Java Messaging Concepts

Objectives 2-2

Message-Oriented Middleware: Introduction 2-3

Why Messaging? 2-5

Synchronous and Asynchronous 2-6

Generic Messaging Terminology 2-7

Messaging Examples 2-8

Point-to-Point Model 2-9

Point-to-Point: Example 2-10

Publish/Subscribe Model 2-11

Publish/Subscribe: Example 2-12

Java Messaging Service (JMS): Introduction 2-13

JMS Providers 2-14

JMS Destinations 2-15

JMS Clients 2-16

JMS Connections 2-17

JMS Sessions 2-18

JMS Context 2-19

in [0]

JMS Messages 2-20



Acknowledgments 2-21

JMS Communication: Example 2-22

Browsing Consumers 2-23

Message-Driven EJBs 2-24

Why Message-Driven EJBs? 2-25

Quiz 2-26

Summary 2-29

#### 3 Basic Configuration

Objectives 3-2

JMS Server: Introduction 3-3

JMS Server Targeting 3-4

JMS Server: Best Practices 3-5

Creating a JMS Server 3-6

JMS Module: Introduction 3-7

Basic Module Resources 3-8

System and Application Modules 3-9

System Module Targeting 3-10

Creating a JMS System Module 3-11

Custom Connection Factories 3-13

Connection Factory Delivery Settings 3-14

Connection Factory Targeting 3-15

Adding a Connection Factory to a Module 3-16

Configuring Factory Default Settings 3-17

Destination Targeting 3-18

JMS Subdeployment 3-19

Subdeployment: Best Practices 3-20

Adding a New Subdeployment to a Module 3-21

Adding a Destination to a Module 3-22

Configuring Destination Delivery Overrides 3-24

Error Destination 3-25

Configuring an Error Destination 3-26

Quota: Introduction 3-27

in [O]

Server and Destination Quotas 3-28

Configuring a JMS Server Quota 3-29

Adding a Quota to a Module 3-30



Assigning a Quota to a Destination 3-31

Quota: Best Practices 3-32

Thresholds and Log Messages 3-33 JMS Template: Introduction 3-34 Adding a Template to a Module 3-35

Creating a Destination from a Template 3-36

Configuring an Existing Destination's Template 3-37

WLST Examples 3-38

RESTful Management Interface 3-40

Accessing the RESTful Management Interface 3-41

REST Example: Locking WebLogic Server for Editing Using cURL 3-42

REST Example: Creating a Server Instance Using cURL 3-43

REST Example: Filtering Returned Data 3-44 REST Example: Creating a JMS Server 3-45

REST Examples: Viewing Properties of Resources 3-47

REST Examples: Creating a JMS Module 3-48

REST Examples: Properties of JMS System Resources 3-49

REST Examples: Creating JMS Subdeployment 3-50

REST Examples: Creating a JMS Connection Factory 3-51 Use CreateForm Requests to Obtain a List of All Fields 3-52

Using ...CreateForm for Creating Resources 3-53

REST Example: Activating the Changes 3-54

Quiz 3-55

Summary 3-59

Practice 3-1: Creating and Testing a Basic Configuration 3-60

# 4 Message Monitoring and Management

Objectives 4-2

in 👩

Why Monitor JMS? 4-3

JMS Monitoring Terminology 4-4

Monitoring a JMS Server 4-5

Monitoring Destinations on a JMS Server 4-6

Monitoring Connections and Sessions 4-7

Monitoring a Specific Destination 4-8

JMS and the Monitoring Dashboard 4-9

Monitoring Message-Driven EJBs 4-10

WLST JMS Runtime Hierarchy 4-12



Monitoring with WLST: Examples 4-13

WLST MDB Runtime Hierarchy 4-14

Viewing Messages on a Destination 4-15

Viewing Message Details 4-17

Message Type Considerations 4-18

Message States 4-19

Querying Messages 4-20

Message Selector: Examples 4-21

JMS Management: Overview 4-22

Destroying Connections 4-23

Deleting Messages 4-24

Creating a Test Message 4-25

Why Move Messages? 4-26

Moving Messages 4-27

Why Export Messages? 4-28

Exporting and Importing Messages 4-29

Sample Export File 4-30

Why Pause JMS? 4-31

Available JMS Operations to Pause 4-32

Pausing and Resuming JMS Operations 4-33

Management WLST Examples 4-34

Quiz 4-35

Summary 4-38

Practice 4-1: Monitoring and Managing JMS 4-39

#### 5 Persistence, Transactions, and Durability

Objectives 5-2

Roadmap 5-3

WebLogic Persistent Store: Review 5-4

JMS Persistence: Overview 5-5

Producer Delivery Mode 5-6

Configuring the Delivery Mode 5-7

Persistent Store Options 5-8

Why Custom Stores? 5-9

Creating a Custom File Store 5-10

Initializing a Database for a JDBC Store 5-11



JDBC Data Source: Review 5-12

Creating a JDBC Store 5-13

Assigning a Store to a JMS Server 5-14

Configuration Wizard: Review 5-15

JMS Persistence and the Configuration Wizard 5-16

Roadmap 5-17

WebLogic Transaction Manager: Review 5-18

Transaction Log (TLOG): Review 5-19

Using JMS in Transactions 5-20

Local and XA Transactions 5-21

XA Transaction: Examples 5-22

Default Connection Factories 5-23

Configuring Transactions for a Custom Factory 5-24

Monitoring JMS Transactions 5-25

Monitoring and Managing JMS Transactions 5-26

Roadmap 5-27

Topics and Durable Subscribers 5-28

Durable Subscriber: Example 5-29

Configuring a Default Client ID 5-30

Shared Subscriptions 5-31

Configuring Shared Subscriptions 5-32

Monitoring and Managing Durable Subscribers 5-33

Quiz 5-35

Summary 5-40

Practice 5-1: Configuring and Testing Message Persistence 5-41

#### 6 Distributed Destinations

Objectives 6-2

in 👩

JMS Scalability Challenges 6-3

Review: Clusters 6-4

JMS Clustering Options 6-5

Dynamic Cluster Limitations 6-6

Limitations of Targeting JMS to an Entire Cluster 6-7

Targeting JMS to a Cluster 6-8

Clustered JMS Architecture 6-9

Naming Conventions for Dynamic Resources 6-10



Monitoring JMS Server Instances 6-11

What is a distributed destination? 6-12

Targeting Distributed Destinations to a Clustered JMS Server 6-13

Targeting Distributed Destinations to Multiple JMS Servers 6-14

Distributed Destination Connectivity 6-15

JNDI Access in a Cluster 6-16

Distributed Queue Architecture 6-17

Message Forwarding with Distributed Queues 6-18

Distributed Topic Options 6-19

Partitioned Distributed Topic Architecture 6-20

Replicated Distributed Topic Architecture 6-21

Server Affinity 6-22

Producer Transaction Affinity 6-23

More Load Balancing Considerations 6-24

Message-Driven EJBs and Distributed Destinations 6-25

Creating a Distributed Destination 6-26

Creating a Distributed Destination Load Balancing Policy 6-27

Configuring Client Failover for Connection Factories 6-28

Configuring Load Balancing for Connection Factories 6-29

Configuring Message Forwarding for Distributed Queues 6-30

Distributed Destinations and the Configuration Wizard 6-31

Distributed Destination WLST: Example 6-32

Monitoring Destination Members 6-33

Scaling Down a JMS Cluster 6-34

Quiz 6-35

Summary 6-38

Practice 6-1: Creating and Testing Distributed Destinations 6-39

#### **7 Server Migration**

ന (രി

Objectives 7-2

Pinned Services 7-3

JMS High Availability (HA) Challenges 7-4

Orphaned Message: Example 7-5

High Availability Options for JMS Clusters 7-6

Virtual Machine Migration for JMS HA 7-7

What is whole server migration? 7-8

Server Migration Prerequisites 7-9



Server Migration Example: Before Failure 7-10

Server Migration Example: After Failure 7-11

Configuration Roadmap 7-12

Configuring SUDO 7-13

wlsifconfig[.sh|cmd] 7-14

Node Manager Migration Settings 7-15

Cluster Leasing Service 7-16

Server Migration Architecture 7-17

Leasing Types 7-18

Initializing a Database for Leasing 7-19

Configuring Cluster Leasing 7-20

Targeting Distributed Destinations to Multiple JMS Servers 7-21

Configuring Candidate Machines 7-22

Enabling Automatic Migration for a Server 7-23

Machine Failback 7-24

Manual Server Migration 7-25

Quiz 7-26

Summary 7-29

Practice 7-1: Migrating a Server 7-30

# 8 JMS Clustering and High Availability

Objectives 8-2

What is simplified JMS clustering? 8-3

What does JMS simplified clustering provide? 8-4

Understanding Distribution, Migration, and Failover 8-5

Singleton Distribution Policy 8-6

Distributed Distribution Policy 8-7

Migration Policy and Restart 8-8

Migration and Failure Policy 8-9

Dynamic Cluster Resize 8-10

Configuration and Inheritance 8-11

Common HA Configuration Attributes 8-12

Legal Combinations of HA Policy 8-14

Legal Combinations of Migration Policy 8-15

Configuring Simplified JMS Clustering 8-16

Configuring a Distributed or Singleton Persistent Store 8-17

Monitoring 8-18



Best Practices 8-19

General Restrictions and Concerns 8-21

Path Service Restrictions 8-23

Store and Forward Restrictions 8-24

Quiz 8-25

Summary 8-26

Practice 8-1: Configuring JMS Clustering and HA 8-27

#### 9 Performance Tuning

Objectives 9-2

Tuning JMS: Overview 9-3

General Programming Considerations 9-4

Tuning Tools 9-5

Tuning Roadmap 9-6

Symptoms of an Overloaded Provider 9-7

Potential Solutions 9-8

Review: Tuning Server Heap 9-9

Quotas Review 9-10

Example: Quota Too Low 9-11

Example: Quota Too High 9-12

Message Paging 9-13

Tuning Message Paging 9-14

Tuning Persistent Stores 9-15

Tuning Roadmap 9-16

Potential Solutions to Slow Producers 9-17

Producer Timeout When Quota Is Full 9-18

Quota Blocking Policy 9-19

Flow Control 9-20

Flow Control Example 9-21

Flow Control Logic 9-22

Tuning Thresholds 9-23

Tuning Flow Control 9-24

Slow Network 9-25

Message Compression 9-26

Tuning Message Compression 9-27

One-Way Send Mode 9-28



One-Way Send Exceptions 9-29

Configuring One-Way Send Mode 9-30

Tuning Roadmap 9-31

Tuning the Consumer Message Pipeline 9-32

Message-Driven EJBs and Performance 9-33

MDB Transactions 9-34

Tuning Transaction Batches 9-35

Quiz 9-36

Summary 9-39

Practice 9-1: Tuning JMS Performance 9-40

#### 10 Troubleshooting

Objectives 10-2

JMS Troubleshooting Tools 10-3

JMS Logging 10-4

Configuring JMS Logging 10-5

JMS Lifecycle Events 10-7

JMS Log Format 10-8

JMS Headers 10-9

JMS Properties 10-10

Review: WebLogic Debug Flags 10-11

JMS and Related Debug Scopes 10-12

JMS Debug Flags 10-13

MDB Debug Flags 10-14

Debug Output Example 10-15

Server Diagnostic Images 10-16

JMS and Diagnostic Images 10-17

Capturing a Diagnostic Image 10-18

Common Configuration Problems 10-19

Common Runtime Problems 10-20

Delayed Messages 10-21

Lost Messages 10-22

Duplicate Messages 10-23

Consumer Acknowledgment Modes 10-24

Distributed Topics and MDBs: Review 10-25

MDB Topic Distribution Modes 10-26



Poison Messages 10-27

Quiz 10-28

Summary 10-31

Practice 10-1: Investigating JMS Problems 10-32

# 11 Introduction to JMS Security

Objectives 11-2

WebLogic Security Terminology: Review 11-3

WebLogic Roles and Policies 11-4

JMS Security: Example 11-5

JMS Resources and Policies 11-6

Creating a JMS Policy 11-7

Creating a JNDI Policy 11-10

Summary 11-11

Practice 11-1: Securing JMS 11-12

#### 12 Introduction to JMS Integration

Objectives 12-2

General Integration Objectives 12-3

Integration Roadmap 12-4

Store and Forward (SAF) 12-5

SAF Architecture 12-6

SAF Configuration: Overview 12-7

Creating an SAF Agent 12-8

Creating a Remote SAF Context 12-9

Creating SAF Imported Destinations 12-10

Integration Roadmap 12-13

What is a Java Resource Adapter? 12-14

WebLogic JMS Resource Adapter 12-15

JMS Adapter Architecture 12-16

Adapter Deployment: Overview 12-17

Integration Roadmap 12-18

Foreign Provider Architecture 12-19

Foreign Provider Configuration: Overview 12-20

Creating a Foreign Server 12-21

Integration Roadmap 12-25

in (G)



Oracle Advanced Queuing (AQ): Overview 12-26

AQ Integration: Overview 12-27

Creating a Foreign Server for AQ 12-28

Summary 12-29

Practice 12-1: Introduction to JMS Integration – Messaging Bridge 12-30
Practice 12-2: Introduction to JMS Integration – Store and Forward 12-31

#### 13 Introduction to Message Ordering

Objectives 13-2

Message Ordering 13-3

What is a destination sort key? 13-4

Creating a Destination Sort Key 13-5

Using Sort Keys with Destinations 13-7

Ordering Limitations 13-8

What is Unit of Order (UOO)? 13-9

Configuring Unit of Order 13-10

UOO and Distributed Destinations 13-11

UOO Routing Options 13-12

Creating a Path Service 13-13

Configuring the Path Service for a Distributed Destination 13-14

Summary 13-15

Practice 13-1: Introduction to Message Ordering 13-16

Related Training 13-17

#### **A** Service Migration

in (ദി

Objectives A-2

What is service migration? A-3

Service Migration Prerequisites A-4

Service Migration Architecture: Database Leasing A-5 Service Migration Architecture: Consensus Leasing A-6

Configuration Roadmap A-7

JTA Service Migration: Before Failure A-8
JTA Service Migration: After Failure A-9
Configuring JTA Service Migration A-10
JMS Service Migration: Before Failure A-11
JMS Service Migration: After Failure A-12

What is a migratable target? A-13



Targeting JMS to Support Service Migration A-14

Service Migration Policy Options A-15

Failure Recovery Example A-16

Exactly-Once Example A-17

Shutdown-Recovery Example A-18

Default Migratable Targets A-19

Configuring a Migratable Target A-20

Assigning JMS Resources to a Migratable Target A-22

Migration Pre/Post Scripts A-23

Migrating Services Manually A-24

Quiz A-25

Summary A-28

#### **B** Oracle Cloud

Agenda B-2

What is cloud? B-3

What is cloud computing? B-4

History – Cloud Evolution B-5

Components of Cloud Computing B-6

Characteristics of Cloud B-7

Cloud Deployment Models B-8

Cloud Service Models B-9

Industry Shifting from On-Premises to the Cloud B-13

Oracle laaS Overview B-15

Oracle PaaS Overview B-16

Oracle SaaS Overview B-17

Summary B-18

#### C Oracle Java Cloud Service Overview

Objectives C-2

in (രി

Introducing Java Cloud Service: Your Platform for Running Business

Applications in the Cloud C-3

Java Cloud Service: Three Options C-4

Java Cloud Service Main Use Cases C-5

Java Cloud Service Feature: Provisioning C-6

Java Cloud Service Feature: Patching C-7

Java Cloud Service Feature: Backup/Restore C-8



Java Cloud Service Feature: Scaling C-9

Oracle Coherence Option: Data Caching and Scaling C-10

Oracle Coherence Option: Your Cloud Data Grid Scalable, Fault-Tolerant

Cloud Infrastructure C-11

How You Interact with Java Cloud Service C-12

Speaking of Dev Environments... Developer Cloud Service C-13

Java Cloud Service On-Premises! C-14

Summary C-15

in 👩