



**Hardware and Software**  
Engineered to Work Together

# Oracle Data Integrator 12c: Integration and Administration

Student Guide – Volume I  
D82167GC20  
Edition 2.0 | August 2016 | D97384

Learn more from Oracle University at [oracle.com/education/](http://oracle.com/education/)

## **Authors**

Elio Bonazzi  
Steve Friedberg

## **Technical Contributors and Reviewers**

Julien Testut  
Alex Kotopoulos

## **Editors**

Raj Kumar  
Vijayalakshmi Narasimhan  
Nikita Abraham

## **Graphic Designer**

Seema Bopaiah

## **Publishers**

Giri Venugopal  
Joseph Fernandez

**Copyright © 2016, Oracle and/or its affiliates. All rights reserved.**

### **Disclaimer**

This document contains proprietary information and is protected by copyright and other intellectual property laws. You may copy and print this document solely for your own use in an Oracle training course. The document may not be modified or altered in any way. Except where your use constitutes "fair use" under copyright law, you may not use, share, download, upload, copy, print, display, perform, reproduce, publish, license, post, transmit, or distribute this document in whole or in part without the express authorization of Oracle.

The information contained in this document is subject to change without notice. If you find any problems in the document, please report them in writing to: Oracle University, 500 Oracle Parkway, Redwood Shores, California 94065 USA. This document is not warranted to be error-free.

### **Restricted Rights Notice**

If this documentation is delivered to the United States Government or anyone using the documentation on behalf of the United States Government, the following notice is applicable:

#### **U.S. GOVERNMENT RIGHTS**

The U.S. Government's rights to use, modify, reproduce, release, perform, display, or disclose these training materials are restricted by the terms of the applicable Oracle license agreement and/or the applicable U.S. Government contract.

### **Trademark Notice**

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

# Contents

## 1 Introduction to Integration and Administration

Course Objectives	1-2
Lesson Objectives	1-3
Agenda of Lessons	1-4
Agenda	1-7
Why Oracle Data Integrator?	1-8
Conventional Integration Process: ETL	1-10
Extract Load Transform (E-LT)	1-11
ODI Architecture and Components	1-13
ODI Architecture	1-14
ODI Components: Overview	1-16
Using ODI Studio	1-17
Designer Navigator (Work Repository)	1-18
Operator Navigator (Work Repository)	1-19
Topology Navigator (Master Repository)	1-20
Security Navigator (Master Repository)	1-21
What Is an Agent?	1-22
ODI Agents	1-23
Three Types of Agents: Java EE, Standalone, Collocated Standalone	1-24
Using the Three Types of Agents	1-25
Standalone Agent: Example	1-26
ODI Console	1-27
Enterprise Manager FMW Console	1-28
Management Pack for ODI for Enterprise Manager Cloud Control	1-29
Management Pack for ODI for EM CC ODI Home Page	1-30
Agenda	1-31
ODI Repositories	1-32
Master and Work Repositories	1-33
Repository Setup: Example	1-35
Repository Setup: Multiple Master Repositories	1-36
Components: Global View	1-37
Possible ODI Methodology	1-38
Checklist of Practice Activities	1-39
Starting Oracle Data Integrator	1-40
Using Online Help	1-41

Quiz 1-42  
Summary 1-44  
Practice 1-1 Overview: Logging In and Using Help 1-45

## **2 Administering ODI Repositories**

Objectives 2-2  
Agenda 2-3  
Initial Repository Administration Tasks 2-4  
Steps to Set Up the ODI Repositories 2-5  
1. Run Repository Creation Utility 2-6  
1a. Create Schemas 2-7  
1b. Create Passwords and Tablespaces 2-8  
2. Connect to the Master/Work Repository 3. Create a Wallet 2-9  
Connecting to the Master/Work Repository 2-10  
Exporting the Master Repository 2-11  
Importing the Master Repository 2-13  
Creating a Work Repository – 1 2-14  
Creating a Work Repository – 2 2-15  
Changing the Work Repository Password 2-16  
Quiz 2-17  
Summary 2-18  
Checklist of Practice Activities 2-19  
Practice 2-1 Overview: Creating and Connecting to ODI Master and Work Repositories 2-20

## **3 ODI Topology Concepts**

Objectives 3-2  
Agenda 3-3  
What Is Topology? 3-4  
What Is in the Topology? 3-5  
Agenda 3-6  
What Is a Data Server? 3-7  
Data Servers: Examples 3-8  
Important Guideline 1 3-9  
What Is a Physical Schema? 3-10  
Physical Schemas: Properties 3-11  
Technology Terminology Among Vendors 3-12  
Important Guideline 2 3-13  
Agenda 3-14  
Infrastructure for Two Production Sites: Example 3-15  
ODI Design: Physical Architecture of the Two Production Sites 3-16  
Logical Schemas and Contexts 3-17

What Is a Logical Schema? 3-18  
Important Guideline 3 3-19  
Logical Versus Physical Architecture 3-20  
Design Time Versus Run Time 3-21  
What Is a Context? 3-22  
A Context Maps a Logical to a Physical Schema 3-23  
Defining Contexts 3-24  
Mapping Logical and Physical Resources 3-25  
Agenda 3-27  
ODI Physical Agents 3-28  
Creating a Physical Agent 3-29  
ODI Agent Parameters 3-30  
Launching a Stand-Alone Agent: Examples 3-32  
Stopping the ODI Agent 3-33  
Deploying and Configuring a Java EE Agent 3-34  
Load Balancing: Example 3-37  
Important Guideline 5 3-39  
Infrastructure with Agents: Example 3-40  
Defining Agents: Example 3-41  
Special Case: Fragmentation Problem 3-42  
Special Case: Important Guideline 6 3-44  
Special Case: Defining the Physical Architecture 3-45  
Special Case: The Infrastructure 3-46  
Special Case: Physical Architecture in ODI 3-47  
Agenda 3-48  
Planning the Topology 3-49  
Matrix of Logical and Physical Mappings 3-50  
Quiz 3-51  
Summary 3-54  
Checklist of Practice Activities 3-55  
Practice 3-1 Overview: Configuring a Standalone Agent by Using the Common Administration Model 3-56

#### **4 Describing the Physical and Logical Architecture**

Objectives 4-2  
Agenda 4-3  
What Topology Navigator Contains 4-4  
Topology Navigator: Overview 4-5  
Review: Context Connects Logical to Physical 4-7  
Objects You Create in the Practice 4-8  
Defining a Context 4-9

Agenda 4-10  
Physical Architecture View 4-11  
Prerequisites for Connecting to a Server 4-12  
Important Note 4-13  
Creating a Data Server 4-14  
Creating a Data Server: JDBC 4-15  
JDBC Driver 4-16  
JDBC URL 4-17  
Creating a Data Server: JNDI 4-18  
Testing a Data Server Connection 4-19  
Creating a Physical Schema 4-20  
Agenda 4-21  
Logical Architecture and Context Views 4-22  
Creating a Logical Schema 4-23  
Creating a Logical Agent 4-24  
Editing a Context to Link Logical and Physical Agents 4-25  
Quiz 4-26  
Summary 4-28  
Checklist of Practice Activities 4-29  
Practice 4-1 Overview: Working with Topology 4-30

## **5 Setting Up a New ODI Project**

Objectives 5-2  
Agenda 5-3  
What Is a Project? 5-4  
Oracle Data Integrator Projects: Overview 5-5  
How to Use ODI Projects in Your Work 5-6  
Creating a New Project 5-7  
Agenda 5-8  
What Is a Folder? 5-9  
Creating a New Folder 5-10  
Organizing Projects and Folders 5-11  
Agenda 5-12  
What Is a Knowledge Module? 5-13  
Types of Knowledge Modules 5-14  
Which Knowledge Modules Are Needed? 5-15  
Knowledge Modules: Examples 5-16  
Importing Knowledge Modules 5-17  
Replacing Existing KMs 5-18  
Knowledge Module Editor 5-20  
Editing a Knowledge Module 5-21

Agenda 5-22  
Exporting and Importing 5-23  
Exporting an Object 5-24  
Importing an Object 5-25  
ID Numbers: Overview 5-26  
Import Types 5-27  
Choosing the Import Mode 5-28  
Import Report 5-29  
Agenda 5-30  
What Is a Marker? 5-31  
Tagging Objects with Markers 5-32  
Removing Markers 5-33  
Marker Groups 5-34  
Project and Global Markers 5-35  
Creating a Marker Group 5-36  
Quiz 5-37  
Summary 5-39  
Checklist of Practice Activities 5-40  
Practice 5-1 Overview: Setting Up a New ODI Project 5-41

## **6 Oracle Data Integrator Model Concepts**

Objectives 6-2  
What Is a Model? 6-3  
Agenda 6-4  
Relational Model 6-5  
Relational Model: Tables and Columns 6-6  
Relational Model: Keys 6-7  
Relational Model: Foreign Keys 6-8  
Relational Model: Constraints 6-9  
Relational Model: Indexes 6-11  
Relational Model Support in ODI 6-12  
Additional Metadata in ODI 6-13  
FlexFields 6-15  
Agenda 6-16  
What Is Reverse-Engineering? 6-17  
Methods for DBMS Reverse-Engineering 6-18  
Other Methods for Reverse-Engineering 6-19  
Standard Versus Customized Reverse-Engineering 6-20  
Reverse-Engineering Life Cycle 6-21  
Agenda 6-22  
Creating a Model by Reverse-Engineering 6-23

Step 1: Creating and Naming a New Model 6-24  
Note: Creating and Naming a New Model 6-25  
Step 2: Defining a Reverse-Engineering Strategy 6-26  
Step 3: Starting the Reverse-Engineering Process 6-28  
Using RKM for Customized Reverse-Engineering 6-29  
Selective Reverse-Engineering 6-31  
Step 4: Fleshing Out Models 6-32  
Shortcuts 6-33  
Smart Export and Import 6-34  
Quiz 6-35  
Summary 6-37  
Checklist of Practice Activities 6-38  
Practice 6-1 Overview: Creating Models by Reverse-Engineering 6-39

## **7 Organizing ODI Models and Creating ODI Datastores**

Objectives 7-2  
Agenda 7-3  
What Is a Model Folder? 7-4  
Creating a Model Folder 7-5  
What Is a Submodel? 7-6  
Creating a Submodel 7-7  
Organizing Datastores into Submodels 7-8  
Setting Up Automatic Distribution 7-9  
Agenda 7-10  
Creating Datastores 7-11  
Creating a Datastore in a Model 7-12  
Adding Columns to a Datastore 7-13  
Agenda 7-14  
What Is a Constraint in ODI? 7-15  
Constraints in ODI 7-16  
Creating a Mandatory Column 7-17  
Agenda 7-18  
Creating a Key 7-19  
Checking a Key 7-20  
Creating a Reference 7-21  
Creating a Simple Reference 7-22  
Creating a Complex Reference 7-23  
Checking a Reference 7-24  
Agenda 7-25  
Creating a Condition 7-26  
Checking a Condition 7-27



Agenda 7-28  
Audit/Explore: When and Why 7-29  
Audit/Explore Process: Overview 7-30  
Agenda 7-31  
Displaying the Contents of a Datastore 7-32  
Viewing the Distribution of Values 7-33  
Analyzing the Contents of a Datastore 7-34  
Agenda 7-35  
Defining Business Rules in ODI 7-36  
From Business Rules to Constraints 7-37  
Deducing Constraints from Data Analysis 7-38  
Testing a Constraint 7-39  
Auditing a Model or Datastore 7-40  
Reviewing Erroneous Records 7-41  
Quiz 7-42  
Summary 7-44  
Checklist of Practice Activities 7-45  
Practice 7-1 Overview: Checking Data Quality in the Model 7-46

## **8 ODI Mapping Concepts**

Objectives 8-2  
Agenda 8-3  
What Is a Mapping? 8-4  
Business Rules for Mappings 8-5  
Where Are the Rules Defined? 8-6  
Agenda 8-7  
What Is an Expression? 8-8  
What Is a Join? 8-9  
What Is a Filter? 8-10  
What Is a Lookup? 8-11  
What Is a Set? 8-12  
What Are Some of the Others? 8-13  
New with Patch: Pivot and Unpivot 8-14  
Agenda 8-15  
How Does ODI Implement Business Rules? 8-16  
Business Problem 8-17  
Implementing the Rules 8-18  
Integration Process 8-19  
Process Details 8-20  
Process Implementation: Example 1 8-21  
Process Implementation: Example 2 8-22

Process Implementation: Example 3	8-23
Agenda	8-24
What Is a Staging Area?	8-25
Execution Location	8-26
Agenda	8-27
From Business Rules to Processes	8-28
Knowledge Modules	8-29
What Is a Knowledge Module?	8-30
Code Generation	8-31
KM Types Used in Mappings	8-32
Agenda	8-33
Purpose of a Mapping	8-34
What Is an Expression?	8-35
Creating a One-to-One Mapping	8-36
Creating and Naming a Mapping	8-37
Defining the Target Datastore	8-38
Multiple Targets	8-39
Defining the Source Datastore	8-40
Connecting the Ports to Make the Map	8-41
Defining the Expressions	8-42
Valid Expression Types	8-43
Saving the Mapping	8-44
Running the Mapping	8-45
Quiz	8-46
Summary	8-48
Checklist of Practice Activities	8-49
Practice 8-1 Overview: Mapping: Simple Transformations	8-50

## **9 Designing Mappings**

Objectives	9-2
Agenda	9-3
Multiple-Source Datastores	9-4
Creating a Join Manually	9-5
Advanced Joins	9-6
Types of Joins	9-7
Setting Up a Join	9-8
Creating Lookups	9-10
Using Lookups	9-11
Agenda	9-13
Filters in ODI	9-14
Defining a Filter Manually	9-15

Setting Up a Filter	9-16
Agenda	9-17
Physical Mapping Diagram	9-18
Flow in the Physical Diagram	9-20
What Defines the Flow?	9-21
Scenario	9-22
Basic Process	9-23
Agenda	9-24
Purpose of a Staging Area	9-25
Placing the Staging Area	9-26
Important Note	9-27
Specifying the Staging Area	9-28
Agenda	9-29
Options for Expressions	9-30
Setting Options for Expressions	9-31
Disabling an Expression	9-32
Enabling a Mapping for Inserts or Updates	9-33
Agenda	9-34
Execution Location and Syntax	9-35
Why Change the Execution Location?	9-36
Changing the Execution Location	9-37
ODI Mapping Execution Simulation	9-38
Agenda	9-39
Which KMs for Which Flow?	9-40
Knowledge Modules: Additional Information	9-42
Identifying IKMs and LKMs	9-43
IKMs and LKMs: Strategies and Methods	9-44
Specifying an LKM	9-45
Specifying an IKM	9-46
Common KM Options	9-47
Flow: Example 1	9-48
Flow: Example 2	9-49
Flow: Example 3	9-50
Quiz	9-51
Summary	9-52
Checklist of Practice Activities	9-53
Practice 9-1 Overview: Mapping: Complex Transformations	9-54
Practice 9-2 Overview: Mapping: Implementing Lookup	9-55

## **10 Mappings: Monitoring and Troubleshooting**

- Objectives 10-2
- Agenda 10-3
- Operator Navigator: Viewing the Log 10-4
- Using the Operator Navigator 10-5
- Hierarchy: Sessions, Steps, Tasks 10-6
- Viewing Details of Sessions, Steps, and Tasks 10-7
- Monitoring Execution of a Mapping 10-8
- Troubleshooting a Session 10-9
  - 1. Identifying the Error 10-10
  - 2. Reviewing the Code 10-11
  - 3. Fixing the Code and Restarting the Session 10-12
  - 4. Fixing the Mapping 10-13
- Keys to Reviewing the Generated Code 10-14
- Agenda 10-15
- Common Errors and Symptoms 10-16
- Important Note 10-18
- Tips for Preventing Errors 10-19
- Using the Attributes Panel for Quick Edits 10-20
- Quiz 10-21
- Summary 10-23
- Checklist of Practice Activities 10-24
- Practice 10-1 Overview: Creating ODI Mapping: Exporting a Flat File to a Relational Table 10-25

## **11 Designing Mappings: Advanced Topics 1**

- Objectives 11-2
- Agenda 11-3
- Business Rules in Mappings 11-4
- Business Rule Elements 11-5
- More Elements 11-6
- Expression Editor 11-7
- Agenda 11-9
- Using a Variable in Code 11-10
- Binding Versus Substitution 11-12
- Case Sensitivity 11-13
- Agenda 11-14
- Defining a Dataset 11-15
- Using Set-Based Operators 11-16
- Example of SET: UNION 11-17
- Agenda 11-18

Types of Sequences	11-19
Support for Native Sequences	11-20
Creating a Native Sequence	11-21
Referring to Sequences	11-22
Note: Sequences Updated by Agent	11-23
Using Standard Sequences in Mappings Correctly	11-24
Using ODI Standard Sequences in Mappings	11-25
Populating Native Identity Attributes	11-26
Sequences: Best Practices	11-27
Automatic Temporary Index Management	11-28
Tracking Variables and Sequences	11-29
How Variable and Sequence Tracking Works	11-30
Variable Actions	11-31
Definition Tab of Session Step or Session Task	11-32
Quiz	11-33
Summary	11-34
Checklist of Practice Activities	11-35
Practice 11-1: Using Native Sequences with ODI Mapping	11-36
Practice 11-2: Using Temporary Indexes	11-37
Practice 11-3: Using Sets with ODI Mapping	11-38

## **12 Designing Mappings: Advanced Topics 2**

Objectives	12-2
Agenda	12-3
Partitioning	12-4
Definition in Datastore After Reverse-Engineering	12-5
Using Partitioning in a Mapping	12-6
Agenda	12-7
Reusable Mappings	12-8
Using Reusable Mappings: Example	12-9
Derived Select (Subselect) for Reusable Mappings	12-10
Agenda	12-11
What Is a User Function?	12-12
Why Use User Functions?	12-13
Properties of User Functions	12-15
Using User Functions	12-16
Creating a User Function	12-17
Defining an Implementation	12-18
Syntax and Implementations	12-19
User Functions at Design Time	12-20
User Functions at Run Time	12-21

Note: Functions in Execution Log 12-22  
Agenda 12-23  
Using Substitution Methods 12-24  
Substitution Methods: Examples 12-26  
Agenda 12-27  
Description of KM Steps 12-28  
Details of the Steps 12-29  
Setting KM Options 12-30  
Developing Your Own KM: Guidelines 12-31  
Complex File Technology 12-33  
Quiz 12-34  
Summary 12-35  
Checklist of Practice Activities 12-36  
Practice 12-1: Creating and Using Reusable Mappings 12-37  
Practice 12-2: Developing a New Knowledge Module 12-38

### **13 Using ODI Procedures**

Objectives 13-2  
Agenda 13-3  
What Is a Procedure? 13-4  
Procedure: Examples 13-5  
Creating Procedures: Overview 13-7  
Agenda 13-8  
Creating a New Procedure 13-9  
Agenda 13-10  
Creating a Command 13-11  
Arranging Tasks in Order 13-13  
Which Parameters Should Be Set? 13-14  
Valid Types of Commands 13-15  
More Elements 13-16  
Why Use a Source Command? 13-17  
Agenda 13-18  
Types of Options 13-19  
Creating a New Option 13-20  
Making a Command Optional 13-21  
Using an Option Value in a Command 13-22  
Agenda 13-23  
Procedure Execution 13-24  
Using the Operator Navigator to View Results 13-25  
Quiz 13-26  
Summary 13-28

Checklist of Practice Activities 13-29  
Practice 13-1: Creating an ODI Procedure 13-30

## **14 Using ODI Packages**

Objectives 14-2  
Agenda 14-3  
What Is a Package? 14-4  
Creating a Package 14-5  
Agenda 14-6  
Creating and Naming a Package 14-7  
Package Diagram 14-8  
Package Diagram Toolbar 14-9  
Agenda 14-11  
Package Steps 14-12  
Creating a Package Step 14-13  
What Is an ODI Tool? 14-14  
Creating an ODI Tool Step 14-15  
Tool Steps: Best Practices 14-16  
Agenda 14-17  
Sequencing Steps 14-18  
A Simple Package 14-19  
Sequencing Package Steps 14-20  
Agenda 14-21  
Executing a Package 14-22  
Agenda 14-23  
Basic Step Types 14-24  
Advanced Step Types 14-25  
Agenda 14-26  
Creating Model, Submodel, and Datastore Steps 14-27  
Models, Submodels, and Datastore Steps 14-28  
Agenda 14-30  
Creating a Variable Step 14-31  
Variable Steps 14-32  
Agenda 14-34  
Controlling Execution 14-35  
Error Handling 14-36  
Creating a Loop 14-37  
The Advanced Tab 14-38  
Quiz 14-39  
Summary 14-41  
Checklist of Practice Activities 14-42

Practice 14-1: Creating an ODI Package 14-43

Practice 14-2: Using ODI Packages with Variables and User Functions 14-44

## **15 Step-by-Step Debugger**

Objectives 15-2

Agenda 15-3

Overview 15-4

Agenda 15-5

Process Overview 15-6

Starting a Session in Debug mode 15-7

Specifying Debug Properties 15-8

Control Execution Flow 15-9

Screen Step Numbering 15-10

Agenda 15-11

New Functionalities 15-12

Benefits for End Users 15-15

Agenda 15-16

Debug Toolbar 15-17

Toolbar: Current Cursor 15-18

Toolbar: Get Data 15-19

Toolbar: Step Into 15-20

Toolbar: Run to Task End 15-21

Toolbar: Run to Next Task 15-22

Toolbar: Run to Step End 15-23

Toolbar: Run to Next Step 15-24

Toolbar: Pause 15-25

Toolbar: Resume 15-26

Summary 15-27

Checklist of Practice Activities 15-28

Practice 15-1: Debugging Mappings 15-29

## **16 Managing ODI Scenarios**

Objectives 16-2

Agenda 16-3

What Is a Scenario? 16-4

Properties of Scenarios 16-5

Agenda 16-6

Scenario-Related Tasks 16-7

Generating a Scenario 16-8

Regenerating a Scenario 16-9

Generation Versus Regeneration 16-10



Executing a Scenario from the GUI 16-11  
Executing a Scenario from a Command Line 16-12  
Executing a Scenario from a Package 16-13  
Exporting a Scenario 16-14  
Agenda 16-15  
Preparing Scenarios for Deployment 16-16  
Automating Scenario Management 16-17  
Scheduling the ODI Scenario 16-18  
Scheduling ODI Scenario with External Scheduler 16-21  
Managing Schedules 16-22  
Quiz 16-23  
Summary 16-24  
Checklist of Practice Activities 16-25  
Practice 16-1: Creating and Scheduling an ODI Scenario 16-26

## **17 Using Load Plans**

Objectives 17-2  
Should You Organize Executions with Load Plans? 17-3  
What Are Load Plans? 17-4  
Load Plan Editor 17-5  
Load Plan Steps 17-6  
Defining the Restart Behavior 17-7  
Are Load Plans Substitutes for Packages or Scenarios? 17-9  
Benefits of Using Load Plans 17-10  
Handling Failed Load Plans 17-11  
Quiz 17-12  
Summary 17-13  
Checklist of Practice Activities 17-14  
Practice 17-1 Overview: Using Load Plans 17-15

## **18 Enforcing Data Quality with ODI**

Objectives 18-2  
Agenda 18-3  
Why Data Quality? 18-4  
When to Enforce Data Quality 18-5  
Data Quality in Source Applications 18-6  
Data Quality Control in the Integration Process 18-7  
Data Quality in the Target Applications 18-8  
Agenda 18-9  
Data Quality Business Rules 18-10  
From Business Rules to Constraints 18-11

Agenda	18-12
Data Quality System: Overview	18-13
Static and Flow Controls: Differences	18-14
Data Quality Control: Properties	18-15
Synchronous Control	18-16
What Is a Constraint?	18-17
What Can Be Checked?	18-18
Enforcing Data Quality in a Mapping	18-19
Agenda	18-20
Setting Up Static or Flow Control	18-21
Enabling Static or Flow Control	18-22
Agenda	18-23
Setting the Physical Options	18-24
Setting the Logical Options	18-25
Agenda	18-26
Selecting Which Constraints to Enforce	18-27
Selecting Which Constraints to Check	18-28
Differences Between Control Types	18-29
Agenda	18-30
Reviewing Erroneous Records	18-31
EnterpriseDataQuality Tool	18-32
Using the EDQ Tool	18-33
Quiz	18-34
Summary	18-36
Checklist of Practice Activities	18-37
Practice 18-1: Enforcing Data Quality with ODI Mappings	18-38

## **19 Working with Changed Data Capture (CDC)**

Objectives	19-2
Why Changed Data Capture?	19-3
CDC Techniques	19-4
Changed Data Capture in ODI	19-5
Journalizing Components	19-6
CDC Infrastructure in ODI	19-7
Simple Versus Consistent Set Journalizing	19-8
Limitations of Simple CDC Journalizing: Example	19-9
Consistent CDC Journalizing	19-10
Consistent CDC: Infrastructure	19-11
Setting Up Journalizing	19-12
Setting CDC Parameters: Example	19-13
Adding a Subscriber: Example	19-14

Starting Journal: Example 19-15  
Journalizing Status 19-16  
Viewing Data/Changed Data: Example 19-17  
Using Changed Data 19-18  
Oracle GoldenGate Integration 19-20  
Oracle GoldenGate Integration in ODI 12c 19-21  
Quiz 19-22  
Summary 19-24  
Checklist of Practice Activities 19-25  
Practice 19-1: Implementing Changed Data Capture 19-26

## **20 Advanced ODI Administration**

Objectives 20-2  
Agenda 20-3  
Introduction to ODI Security Navigator 20-4  
Security Concepts: Overview 20-6  
Defining Security Policies 20-8  
Creating Profiles 20-9  
Using Generic and Nongeneric Profiles 20-10  
Built-in Profiles 20-11  
Creating Users 20-12  
Assigning a Profile to a User 20-13  
Assigning an Authorization by Profile or User 20-14  
Defining Password Policies 20-15  
Setting User Preferences 20-17  
ODI Security Integration: Overview 20-18  
Implementing External Authentication (OPSS) 20-19  
Implementing External Authentication (OPSS): Switching the Authentication Mode 20-21  
Implementing External Password Storage 20-22  
Agenda 20-24  
Types of ODI Reports 20-25  
Generating Topology Reports 20-26  
Generated Topology Report: Example 20-27  
Version Comparison Report: Example 20-28  
Generating Object Reports 20-29  
Agenda 20-30  
Integration of ODI with Enterprise Manager 20-31  
Java EE Agent and Enterprise Manager Configuration with WebLogic Domain:  
    Overview 20-32  
Using ODI Console: Example 20-33  
Quiz 20-34

Summary	20-35
Checklist of Practice Activities	20-36
Practice 20-1: Setting Up ODI Security	20-37
Practice 20-2: Integration with Enterprise Manager and Using ODI Console	20-38

## **21 Integrating ODI with Subversion**

Objectives	21-2
Agenda	21-3
ODI-VCS Integration	21-4
ODI-VCS Integration Features	21-5
ODI: Selecting the Required VCS	21-6
ODI Repository Change	21-7
Agenda	21-8
SVN Connections	21-9
Creating an SVN Connection	21-10
Configuring ODI Subversion Settings	21-11
Configuring the Subversion Repository with ODI	21-12
Creating a Default Subversion Project Structure	21-13
Configuring the Subversion Repository with ODI: Options	21-14
SVN Configuration Options	21-15
Creating the Default Project Structure	21-16
Disconnection from ODI (Required)	21-17
Agenda	21-18
Adding ODI Objects to SVN: Options	21-19
Adding a Single Non-Versioned Object to SVN: 1	21-20
Adding a Single Non-Versioned Object to SVN: 2	21-21
Adding Multiple Non-Versioned Objects to SVN: 1	21-22
Adding Multiple Non-Versioned Objects to SVN: 2	21-23
Creating a New Version for an Object	21-24
Adding a Version Comment	21-25
Agenda	21-26
Creating Full or Partial Tags in the Subversion Repository	21-27
Creating a Full Tag	21-28
Full Tag Parameters	21-29
Creating a Partial Tag	21-30
Partial Tag: Adding a Subset of ODI Objects	21-31
Agenda	21-32
Version History	21-33
Comparing Versions	21-34
Version Search Criteria	21-35
Version Compare Results	21-36

- Display Color Options 21-37
- Display Version Tree 21-38
- Agenda 21-39
- Performing a Branch Merge 21-40
- Merge Summary Report 21-41
- Merge Results Window 21-42
- Resolving Merge Conflicts 21-43
- Merge Conflict Resolution 21-44
- Quiz 21-45
- Summary 21-46
- Practice 21-1: Subversion ODI Setup 21-47
- Practice 21-2: Branch and Label Management 21-48

## **22 Integrating Big Data with ODI**

- Objectives 22-2
- Agenda 22-3
- Big Data 22-4
- Google BigTable, a Big Data Pioneer 22-5
- Emergence of Apache Hadoop 22-6
- Agenda 22-7
- Apache Hadoop 22-8
- Hadoop Ecosystem 22-9
- Apache HBASE 22-10
- Apache Hive 22-11
- Apache Pig 22-12
- Apache Spark 22-13
- Apache Sqoop 22-14
- Apache Oozie 22-15
- Agenda 22-16
- Hadoop Data Integration: Overview 22-17
- Big Data Knowledge Modules Matrix:1 22-18
- Big Data Knowledge Modules Matrix: 2 22-19
- Big Data Knowledge Modules Matrix: 3 22-20
- ODI: Hadoop Integration Process 22-21
- ODI: Further Processing After Hadoop Analysis 22-22
- ODI: Code Generation 22-23
- Agenda 22-24
- Apache Oozie and ODI Integration 22-25
- ODI to Oozie Workflow Tasks 22-26
- Agenda 22-27
- ODI Support for Unstructured Data 22-28

ODI Support for Complex Data 22-29  
Summary 22-30