

Oracle Database: Performance Management and Tuning Ed

Learn via: **Classroom / Virtual Classroom / Online**

Duration: **5 Gün**

Overview

In the Oracle Database 12c: Performance Management and Tuning course, learn about the performance analysis and tuning tasks expected of a DBA: proactive management through built-in performance analysis features and tools, diagnosis and tuning of the Oracle Database instance components, and diagnosis and tuning of SQL-related performance issues.

Learn To:

- Use the Oracle tuning methodology.
- Use Oracle-supplied tools for monitoring and diagnosing SQL and instance performance issues.
- Use database advisors to proactively correct performance problems.
- Identify and tune problem SQL statements.
- Monitor instance performance by using Enterprise Manager.
- Tune instance components.

Benefits To You:

The DBA will analyze the SQL performance with available tools. The DBA will be introduced to various methods of identifying the SQL statements that require tuning and the diagnostic tools used to find ways to improve performance. This will include the use of statistics, profiles to influence the optimizer, and using the SQL Advisors.

Maintain SQL Performance:

A major task of DBAs is to maintain SQL performance across changes. This course introduces Database Replay and SQL Performance Analyzer which help the DBA test and minimize the impact of change.

Influence Instance Behavior:

Instance tuning uses the same general method of observing a problem, diagnosing the problem, and implementing a solution. The instance tuning lessons cover the details of major tunable components and describe how you can influence the instance behavior. For each lesson, we will examine the relevant components of the architecture. The course only discusses the architecture to the level required to understand the symptoms and solutions. More detailed explanations are left to other courses, reference material, and the Oracle documentation.

Target Audience:

- Database Administrators
- Data Warehouse Administrator

Prerequisites

Required:

- Knowledge of the Oracle Database 12c: Administration Workshop

Suggested training:

- Oracle Database 12c: Install and Upgrade Workshop

What You Will Learn

At the end of this course you will be able to:

- Diagnose and tune common Instance related performance problems
- Use Enterprise Manager performance-related pages to monitor an Oracle database
- Use the Oracle Database tuning methodology
- 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

Outline

Introduction

- Course Objectives
- Course Organization
- Course Agenda
- Topics Not Included in the Course
- Who Tunes?
- What Does the DBA Tune?
- How to Tune
- Tuning Methodology

Basic Tuning Diagnostics

- Performance Tuning Diagnostics, Features, and Tools
- DB Time
- CPU and Wait Time Tuning Dimensions
- Time Model
- Dynamic Performance Views
- Statistics
- Wait Events
- Log Files and Trace Files

Using Automatic Workload Repository

- Automatic Workload Repository Overview
- Automatic Workload Repository Data
- Enterprise Manager Cloud Control and AWR
- Snapshots
- Reports
- Compare Periods

Defining the Scope of Performance Issues

- Defining the Problem and Limiting the Scope
- Setting the Priority
- Top SQL Reports
- Common Tuning Problems
- Tuning During the Life Cycle
- ADDM Tuning Session
- Performance Tuning Resource
- Monitoring and Tuning Tools Overview

Using Metrics and Alerts

- Metrics and Alerts Overview
- Limitation of Base Statistics
- Benefits of Metrics
- Viewing Metric History Information
- Viewing Histograms
- Server-Generated Alerts
- Setting Thresholds
- Metrics and Alerts Views

Using Baselines

- Comparative Performance Analysis with AWR Baselines
- Moving Window Baseline
- Baseline Templates
- Creating AWR Baselines
- Baselines Views
- Performance Monitoring and Baselines
- Defining Alert Thresholds Using a Static Baseline
- Configuring Adaptive Thresholds

Using AWR-Based Tools

- Automatic Maintenance Tasks
- ADDM Performance Monitoring
- Active Session History

- Additional Automatic Workload Repository Views
- Real-time ADDM

Real-Time Database Operation Monitoring

- Overview and Use Cases
- Defining a Database Operation
- Database Operation Concepts
- Enabling Monitoring of Database Operations
- Identifying, Starting, and Completing a Database Operation
- Monitoring the Progress of a Database Operation
- Database Operation Views
- Database Operation Tuning

Monitoring Applications

- Service Attributes and Types
- Creating Services
- Using Services with Client Applications
- Using Services with the Resource Manager
- Services and Oracle Scheduler
- Services and Metric Thresholds
- Service Aggregation and Tracing
- Top Services Performance Page

Identifying Problem SQL Statements

- SQL Statement Processing Phases
- SQL Monitoring
- Execution Plans
- DBMS_XPLAN Package
- EXPLAIN PLAN Command
- Reading an Execution Plan
- Using the SQL Trace Facility
- Generating an Optimizer Trace

Influencing the Optimizer

- Functions of the Query Optimizer
- Optimizer Statistics
- Controlling the Behavior of the Optimizer by Using Parameters
- Enabling Query Optimizer Features
- Using Hints
- Access Paths
- Join Operations
- Sort Operations

Reducing the Cost of SQL Operations

- Index Maintenance
- SQL Access Advisor
- Table Maintenance and Reorganization
- Extent Management
- Data Storage
- Migration and Chaining
- Shrinking Segments
- Table Compression

Using SQL Performance Analyzer

- SQL Performance Analyzer Overview
- Real Application Testing Overview and Use Cases
- Capturing the SQL Workload
- Creating a SQL Performance Analyzer Task
- Comparison Reports
- Tuning Regressing Statements
- Guided Workflow Analysis
- SQL Performance Analyzer Views

SQL Performance Management

- Maintaining Optimizer Statistics
- Automated Maintenance Tasks
- Statistics Gathering Options and Preferences
- Deferred Statistics Publishing

- Automatic SQL Tuning
- SQL Tuning Advisor
- SQL Access Advisor
- SQL Plan Management

Using Database Replay

- Database Replay Architecture
- Capture Considerations
- Replay Options
- Replay Analysis
- Database Replay Workflow in Enterprise Manager
- Database Replay Packages and Procedures
- Database Replay Views
- Calibrating Replay Clients

Tuning the Shared Pool

- Shared Pool Architecture
- Latch and Mutex
- Diagnostic Tools for Tuning the Shared Pool
- Avoiding Hard Parses
- Sizing the Shared Pool
- Avoiding Fragmentation
- Data Dictionary Cache
- SQL Query Result Cache

Tuning the Buffer Cache

- Database Buffer Cache Architecture
- Working Sets
- Buffer Cache Tuning Goals and Techniques
- Buffer Cache Performance Symptoms
- Buffer Cache Performance Solutions
- Database Smart Flash Cache
- Flushing the Buffer Cache

Tuning PGA and Temporary Space

- SQL Memory Usage
- Configuring Automatic PGA Memory
- PGA Target Advice Statistics and Histograms
- Automatic PGA and AWR Reports
- Temporary Tablespace Management
- Temporary Tablespace Group
- Monitoring Temporary Tablespaces
- Temporary Tablespace Shrink

Automatic Memory

- Dynamic SGA
- Automatic Shared Memory Management Overview
- SGA Sizing Parameters
- Enabling and Disabling Automatic Shared Memory Management
- SGA Advisor
- Automatic Memory Management Overview
- Enabling Automatic Memory Management
- Monitoring Automatic Memory Management

Tuning I/O

- I/O Architecture
- I/O Modes
- Important I/O Metrics for Oracle Databases
- I/O Calibration
- I/O Statistics
- I/O Diagnostics
- Database I/O Tuning
- Automatic Storage Management (ASM)

Performance Tuning Summary

- Initialization Parameters and their Impact on Performance
- Initial Memory Sizing
- Tuning the Large Pool

- Best Practices for Different Types of Tablespaces
- Block Sizes
- Sizing the Redo Log Buffer and Redo Log Files
- Automatic Statistics Gathering
- Commonly Observed Wait Events