

Oracle Database 11g: Performance Tuning

Duration: 5 Days

What you will learn

Students learn how to use Oracle Database 11g automatic tuning features such as SQL Tuning Advisor, SQL Access Advisor, Automatic Workload Repository and Automatic Database Diagnostic Monitor, and practice these tuning methods. The course focuses on the tuning tasks expected of a DBA: reactive tuning of SQL statements, maintaining SQL statement performance, and tuning the Oracle Database Instance components. Throughout the course, students practice the art of tuning an Oracle Instance through a series of workshops. The methodology is practiced in the workshops rather than taught.

This course does not address partition tuning, materialized views, or RAC specific issues as they are covered in courses specifically for these products. This course makes use of many features that require the Enterprise Edition and optional Packs.

This course counts towards the Hands-on course requirement for the Oracle Database 11g Administrator Certification. Only instructor-led inclass or instructor-led online formats of this course will meet the Certification Hands-on Requirement. Self Study CD-Rom and Knowledge Center courses DO NOT meet the Hands-on Requirement.

Learn To:

- Use the Oracle Database tuning methodology appropriate to the available tools
- Utilize database advisors to proactively tune an Oracle Database Instance
- Use the tools based on the Automatic Workload Repository to tune the database.
- Diagnose and tune common SQL related performance problems
- Diagnose and tune common Instance related performance problems
- Use Enterprise Manager performance-related pages to monitor an Oracle Database

Audience

Database Administrators
Support Engineer
Technical Consultant

Prerequisites

Required Prerequisites

Oracle Database 11g: Administration Workshop II

Oracle Database 11g: Administration Workshop I

Course Objectives

- Use Database Statistics and Metrics to identify a performance problem
- Interpret Tuning diagnostics
- Identify and eliminate performance issues
- Set tuning priorities and strategies
- Identify problem SQL statements

Influence the optimizer

Course Topics

Introduction

Tuning Questions
Who tunes
What to tune
How to tune

Monitoring With Basic Tools

Monitoring tools overview
Enterprise Manager
V\$ views, Statistics and Metrics
Wait Events
Time Model: Overview

Using Automatic Workload Repository

Automatic Workload Repository: Overview
Automatic Workload Repository Data
Database Control and AWR
Generating AWR Reports in SQL*Plus

Identifying the Problem

Tuning Life Cycle Phases
Identify a Tuning Issue
Remedy one problem

Identifying Problem SQL Statements

Characteristics of a bad SQL statement
Role of the Optimizer
Generate explain plan
Access Paths Choices
Trace the execution

Influencing the Optimizer

Manage Optimizer Statistics
Calibrate I/O
Optimizer Cost
Changing Optimizer Behavior

SQL Plan Management

Automatic Maintenance Tasks
SQL Profiles
SQL Access Advisor
SQL Outlines
SQL Plan Baselines

Change Management

Types of changes
SQL Performance Analyzer

DB Replay
Server-Generated Alerts

Using Metrics and Alerts

Benefits of Metrics
Database Control Usage Model
User-Defined SQL Metrics

Using AWR Based Tools

Automatic Maintenance Tasks
Using ADDM
Using Active Session History
Historical Data View

Monitoring an Application (Using Services)

Service Overview
Managing Service
Service Aggregation and Tracing
Tracing Your Session

Baselines

Working with Metric Baselines
Setting Adaptive Alert Thresholds
Configuring Normalization Metrics

Tuning the Shared Pool

Shared Pool Operation
Mutex
Statspack/AWR Indicators
Library Cache Activity
Diagnostic Tools
UGA and Oracle Shared Server
Large Pool

Tuning the Buffer Cache

Architecture
Tuning Goals and Techniques
Symptoms
Solutions

Tuning PGA and Temporary Space

Monitoring SQL Memory Usage
Temporary Tablespace Management

Automatic Memory Management

Automatic Memory Management Architecture
Dynamic SGA Feature
Managing Automatic Memory Management

Tuning Block Space Usage

Space Management
Extent Management

Anatomy of a Database Block
Block Space Management

Tuning I/O

I/O Architecture
Striping and Mirroring
Using RAID
I/O Diagnostics
Using Automatic Storage Management

: Performance Tuning: Summary

Important Initialization Parameters with Performance Impact
Database High Availability: Best Practices
Tablespace: Best Practices
Statistics Gathering

Using Statspack

Introduction to Statspack
Capturing Statspack Snapshots
Reporting with Statspack
Statspack considerations
Statspack and AWR