

# Oracle Service Bus 12c: Design & Integrate Services Ed 1

JAVA

DURATION

**4 Days**

MODULES

**13 Lectures**

COURSE CODE

—

## Course Overview

This Oracle Service Bus 12c: Design and Integrate Services training teaches you how to integrate services across various protocols and technologies. Deep dive into the VETRO (Validate, Enrich, Transform, Route, Operate) pattern implementation.

## What You Will Learn

### Introduction

- Goals
- Audience
- Prerequisites
- Class Introductions
- Course Objectives
- Course Map
- Course Schedule
- How Can I Learn More?

### Introducing Oracle Service Bus

- Objectives
- Agenda
- Service Integration Can End Up as Spaghetti
- Enterprise Service Bus Reduces Complexity and Enables Flexibility
- What Does an Enterprise Service Bus Do?
- What an Enterprise Service Bus Should Not Do
- Key Capabilities
- Benefits
- Agenda
- About Oracle Service Bus
- Example: Virtualizing Back-end Service
- Functional Features of Oracle Service Bus

- Features of Oracle Service Bus 12c
- Agenda
- SOA Reference Architecture
- Oracle Service Bus in Oracle SOA Suite
- Oracle SOA Suite and Oracle Service Bus Product Architecture
- Key Components in a SOA Composite Application
- Mediator Versus OSB
- Oracle SOA Suite and Oracle Service Bus Deployment Topology
- Agenda
- Developer and Production Distributions
- Domain Configuration
- Summary
- Practice 2: Overview

## Getting Started with Oracle Service Bus Applications

- Objectives
- Agenda
- Web Services Description Language (WSDL)
- Abstract WSDL
- XML Schema Definition (XSD)
- XSD: Example
- Agenda
- OSB Components
- Business Services
- Service Types for Business Services
- Business Service Configuration
- Proxy Services
- Proxy Service Configuration
- Pipelines
- Quiz
- Agenda
- Developing Service Bus in JDeveloper
- Projects and Resources
- A Basic Service Bus Application
- High-Level Steps of Creating a Service Bus Application
- Creating a Business Service
- Creating a Proxy Service
- Agenda
- Features for Developers
- Import and Export Resources
- Share Artifacts with MDS
- Populating Shared Data with File-Based MDS
- Using Shared Data in MDS
- Promote Reusability and Best Practices with Pipeline Template
- Test and Debug Integrations

- OSB Maven Support
- Oracle Service Bus Console
- Working with Sessions
- Test Console
- Monitoring and Administering in EM Console
- Development Tasks Support
- Quiz
- Summary
- Practice 3: Overview

## Basics of Message Flow

- Objectives
- Agenda
- Message Exchange Pattern
- Message Flow
- Pipeline
- Pipeline Components
- Message Processing Actions
- Communication Actions
- Flow Control and Report
- Message Flow Communication Actions
- Pipeline: Example
- Quiz
- Agenda
- Message Context
- Predefined Context Variables
- Message-related Variables
- \$inbound and \$outbound Variables
- \$operation Variable
- \$fault Variable
- Variables and Types
- Context Variables in Message Processing
- Pass Content by Reference
- User-Defined Variables
- Shared Variables
- Shared Variable Rules
- Creating a Shared Variable
- Quiz
- Agenda
- Pipeline Construction
- Creating a Pipeline
- Pipeline Templates
- Creating and Using Pipeline Template
- Breaking a Template Link
- Agenda

- Debugging Service Bus Applications
- Enable/Disable Stages and Actions
- Enable Flow Tracing in Pipeline
- Debugging Service Bus Applications with Debugger
- Features and Limitations
- Configuring Debugger
- Setting Breakpoints
- Starting the Debugger
- Stepping Through a Debugging Session
- Viewing and Modifying Variable Values
- Ending a Debugging Session
- Summary
- Practice 4: Overview

## Validating Messages and Error Handling

- Objectives
- Agenda
- Message Validation
- Validate Action
- Dynamic Validation
- Quiz
- Agenda
- Faults: Overview
- Fault-Handling Challenges
- Handling Errors in OSB
- Error Handlers
- \$fault Variable
- Reply Action
- Generating Error Messages Using Reply Action
- Quiz
- Agenda
- Reporting Actions
- Report Action
- Log Action
- Configuring OSB Log Level
- Alert Action
- Summary
- Practice 5: Overview

## Transforming Messages

- Objectives
- Agenda
- Message Transformation in Service Bus
- Terminology and Concepts
- XPath

- XPath: Examples
- XPath Functions
- XPath Expression Builder
- Standard XPath Functions
- Custom XPath Functions
- Creating and Packaging Custom XPath Functions
- Registering a Custom Function
- Agenda
- Data Standards
- Transforming Data
- XSL Transformations
- XSLT Mapper
- Using XPath Functions in XSLT Mapper
- Agenda
- XQuery: Introduction
- Uses of XQuery
- XQuery Support in Service Bus
- XQuery Expression Builder
- XQuery Mapper
- Types of XQuery Maps
- Steps for Creating XQuery Map Files
- XSLT Versus XQuery
- Test Expressions at Design-Time
- Agenda
- XML to non-XML with nXSD
- Working with Native Format Data
- Native Data Transformation
- Specifying File Name and Native Data Format
- Specifying a Sample File
- Defining a Schema for a Native Format
- nXSD Translate Action
- Summary
- Practice 6: Overview

## Routing Messages

- Objectives
- Agenda
- Message Routing: Overview
- Routing Use Cases
- Header-based Routing
- Agenda
- Content-based Routing
- Conditional Branch Node
- Configuring Conditional Branch Node
- Routing Table Action

- Conditional Branching Versus Routing Table
- Quiz
- Agenda
- Dynamic Routing
- Dynamic Routing with Dynamic Routing Action by Example
- Mapping Table Used by Dynamic Routing Action: Example
- XQuery Expression for Dynamic Routing Action
- Configuring Dynamic Routing Action
- Dynamic Routing with Routing Options Action by Example
- Mapping Table Used by Routing Options Action: Example
- Configuring Routing Options Action
- Quiz
- Summary
- Practice 7: Overview

## Enriching Messages

- Objectives
- Message Enrichment Options
- Service Callout
- Using Service Callout
- Service Callout Action
- Configuring Service Callout Action
- Constructing Service Callout Messages
- Java Callout
- Use Cases
- Java Callout Guidelines
- Java Callout Action
- Summary
- Practice 8: Overview

## Processing Messages with Concurrent Calls

- Objectives
- Split-Join
- Split-Join Patterns
- Split-Join Invocation
- Split-Join Construction: Static Split-Join
- Split-Join Construction: Dynamic Split-Join
- Split-Join Operations
- Global and Local Variables
- Transaction Support
- Summary
- Practice 9: Overview

## Adapters and Transports

- Objectives
- Agenda
- JCA Transport
- JCA Adapter Framework
- JCA Adapters
- Supported Adapters and Transports
- File Adapter
- Database Adapter
- JMS Message
- JMS Messaging
- JMS Resources
- Oracle JMS Transport
- Agenda
- SOA-DIRECT Transport
- Features of SOA-DIRECT Transport
- Transactional Boundaries
- Synchronous Invocation of a SOA Composite
- Endpoint URI Linking to a SOA Composite
- Synchronous Invocation from a SOA Composite
- Asynchronous Invocation of a SOA Composite
- Service Roles in Asynchronous Invocation
- Agenda
- REST: Overview
- REST Queries
- Comparing REST and SOAP
- Example: Use Cases for REST and SOAP
- Supported Features in OSB
- Creating a REST Binding
- Configuring a REST Binding
- Summary
- Practice 10: Overview

## Reliable Messaging

- Objectives
- Reliable Communication
- Quality of Service
- Default Value of qualityOfService
- Overriding the Default Value of QoS in Routing Options Action
- Configurations for Reliable Communication
- Configuring Retry Handling in JMS Queue
- High-Level Steps
- Configuring Delivery Failure Options
- JMS Transport Configuration of the Proxy Service

- Summary
- Demonstration: Overview

## Service Bus Security

- Objectives
- Agenda
- Web Services Security: Overview
- Transport-Level Security
- Message Security
- WS-Security
- SAML
- SAML Architecture
- WS-Security and SAML
- WS-Policy: Overview
- Policy Assertion
- Quiz
- Agenda
- SB Security Capabilities
- Active and Passive Intermediary
- Securing Services with OWSM Policies
- Oracle Web Service Manager
- Components of Oracle Web Services Manager Architecture
- Inbound Security by Using OWSM
- Outbound Security by Using OWSM
- Policy Support (12c 12.1.3.0)
- User Interface (UI) Support
- Identity Propagation
- Identity Propagation: Example
- OWSM Predefined Policies
- Applying OWSM Policies to Services in JDeveloper
- Test Console Support: Business Service
- Test Console Support: Proxy Service
- Agenda
- Service Access Control Policies
- Role-Based Access: Application Security Roles
- Summary
- Practice 12: Propagating Identity from Service Bus to a Web Service

## Advanced Topics

- Objectives
- Agenda
- Principles and Best Practices of Using Service Bus
- BPEL Versus Service Bus
- Testing Approaches
- Agenda

- Service Result Caching
- Use Cases of Result Caching
- How Does Result Catching Work?
- Configuring a Business Service for Result Caching
- Using an Out-of-Process Coherence Cache Server
- Coherence Configuration Files
- Agenda
- SLA Alert in OSB
- SLA Alert Rules
- Creating SLA Alert Rules
- Agenda
- Managed File Transfer (MFT)
- OSB and MFT Integration
- Agenda
- Resequencing Message
- Configuring the Resequencer
- Work Manager in Service Bus
- Agenda
- About Maven
- Concepts and Terminology
- OSB Maven Support
- Summary
- Practice 13: Overview
- Building Service Bus Projects with Maven