

## Data Integration and ETL with Oracle Warehouse Builder

**Duration:** 5 Days

### What you will learn

In this 5-day hands-on course, students spend the first 3 days exploring the concepts, design issues, architecture, and terminology related to Oracle Warehouse Builder 11g, Release 2. These three days cover basic ETL activities using the subset of OWB functionality included in the Oracle Database 11g, Release 2 license.

The last 2 days of this course cover advanced ETL, data integration, and data warehousing functionality in Oracle Warehouse Builder, Release 2, beyond the basic ETL activities covered in the first 3 days. This part of the course requires the Oracle Warehouse Builder Enterprise ETL/ODI EE option.

Learn To :

Retrieve data from different types of sources such as flat files or relational schemas

Use the different transformation operators to design an ETL task

Load data by executing the mappings or the process flows

Use OWB features to manage metadata changes, debug mappings, backup metadata, manage security, and tune the ETL mappings for better performance

Integrate Warehouse Builder with OBI EE

Explain the Warehouse Builder architecture and configuration

### Audience

Business Intelligence Developer

Data Warehouse Administrator

Data Warehouse Analyst

Data Warehouse Developer

Developer

Support Engineer

### Prerequisites

*Required Prerequisites*

OTN Oracle By Example (OBE): Oracle Business Intelligence

Oracle University ILT: Oracle Database 11g: Data Warehousing

*Suggested Prerequisites*

Oracle Database 11g: Data Warehousing Fundamentals

### Course Objectives

Backup the OWB Projects using the MDL Export/Import and create snapshots to manage metadata changes

Load tables and view the resulting data

Use the Mapping Debugger to debug mappings

Apply performance enhancement methods in the mappings

Report on the ETL Jobs using the Repository Browser  
Describe the OBI EE integration  
Use OWB to define, deploy, and execute basic source to relational target ETL programs  
Describe the Name and Address cleansing and Match-merging  
Define metadata representing flat file and relational sources, and relational table targets  
Create simple mappings from flat file and relational sources to relational targets  
Explain the use of different Mapping Editor operators  
Define a process flow for a set of simple mappings  
Use OWB tools to deploy tables, mappings, and related objects

## Course Topics

### **Installing and Setting Up the Warehouse Builder Environment**

What Is Oracle Warehouse Builder?  
Basic Process Flow of Design and Deployment  
Oracle Warehouse Builder Licensing and Connectivity Options  
Installing Oracle Warehouse Builder 11.2  
OWBSYS Schema  
Using OWB 11.2 with Database 10g R2  
Using the Repository Assistant to Manage Workspaces  
Supported operating systems (OS), sources, targets, and optional components

### **Getting Started with Warehouse Builder**

Logging In to OWB Design Center  
Overview of the Design Center  
OWB Projects  
Overview of Objects within a Project  
Overview of Objects within an Oracle Module  
Organizing Metadata Using Foldering  
Locations Navigator and Global Navigator panels  
Setting Projects Preferences: Recent Logons

### **Understanding the Warehouse Builder Architecture**

Warehouse Builder Development Cycle  
Overview of the Architecture for Design, Deployment, Execution  
Overview of Configurations, Control Centers, and Locations  
Creating Target Schemas  
Registering DB User as an OWB User  
Roles and Privileges of Warehouse Builder Users  
Registering an Oracle Workflow User

### **Defining Source Metadata**

Data warehouse implementation: Typical steps  
Difference Between Obtaining Relational and Flat File Source Metadata  
Creating Flat File Module  
Sampling Simple Delimited File  
Sampling Multi-record Flat File  
Creating an Oracle Module  
Selecting the Tables for Import

### **Defining ETL Mappings for Staging Data**

- Purpose of a Staging Area
- Define OWB Mappings
- Mapping Editor Interface: Grouping, Ungrouping, and Spotighting
- Creating External Tables
- Create and Bind process
- Levels of Synchronizing Changes
- Using the Automapper in the Mapping Editor
- Set loading type and target load ordering

### **Using the Data Transformation Operators**

- Component Palette
- Using a Joiner
- Lookup Operator: Handling Multiple Match Rows
- Using the Subquery Filter Operator
- Using the Set, Sequence, and Splitter Operators
- Pivot and Unpivot Operators
- Using the Aggregator, Constant, Transformation, and Pre/Post Mapping Operators
- Deploying and Executing in Projects Navigator Panel

### **Cleansing and Match-Merging Name and Address Data**

- Integrating Data Quality into ETL
- Name and Address Data Cleansing
- Name and Address Server
- Name and Address Software Providers
- Settings in the Name and Address Operator
- Reviewing a Name and Address Mapping
- Consolidating Data Using the Match Merge Operator
- Using the Match Merge Operator in a Mapping

### **Using Process Flows**

- Process Flow Concepts
- Creating a Process Flow Module, a Process Flow Package and a Process Flow
- Types of Activities: Fork, And, Mapping, End Activity
- Creating Transitions Between Activities
- Some More Activities: Manual, SQLPLUS, Email
- Generating the Process Flow Package

### **Deploying and Reporting on ETL Jobs**

- Logical Versus Physical Implementation
- Setting Object Configuration
- Deployment Concepts
- Invoking the Control Center Manager
- Deploy Options and Preferences
- Repository Browser
- Starting OWB Browser Listener and the Repository Browser
- Browsing Design Center and Control Center Reports

### **Using the Mapping Debugger**

- Overview of the Mapping Debugger
- Initializing a Mapping Debugging Session
- Preparing the testing environment and test data
- Setting breakpoints and watch points

Evaluating the flow of data to detect mapping errors

### **Enhancing ETL Performance**

Performance Tuning at Various Levels

Performance-Related Parameters in ETL Design

Configuring Mappings for Operating Modes, DML Error Logging, Commit Control, and Default Audit Levels

Enabling Partition Exchange Loading (PEL) for Targets

Performance-Related Parameters in Schema Design

Configuring Indexes, Partitions, Constraints

Enabling Parallelism and Parallel DML

Setting Tablespace Properties and Gathering Schema Statistics

### **Managing Backups, Development Changes, and Security**

Overview of Metadata Loader Utilities (MDL)

Managing Metadata Changes by Using Snapshots

Using Change Manager

Version Management of Design Objects

Graphical UI for Security Management

Object-Level Security

Setting Security Parameters

### **Integrating with Oracle Business Intelligence Enterprise Edition (OBI EE)**

Business Justification: Tools Integration

Integrating with OBI EE and OBI SE

Transferring BI Metadata to OBI EE Server

Setting Up the UDML File Location

Deriving the BI Metadata (OBI EE)

Deploying the BI Module

Converting the UDML File for OBI EE

Oracle BI Admin and Answers Tool

### **Administrative Tasks in Warehouse Builder**

Enterprise ETL License Extends Core In-Database ETL

Multiple Named Configurations: Why and How

Using Multiple Named Configurations

Using Configuration Templates

Steps for Setting Up OWB in a RAC Environment

Creating an OWB Schedule

### **Managing Metadata**

Using Lineage and Impact Analysis Diagrams

Invoking Lineage and Impact Analysis

Using the Change Propagation Dialog

User-Defined Properties, Icons, and Objects

Using Pluggable Mappings

Advanced Activity Types in Process Flows

Native Relational Object Support

Heterogeneous Predefined SQL Transformations

### **Accessing Non-Oracle Sources**

Extensible Framework of OWB 11g Release 2

Benefits of Extensible Code Templates

- Location of Seeded Code Templates
- Creating New Code Templates
- Defining New Integration Platforms in OWB

### **Designing Mappings with the Oracle Data Integration Enterprise Edition License**

- Traditional Versus Code Template (CT) Mappings
- Execution Units in a CT Mapping
- Execution View Versus Logical View
- Assigning a Code Template to an Execution Unit
- Convert a Classic Mapping to a CT Mapping That Utilizes Data Pump
- CT Mappings Deploy to Control Center Agents

### **Right-Time Data Warehousing with OWB**

- What Is Meant by Real-Time Data Warehousing
- What Refresh Frequency Does OWB Support
- Building a Trickle Feed Mapping
- Using Advanced Queues in Trickle Feed Mappings
- Using CDC Code Templates in Mappings for Change Data Capture
- Starting CDC Capture Process

### **Defining Relational Models**

- Defining Dimensions Using Wizards and Editors
- Defining Dimension Attributes, Levels, and Hierarchies
- Binding Dimension Attributes to the Implementation Table
- Using the Create Time Dimension Wizard
- Defining a Cube
- Specifying a Cube's Attributes and Measures
- Designing Mappings Using Relational Dimensions and Cubes

### **More Relational Dimensional Modeling**

- Initial Versus Incremental Data Warehouse Loads
- Updating Data and Metadata
- Capturing Changed Data for Refresh
- Setting Loading Properties
- Choosing the DML Load Type
- How OWB Manages Orphans
- Support for Cube-Organized Materialized Views
- Creating a Type 2 Slowly Changing Dimension

### **Modeling Multidimensional OLAP Dimensions and Cubes**

- What Is OLAP
- Multidimensional Data Types
- Analytic Workspace
- Dimensional Modeling Using OWB
- OWB Calculated Measures
- OWB Calculated Measures