DATABASE PERFORMANCE TUNING

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COURSE CONTENT

1) Introduction
   • Utilize database advisors to proactively tune an Oracle Database
   • Use the tools based on Automatic Workload Repository (AWR) to tune Database
   • Diagnose and tune common SQL-related performance problems
   • Diagnose and tune common instance-related performance problems
   • Use the Enterprise Manager performance-related pages to monitor Database

2) Basic Tuning Diagnostics
   • 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

3) Using Automatic Workload Repository
   • Create and manage AWR snapshots
   • Generate AWR reports
   • Create Compare Periods reports

4) Defining Problems
   • Identify performance issues
   • Set tuning priorities
   • Interpret tuning diagnostics
   • Tune for life-cycle phase

5) Using Metrics and Alerts
   • View metrics by using the metrics history views
   • Create metric thresholds
   • View alerts
6) Using Baselines
   • Create AWR baselines
   • Enable adaptive thresholds
   • Create AWR baselines for future time periods

7) Using AWR-Based Tools
   • Describe tuning automatic maintenance tasks
   • Generate ADDM reports
   • Generate Active Session History (ASH) reports

8) Monitoring Applications
   • 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

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

10) Influencing the Optimizer
    • Describe the optimizer's behaviour
    • Explain how statistics can affect the optimizer
    • Describe how data structures affect the optimizer
    • Adjust parameters to influence the optimizer

11) Reducing the Cost
    • Adjust data structures to influence the optimizer
    • Tune segment space management
    • Use Segment Advisor
    • Convert to Automatic Segment Space Management
    • Tune block space management
    • Diagnose and correct row migration
    • Diagnose table fragmentation
    • Use table compression

12) 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 in database change
• Use SQL Performance Analyzer to test the impact of proposed changes

13) 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

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

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

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

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

18) 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)