

# ***Oracle Database 12c: Performance Management and Tuning***



**Durata:** 4 giornate

**Scopo del corso:**

Nel corso Database Oracle 12c: Performance Management and Tuning, si apprende come conoscere le analisi e messa a punto, l'attività di prestazioni previste di un DBA: gestione proattiva attraverso funzionalità integrate di effettuazione delle analisi e strumenti, diagnosi e messa a punto dei componenti istanza di database Oracle, e la diagnosi e messa a punto di problemi di prestazioni relativi a SQL.

Al termine del corso gli allievi saranno in grado di:

- Diagnosticare e problemi di prestazioni sintonizzare grado comuni correlati
- Utilizzare le pagine relative alle prestazioni Enterprise Manager per monitorare un database Oracle
- Utilizzare la metodologia messa a punto di database Oracle
- Utilizzare consiglieri di database per ottimizzare in modo proattivo un'istanza del database Oracle
- Utilizzare gli strumenti basati sul Automatic Workload Repository per ottimizzare il database
- Diagnosticare e problemi di prestazioni sintonizzare comuni SQL correlati

**Prerequisiti:**

Aver sostenuto il seguente corso: Oracle Database 12c: Administration Workshop



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## **Contenuti:**

### **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



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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



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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



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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



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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



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## **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



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## **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





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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