

## Data Integration and ETL with Oracle Warehouse Builder

**Duration:** 5 Days

### What you will learn

Participants learn to load data by executing the mappings or the process flows, use Oracle Warehouse Builder 11g, Release 2 features to manage metadata changes, debug mappings, backup metadata, manage security, and tune the ETL mappings for better performance. Integration of Warehouse Builder with OBI EE, along with the Warehouse Builder architecture and configuration are discussed.

Participants learn to retrieve data from different types of sources such as flat files or relational schemas and also to use the different transformation operators to design an ETL task. The usage of Warehouse Builder to define both relational dimensional models and multidimensional models, to deploy a single logical model to multiple physical targets and how to handle slowly changing dimensions are also covered.

In addition, extraction of data from non-Oracle sources using code templates, usage of the Warehouse Builder ETL and data integration features of the Enterprise ETL Option of the Oracle database are discussed.

This functionality requires the Oracle Warehouse Builder Enterprise ETL/ODI EE option.

This course is a combination of Data Integration and ETL with Oracle Warehouse Builder: Part 1 and Data Integration and ETL with Oracle Warehouse Builder: Part 2 courses.

### 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 Warehouse

Explain the Warehouse Builder architecture and configuration

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### Related Training

#### *Required Prerequisites*

Experience in basic use of Oracle RDBMS, including SQL DDL and DML, and PL/SQL;

### *Suggested Prerequisites*

Introduction to Business Intelligence Products (eStudy)

Oracle BI Warehouse Builder 11g R2: Getting Started (OBE)

Oracle Database 11g: Data Warehousing Fundamentals

### **Course Objectives**

Back up 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 Spotlighting
- 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

### **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