

Oracle Database 11g: Administer a Data Warehouse

Duration: 4 Days

What you will learn

Participants learn about Oracle's Database partitioning architecture and how to identify the benefits of partitioning in addition to using parallel operations to reduce response time for data-intensive operations. Participants extract, transform, and load data into an Oracle database warehouse. Participants also use materialized views to improve the data warehouse performance and learn how query rewrites can improve performance.

The usage of SQL Access Advisor to optimize the entire workload, tuning materialized views for fast refresh and query rewrite and also how to use the compression and resumable sessions features are discussed.

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

Ability to read and understand execution plans

Data Warehouse design, implementation, and maintenance experience

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

Course Objectives

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

Review the basic Oracle data warehousing concepts

Course Topics

Introduction

- Development Tools
- Oracle SQL Developer
- Enterprise Manager
- Sample Schemas used

Data Warehouse Design: Overview

- Characteristics of a Data Warehouse
- Comparing OLTP and Data Warehouses
- Data Warehouse Architectures
- Data Warehouse Design
- Data Warehouse objects
- Data Warehouse Schemas

Data Warehouse Tuning Considerations

- Optimizing Star Queries
- Introducing Bitmap Join Indexes
- Understanding Star Query Optimization and Bitmap Joined Index Optimization

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
- Automatic Parallelism

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