

Oracle Database 11g: Administer a Data Warehouse

Duration: 4 Days

What you will learn

Students learn about Oracle's Database partitioning architecture and identify the benefits of partitioning. Students also use parallel operations to reduce response time for data-intensive operations. Participants extract, transform, and load data into an Oracle database warehouse. Students also use materialized views to improve the data warehouse performance. Students also learn how query rewrite can improve a query's performance. Students use the SQL Access Advisor to optimize the entire workload. Finally, students learn how to tune materialized views for fast refresh and query rewrite and how to use the compression and resumable sessions features.

Learn to:

Implement partitioning

Use parallel operations to reduce response time

Extract, Transform, and Load data

Create, use, and refresh materialized views to improve the data warehouse performance

Use Query rewrite to quickly answer business queries using materialized views

Use SQL Access Advisor and PL/SQL procedures to tune materialized views for fast refresh and query rewrite

Audience

Application Developers

Data Warehouse Administrator

Data Warehouse Developer

Database Administrators

Support Engineer

Technical Consultant

Prerequisites

Required Prerequisites

Oracle 10g: Data Warehousing Fundamentals

Oracle Database 11g: Administration Workshop I

Oracle Database 11g: Performance Tuning

Suggested Prerequisites

Good working knowledge of data warehouse design

Ability to read and understand execution plans

Good working knowledge of SQL and in data warehouse design and implementation

Good working knowledge of SQL

Course Objectives

Review the basic Oracle data warehousing concepts

Use parallel operations to reduce response time for data-intensive operations

Extract, Transform, and Load data in the data warehouse

Create, use, and refresh materialized views to improve the data warehouse performance

Use Query rewrite to quickly answer business queries using materialized views

Use SQL Access Advisor and PL/SQL procedures to tune materialized views for fast refresh and query rewrite

Use the features of compression and resumable sessions

Course Topics

Introduction

Development Tools

Oracle SQL Developer

Enterprise Manager

Sample Schemas used

Data Warehouse Design: Overview

What is a Data Warehouse?

Characteristics of a Data Warehouse

Comparing OLTP and Data Warehouses

Data Warehouse Architectures

Data Warehouse Design

Data Warehouse objects

Data Warehouse Schemas

Star Transformation

Partitioning Basics

Partitioned Tables and Indexes

Partitioning Methods

Partitioning Types

Partition Pruning and Star queries

Parallelism Concepts

Operations That Can Be Parallelized

How Parallel Execution Works

Degree of Parallelism

Parallel execution plan

Parallel Operations in Data Warehouses

Parallel Query

Parallel DDL

Parallel DML

Tuning Parameters for Parallel Execution

Balancing the Workload

ETL: Extraction and Transportation

Extraction Methods

Capturing Data With Change Data Capture

Sources and Modes of Change Data Capture

Publish and Subscribe Model: The Publisher and the Subscriber

Synchronous and Asynchronous CDC
Asynchronous AutoLog Mode and Asynchronous HotLog Mode
Transportation in a Data Warehouse
Transportable Tablespaces

ETL: Loading

Loading Mechanisms
Applications of External Tables
Defining external tables with SQL*Loader
Populating external tables with Data Pump
Other Loading Methods

ETL: Transformation

Data transformation
Transformation Mechanisms
Transformation Using SQL
Table Functions
DML error logging

Materialized Views

The Need for Summary Management
Types of Materialized Views
Using Materialized Views for Summary Management
Materialized View Dictionary views

Refreshing Materialized Views

Refresh Options
Refresh Modes
Conditions That Effect Possibility of Fast Refresh
Materialized View Logs
Partition Change Tracking (PCT) Refresh
Refresh Performance Improvements

Working With Dimensions

What Are Dimensions
Creating Dimensions and Hierarchies
Dimensions and Privileges
Dimension Restrictions
Verifying Relationships in a Dimension
Dimension Invalidation

Query Rewrite

Query Rewrite: Overview
What Can be Rewritten
Conditions Required for Oracle to Rewrite a Query
Query Rewrite guidelines
Setting Initialization Parameters for Query Rewrite
Query Rewrite Methods
Partition Change Tracking (PCT) and Query Rewrite
Query Rewrite Enhancement to Support Queries Containing Inline Views

Using the SQL Access Advisor, Compression, and Resumable Sessions

SQL Access Advisor: Usage Model
Setting Initial Options
Specifying the Workload Source
Recommendation Options
Schedule and Review
PL/SQL Procedure Flow
Tuning Materialized Views for Fast Refresh and Query Rewrite
Table Compression and Resumable Sessions