

# Oracle Database 19c/21c/23ai : Performance Tuning

## Course information

Days : 5

Total lessons : 20

Suggested Prerequisites :

- Oracle Database : Administrator Workshop I

Training includes :

- Experienced trainer(s)
- Pre-test and Post-test
- Practices and solutions

Public price :

- 30,000 baht(THB) : 1 person

In-house price for 5 days:

- 90,000 baht(THB) : Economic Class : 1 - 5 people
- 100,000 baht(THB) : Small Class : 6 - 10 people
- 120,000 baht(THB) : Medium Class : 11 - 20 people
- 140,000 baht(THB) : Large Class : 21 - 30 people

*All prices exclude VAT 7 %*

## Course details

### Day 1

Lesson 1 : Introduction

Lesson 2 : Basic Tuning Tools

Lesson 3 : Using Automatic Workload Repository

Lesson 4 : Defining Problems

### Day 2

Lesson 5 : Using Metrics and Alerts

Lesson 6 : Baselines

Lesson 7 : Using AWR-Based Tools

Lesson 8 : Monitoring an Application

### Day 3

Lesson 9 : Identifying Problem SQL Statements

Lesson 10 : Influencing the Optimizer

Lesson 11 : Using SQL Performance Analyzer

Lesson 12 : SQL Performance Management

### Day 4

Lesson 13 : Using Database Replay

Lesson 14 : Tuning the Shared Pool

Lesson 15 : Tuning the Buffer Cache

Lesson 16 : Tuning PGA and Temporary Space

### Day 5

Lesson 17 : Automatic Memory Management

Lesson 18 : Tuning Segment Space Usage

Lesson 19 : Tuning I/O

Lesson 20 : Performance Tuning Summary



## **Lesson details**

### **Lesson 1 : Introduction**

- Identify tuning tools
- Utilize a tuning methodology

### **Lesson 2 : Basic Tuning Tools**

- View the top wait events to determine the highest wait
- View the time model to diagnose performance issues
- Use dynamic performance views to view statistics and wait events
- Use Enterprise Manager Monitoring
- Identify the key tuning components of the alert logs
- Identify the key tuning components of user trace files

### **Lesson 3 : Using Automatic Workload Repository**

- Create and manage AWR snapshots
- Generate AWR reports
- Create Compare Periods reports

### **Lesson 4 : Defining Problems**

- Identify performance issues
- Set tuning priorities
- Interpret tuning diagnostics
- Tune for life cycle phase

### **Lesson 5 : Using Metrics and Alerts**

- View metrics by using the metrics history views
- Create metric thresholds
- View alerts

### **Lesson 6 : Baselines**

- Create AWR baselines
- Enable adaptive thresholds
- Create AWR baselines for future time periods

### **Lesson 7 : Using AWR-Based Tools**

- Describe tuning automatic maintenance tasks
- Generate ADDM reports
- Generate Active Session History (ASH) reports

### **Lesson 8 : Monitoring an Application**

- Configure and manage services
- Use services with client applications
- Use services with the Database Resource Manager
- Use services with the Scheduler
- Set performance-metric thresholds on services
- Configure services aggregation and tracing

### **Lesson 9 : Identifying Problem SQL Statements**

- Describe SQL statement processing
- Describe the role of the optimizer
- View the SQL statement statistics
- Identify the SQL statements that perform poorly
- Generate and view an execution plan
- Generate a tkprof report
- Generate an optimizer trace



### **Lesson 10 : Influencing the Optimizer**

- Describe the optimizer's behavior
- Adjust parameters to influence the optimizer
- Adjust data structures to influence the optimizer

### **Lesson 11 : Using SQL Performance Analyzer**

- Identify the benefits of using SQL Performance Analyzer
- Describe the SQL Performance Analyzer workflow phases
- Use SQL Performance Analyzer to ascertain performance gains following a database change
- Use SQL Performance Analyzer to test the impact of proposed changes

### **Lesson 12 : SQL Performance Management**

- Manage changes to optimizer statistics
- Capture SQL profiles
- Use SQL Access Advisor
- Set up SQL Plan Management
- Set up various SQL Plan Management scenarios

### **Lesson 13 : Using Database Replay**

- Identify the benefits of using Database Replay
- List the steps involved in Database Replay
- Use Enterprise Manager to record and replay workloads

### **Lesson 14 : Tuning the Shared Pool**

- Diagnose and resolve hard-parsing problem
- Diagnose and resolve soft-parsing problem
- Size the shared pool
- Diagnose and resolve shared pool fragmentation
- Keep objects in the shared pool
- Size the reserved area
- Manage the results cache

### **Lesson 15 : Tuning the Buffer Cache**

- Describe the buffer cache architecture
- Size the buffer cache
- Resolve common performance issues related to the buffer cache
- Use common diagnostic indicators to suggest a possible solution

### **Lesson 16 : Tuning PGA and Temporary Space**

- Diagnose PGA memory issues
- Size the PGA memory
- Diagnose temporary space issues
- Specify temporary tablespace parameters for efficient operation

### **Lesson 17 : Automatic Memory Management**

- Use memory advisors to size dynamic memory areas
- Enable Automatic Shared Memory Manager
- Enable Enterprise Manager memory parameters
- Set minimum size of auto-tuned SGA components
- Use the SGA advisor to set SGA\_TARGET
- Enable Automatic Memory Management
- Use the Memory Advisor to set overall memory parameters

### **Lesson 18 : Tuning Segment Space Usage**

- Tune segment space management



- Use Segment Space Advisor
- Convert to Automatic Segment Space Management
- Tune block space management
- Diagnose and correct row migration
- Diagnose table fragmentation
- Use table compression

#### **Lesson 19 : Tuning I/O**

- Diagnose database I/O issues
- Describe the Stripe and Mirror Everything (SAME) concept
- Set filesystemio\_options
- Choose appropriate I/O solutions
- Tune Automatic Storage Management (ASM)

#### **Lesson 20 : Performance Tuning Summary**

- List best practices identified throughout the course
- Summarize the performance tuning methodology

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