Oracle Database 19c DBA Performance Tuning & Management

Duration: 5 Days **Course Code: O19CDBAPT**

Overview:

Oracle Database 19c DBA Performance Tuning & Management Course Overview

English - Please note this course is only available in English.
Nederlands - Let op: deze training is alleen in het Engels beschikbaar.
Français - Veuillez noter que ce cours est uniquement disponible en anglais.
This Oracle Database 19c DBA Performance Tuning & Management course introduces the DBA to the main conc

Target Audience:

Who will the Course Benefit?

The Oracle Database 19c DBA Performance Tuning & Management course is suitable for database administrators and technical support staff who are required to monitor and tune an Oracle Database.

Objectives:

- Course Objectives

- The objective of the Oracle Database 19c DBA Performance Tuning & Management course is to provide the skills needed to monitor and tune an Oracle Database.

Prerequisites:

Delegates who wish to attend the Oracle Database 19c DBA Performance Tuning & Management course should have practical knowledge of using SQL and administering an Oracle database. They should have attended the Oracle SQL and the Oracle Database 19c Administration courses or have a good working knowledge of Oracle SQL and Oracle database administration. The ability to describe and use Oracle built-in packages would be highly advantageous but is not essential.

This course is run on a Linux operating system,a basic knowledge of Linux/UNIX is recommended but is not essential.

Where Oracle 19c courses are listed in pre-requisites or follow-on courses the equivalent Oracle 18c or Oracle 12cR2 courses would also suffice.

Follow-on-Courses:

Further Learning

- Oracle Database 19c Backup and Recovery with RMAN
- Oracle Database 19c Data Guard
- Oracle Database 19c RAC and Grid Infrastructure Administration
- Oracle Multitenant Administration

Content:

Oracle Database 19c DBA Performance Tuning ; Management Training Course Course Contents - DAY 1

Course Introduction

- Administration and Course Materials
- Course Structure and Agenda
- Delegate and Trainer Introductions

Session 1: INTRODUCTION TO ORACLE PERFORMANCE TUNING

- Tuning Overview of Oracle Database Tuning
- Application Developer Tuning Responsibilities
- Oracle DBA Tuning Responsibilities
- Oracle Tuning Process
- Plan a Routine Monitoring Regime
- Setting Suitable Goals
- Syntax Considerations

Session 2: TOOLS FOR EVALUATING SQL STATEMENTS

- Overview of SQL Statement Tuning
- Tools to Assist in SQL Tuning
- Use Explain Plan,Autotrace and SQL Trace to Examine the Execution of a SQL Statement
- Interpreting a SQL Trace

Session 3: THE SQL OPTIMIZER

- The SQL Optimizer
- Statement Transformation
- The Optimizer_Mode Initialization Parameter
- Cost Based Optimizer
- Managing Statistics with DBMS_STATS
- Automatic Statistics Gathering
- Dynamic Statistics
- Adaptive Optimization
- Transferring Statistics between Databases

Session 4: SORTS

- How Oracle Processes Sorts
- Temporary Disk Space Assignment
- SQL Operations that Use Sorts

Session 5: INDEXES

- Index Overview
- Selecting Suitable Columns for an Index
- B*Tree Indexes
- Rebuild an Index
- Create Multiple Indexes on the Same Column
- Composite Indexes
- Descending Indexes
- Access Paths with Indexes
- Index Scans

Session 9: SEQUENCES AND VIEWS

- Sequence Caching
- Views
- View Merging
- Inline Views
- The WITH Clause

Session 10: USING HINTS

- Using Hints to Influence Execution Plan
- Optimization Mode and Goals
- Access Methods
- Query Transformations
- Join Orders
- Join Operations
- Hint Examples

Session 11: MISCELLANEOUS

- Tips for Avoiding Problematic Queries
- Oracle 12.2 SQL*Plus Performance Setting Options
- Array Size
- The Shared Pool
- Intelligent Cursor Sharing
- Virtual Columns
- Bind Variable Usage
- Result Caching
- Approximate Query Processing
- Reduce Cursor Invalidations for DDLs
- Some PL/SQL Performance Issues Oracle Database 19c DBA Performance Tuning ; Management Training Course Course Contents - DAY 3

Session 12: BASIC TUNING DIAGNOSTICS

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

Session 13: REDUCE THE COST OF SQL OPERATIONS

- Identify Unusable Objects
- Maintain Indexes
- Maintain Tables and Reorganize Tables
- Manage Extents
- Row Chaining and Row Migration
- Segment Shrink

Session 14: THE SQL PERFORMANCE ANALYZER

- An Overview of the SQL Performance

Session 19: TUNE PGA AND TEMPORARY SPACE

- Overview of the PGA
- SQL Memory Usage
- Automatic PGA Memory Mode Configuration
- Configure the PGA for a New Instance
- Data Dictionary Views and PGA Management
- PGA Target Advice Statistics and Histograms
- Temporary Tablespace Management
- Temporary Tablespace Group
- Multiple Temporary Tablespaces
- Monitoring Temporary Tablespaces
- Temporary Tablespace Shrink
- Data Dictionary Views and Sort Segments

Session 20: CREATE AND USE SNAPSHOTS AND BASELINES WITH THE AUTOMATIC WORKLOAD REPOSITORY

- An Overview of In-Built Automatic Tuning Capabilities
- An Overview of the Automatic Workload Repository
- AWR Data
- Create and Compare Snapshots
- Examine AWR Reports
- Static and Moving Window Baselines
- Baseline Templates
- AWR Reports
- Monitor AWR using SQL Developer
- Performance Hub Active Report

Session 21: USE AWR-BASED TOOLS

- Automatic Maintenance Tasks
- Maintenance Window Configuration
- ADDM Performance Monitoring
- ADDM Reports
- Active Session History
- Generate an ASH Report

Session 22: USE METRICS AND ALERTS

- An Overview of Metrics and Alerts
- The Benefits and Limitations of Metrics and Alerts
- System Generated,Threshold Generated and Event Based Alerts
- Set Thresholds
- View Metric History Information
- View Histograms
- Metric and Alert Views Oracle Database 19c DBA Performance Tuning ; Management Training Course Course Contents - DAY 5

Session 23: REAL TIME DATABASE OPERATION MONITORING

- Conditions That Stop Indexes Being Used
- Parameters that Affect Optimizer Index Choice Oracle Database 19c DBA Performance Tuning ; Management Training Course Course Contents - DAY 2

Session 6: ADVANCED INDEXES

- Bitmap Indexes
- Key Compressed Indexes
- Index Organized Tables
- Function Based Indexes
- Invisible Indexes
- Table Partitioning
- Serial Direct Path Reads

Session 7: JOIN OPERATIONS

- Understand Access Paths
- Joining Tables
- Nested Loops Join
- Merge Join
- Cluster Join
- Hash Join
- Anti Join and Semi Join
- Outer Joins
- Star Join
- Improve Optimization with Different Access Paths

Session 8: SQL TUNING ADVISOR USING SQL DEVELOPER

- Overview of the DBMS_SQLTUNE Package
- Using the SQL Tuning Advisor with SQL Developer

Analyzer

- Usage of the SQL Performance Analyzer
- Capture a SQL Workload into a SQL Tuning Set
- Create a SQL Performance Analyzer Task
- Generate Comparison Reports
- Configuring Analysis Tasks
- Transfer SQL Tuning Sets

Session 15: SQL PERFORMANCE MANAGEMENT

- Maintenance of the Optimizer Statistics
- Optimizer Statistics Collection
- Gather Statistics Options
- Defer Publishing Statistics
- The Optimizer Statistics Advisor
- The Expression Statistics Store
- Adaptive Query Optimization
- Automatic SQL Tuning
- SQL Monitoring
- The SQL Access Advisor
- SQL Plan Management

Session 16: AUTOMATIC MEMORY MANAGEMENT

- Overview of Automatic Shared Memory Management
- Dynamic SGA
- Parameters for Sizing the SGA
- Enable and Disable Automatic Shared Memory Management
- Overview of Automatic Memory Management
- Enable and Disable Automatic Memory Management
- Monitor Dynamic Memory Allocation
- Use the Memory Advisors

Session 17: TUNE THE SHARED POOL

- Overview of the Shared Pool Architecture
- Tune the Shared Pool
- Tune the Data Dictionary Cache
- Tune the Library Cache
- Pin objects in the Shared Pool
- The Data Dictionary Cache
- Latches and Mutexes
- The SQL Query Result Cache Oracle Database 19c DBA Performance Tuning ; Management Training Course Course Contents - DAY 4

Session 18: TUNE THE BUFFER CACHE

- Overview of the Database Buffer Cache Architecture
- Buffer Cache Tuning Goals and Techniques
- Buffer Cache Performance Symptoms and Solutions
- Buffer Cache Advisor
- Database Smart Flash Cache
- Overview of Real Time Database Operation Monitoring
- Database Operation Concepts
- Define a Database Operation
- Enable the Monitoring of Database Operations
- Identify,Start and Complete a Database Operation
- Monitor the Progress of a Database Operation
- Database Operation Views

Session 24: MONITOR APPLICATIONS

- Aggregation of Services with Tracing
- The DBMS_Monitor Package
- Enable Tracing for a Client
- Enable Session Tracing
- Enable Tracing for a Module
- Analyze Trace Results

Session 25: BIG DATA AND DATA WAREHOUSE FEATURES

- Reduce Cursor Invalidations For DDLS
- Automatic Indexing with DBMS_AUTO_INDEX
- Real Time Statistics Gathering During DML Operations
- High Frequency Statistics Gathering
- Advanced Index Compression
- Basic and Advanced Table Compression
- Quarantine of Runaway SQL Statements
- Bitmap-Based COUNT(DISTINCT) SQL Functions
- Scaleable Sequences

Session 26: TUNE DATABASE I/O

- An Overview of Database I/O Management
- I/O Architecture and Modes
- Important I/O Metrics for Oracle Databases
- Layout Files using Operating System or Hardware Striping
- Manually Distribute Files to Reduce I/O Contention
- Sample Configurations
- Asynchronous and Synchronous I/O
- Multi-Threaded Oracle
- Automatic Storage Management(ASM)Overview

Session 27: A SUMMARY OF ORACLE PERFORMANCE TUNING

- The Potential Impact of Initialization Parameters on Performance
- Initially Size Memory for a Database
- Recommended Best Practices for Different Types of Tablespaces
- Determine and Use Block Sizes
- Size the Redo Log Buffer and the Redo Log Files
- Configure Automatic Statistics Gathering

- Full Database Caching
- When to Flush the Buffer Cache

Further Information:

For More information, or to book your course, please call us on 0800/84.009

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