

O1031 - Oracle 10g Database Tuning

Course Objectives

Everyone involved with the Oracle system; system architects, designers, developers and database administrators (DBA's), should consider performance tuning while carrying out their work.

This course is aimed at the DBA's who often have to make the first attempt at solving performance problems prior to, and as they develop. We cover all aspects of internal database tuning on an Oracle 10g platform in this three-day course.

The enhancements and changes that have been introduced in 10g will be discussed during this course for the benefit of DBA's responsible for earlier RDBMS versions for the purposes of planning and upgrade tuning.

Who Should Attend	Prerequisites	Duration
Oracle Database Administrators Oracle Systems Engineers Oracle Support Engineers	Oracle 10g DBA Part 1 Oracle 10g DBA Part 2 Oracle SQL	3 Days

Course Contents

Tuning Overview Tuning Questions/Goals/Steps	Wait model statistics	Using stored outlines Viewing the execution paths The OUTLN user
Oracle Alert, Trace Files & Events Diagnostic Information The Alert Log File User Trace Files Statistics Event Views	Tuning the Shared Pool The Shared Global Area Tuning the Library Cache The Data Dictionary Cache User Global Area and Shared Server	Materialised Views Creating Registering existing summary tables Refresh options
Dynamic Performance Views & Utilities Dynamic Performance Views Collecting System-Wide Statistics Collecting Session Related Statistics Statspack	Tuning the Buffer Cache Evaluating the Cache Hit Ratio Adding Buffers Using Multiple Buffer Pools Defining Multiple Buffer Pools Caching Tables	Database Configuration and I/O Issues Tablespace Usage Partitioning Tables and Indexes Distributing Files Across Devices Tuning Checkpoints Automatic Storage Management
Oracle Wait Events I/O related events Lock related events Latency related events Gathering wait event data	Tuning The Redo Log Buffer Sizing The Redo Log Buffer Reducing Redo Operations	Using Oracle Blocks Efficiently Database Storage Hierarchy Database Block Size Multiple Block Sizes PCTFREE and PCTUSED Automatic Space Segment Management Detecting Chaining Monitoring and Rebuilding Indexes
Automatic Workload Repository Automated snapshot collection Active Session History	SQL Tuning Optimizer Modes Diagnostic Tools V\$SQL_PLAN Monitoring table and index usage	Tuning Rollback Segments Rollback Segment Usage
Automatic Database Diagnostics Monitor Enterprise Manager Advisors ADDM reports Time model statistics	DBMS_STATS Gathering statistics Changing the data dictionary statistics Automating statistics collection	
	Optimiser Plan Stability Creating stored outlines	

Tools for Tuning Rollback Segments
Using Less Rollback
Using Automatic Undo Management

Tuning the Operating System

CPU Tuning Guidelines
Tuning Memory
Tuning I/O

Optimizing Sorts

Sort Area and Parameters
Tuning Sorts
Avoiding Sorts
Configuring Temporary Tablespaces
Database Default Temporary Tablespace
Automatic PGA Management

Tuning Different Applications

Comparing B-Tree and Bitmap Indexes
Creating Reverse Key Indexes
Index-Organized Tables
Clusters / Cluster Types
Histograms

Database Resource Manager

Creating Consumer groups and adding users
Allocating resources to groups
Activating resource plans

Lock Contention

Locking Mechanisms
Tools for Monitoring Locking Activity
Resolving Contention
Deadlocks

Contention Issues

Diagnosing Latch Problems
Resolving Latch contention
Diagnosing Free List Contention
Resolving Free List Contention