



## Oracle Database 10g

Total Duration: 70 Hours

### PRE-REQUISITE:

Good working knowledge of Oracle SQL, PL/SQL is required

## ORACLE DATABASE 10g: ADMINISTRATION WORKSHOP 1

Duration: 35 Hours

### Introduction (Database Architecture)

- Describe course objectives
- Explore the Oracle 10g database architecture

### Installing the Oracle Database Software

- Explain core DBA tasks and tools
- Plan an Oracle installation
- Use optimal flexible architecture
- Install software with the Oracle Universal Installer (OUI)

### Creating an Oracle Database

- Create a database with the Database Configuration Assistant (DBCA)
- Create a database design template with the DBCA
- Generate database creation scripts with the DBCA

### Managing the Oracle Instance

- Start and stop the Oracle database and components
- Use Enterprise Manager (EM)
- Access a database with SQL\*Plus and iSQL\*Plus
- Modify database initialization parameters
- Understand the stages of database startup
- View the Alert log
- Use the Data Dictionary



## **Managing Database Storage Structures**

- Describe table data storage (in blocks)
- Define the purpose of tablespaces and data files
- Understand and utilize Oracle Managed Files (OMF)
- Create and manage tablespaces
- Obtain tablespace information
- Describe the main concepts and functionality of Automatic Storage Management (ASM)

## **Administering User Security**

- Create and manage database user accounts
- Authenticate users
- Assign default storage areas (tablespaces)
- Grant and revoke privileges
- Create and manage roles
- Create and manage profiles
- Implement standard password security features
- Control resource usage by users

## **Managing Schema Objects**

- Define schema objects and data types
- Create and modify tables
- Define constraints
- View the columns and contents of a table
- Create indexes, views and sequences
- Explain the use of temporary tables
- Use the Data Dictionary

## **Managing Data and Concurrency**

- Manage data through SQL
- Identify and administer PL/SQL Objects
- Describe triggers and triggering events
- Monitor and resolve locking conflicts

## **Managing Undo Data**

- Explain DML and undo data generation
- Monitor and administer undo
- Describe the difference between undo and redo data
- Configure undo retention



- Guarantee undo retention
- Use the undo advisor

### **Implementing Oracle Database Security**

- Describe DBA responsibilities for security
- Apply the principal of least privilege
- Enable standard database auditing
- Specify audit options
- Review audit information
- Maintain the audit trail

### **Configuring the Oracle Network Environment**

- Use Enterprise Manager for configuring the Oracle network environment
- Create additional listeners
- Create Net Service aliases
- Configure connect-time failover
- Control the Oracle Net Listener
- Test Oracle Net connectivity
- Identify when to use shared versus dedicated servers

### **Proactive Maintenance**

- Use statistics
- Manage the Automatic Workload Repository (AWR)
- Use the Automatic Database Diagnostic Monitor (ADDM)
- Describe advisory framework
- Set alert thresholds
- Use server-generated alerts
- Use automated tasks

### **Performance Management**

- Use Enterprise Manager pages to monitor performance
- Use the SQL Tuning Advisor
- Use the SQL Access Advisor
- Use Automatic Shared Memory Management
- Use the Memory Advisor to size memory buffers
- Use performance related dynamic views
- Troubleshoot invalid or unusable objects



## **Backup and Recovery Concepts**

- Identify the types of failure that may occur in an Oracle Database
- Describe ways to tune instance recovery
- Identify the importance of checkpoints, redo log files, and archived log files
- Configure ARCHIVELOG mode

## **Performing Database Backups**

- Create consistent database backups
- Back your database up without shutting it down
- Create incremental backups
- Automate database backups
- Monitor the flash recovery area

## **Performing Database Recovery**

- Recover from loss of a control file
- Recover from loss of a redo log file
- Perform complete recovery following the loss of a data file

## **Performing Flashback**

- Describe Flashback database
- Restore the table content to a specific point in the past with Flashback Table
- Recover from a dropped table
- View the contents of the database as of any single point in time with Flashback Query
- See versions of a row over time with Flashback Versions Query
- View the transaction history of a row with Flashback Transaction Query

## **Moving Data**

- Describe available ways for moving data
- Create and use directory objects
- Use SQL\*Loader to load data from a non-Oracle database (or user files)
- Explain the general architecture of Data Pump
- Use Data Pump Export and Import to move data between Oracle databases
- Use external tables to move data via platform-independent files



## ORACLE DATABASE 10g: ADMINISTRATION WORKSHOP 2

Duration: 35 Hours

### Introduction

- Grid Computing
- Oracle Enterprise Manager 10g Product Controls
- Database Architecture Review

### Configuring Recovery Manager

- Recovery Manager Features and Components
- Using a Flash Recovery Area with RMAN
- Configuring RMAN
- Control File Autobackups
- Retention Policies and Channel Allocation
- Using Recovery Manager to connect to a target database in default NOCATALOG mode
- Displaying the current RMAN configuration settings
- Altering the backup retention policy for a database

### Using Recovery Manager

- RMAN Command Overview
- Parallelization of Backup Sets
- Compressed Backups
- Image Copy
- Whole Database and Incremental Backups
- LIST and REPORT commands
- Enable ARCHIVELOG mode for the database
- Use Recovery Manager

### Oracle Secure Backup

- Installation and Configuration
- Implement the Oracle suggested strategy
- RMAN and Oracle Secure Backup
- Database and File-system files backup/restore to tape
- Using obtool and web interface to configure Oracle Secure Backup devices (CLI/GUI)
- Configuring EM for Oracle Secure Backup and test backup to tape (EM)
- Using RMAN to backup your database to tape (CLI)
- Using the OB Web tool to backup file system files



## Recovering from Non-critical Losses

- Recovery of Non-Critical Files
- Creating New Temporary Tablespace
- Recreating Redo Log Files, Index Tablespaces, and Indexes
- Read-Only Tablespace Recovery
- Authentication Methods for Database Administrators
- Loss of Password Authentication File
- Creating a new temporary tablespace
- Altering the default temporary tablespace for a database

## Incomplete Recovery

- Recovery Steps
- Server and User Managed Recovery commands
- Recovering a Control File Autobackup
- Creating a New Control File
- Incomplete Recovery Overview
- Incomplete Recovery Best Practices
- Simplified Recovery Through RESETLOGS
- Point-in-time recovery using RMAN

## Flashback

- Flashback Database Architecture
- Configuring and Monitoring Flashback Database
- Backing Up the Flash Recovery Area
- Using V\$FLASH\_RECOVERY\_AREA\_USAGE
- Flashback Database Considerations
- Using the Flashback Database RMAN interface
- Using Flashback Database EM Interface
- Managing and monitoring Flashback Database operations

## Dealing with Database Corruption

- Block Corruption Symptoms: ORA-1578
- DBVERIFY Utility and the ANALYZE command
- Initialization parameter DB\_BLOCK\_CHECKING
- Segment Metadata Dump and Verification
- Using Flashback for Logical Corruption and using DBMS\_REPAIR
- Block Media Recovery
- RMAN BMR Interface



- Dumping and Verifying Segment Metadata

### **Monitoring and Managing Memory**

- Oracle Memory Structures
- Automatic Shared Memory Management
- SGA Tuning Principles
- Database Control and Automatic Shared Memory Management
- Behavior of Auto-Tuned and Manual SGA Parameters
- Resizing SGA\_TARGET
- PGA Management Resources
- Using the Memory Advisor

### **Automatic Performance Management**

- Identifying Tunable Components
- Oracle Wait Events and System Statistics
- Troubleshooting and Tuning Views
- Direct Attach to SGA for Statistic Collection
- Workload Repository
- Advisory Framework
- ADDM Scenarios and Usage Tips
- Using the SQL Tuning and SQL Access Advisor

### **Monitoring and Managing Storage I**

- Database Storage Structures
- Space Management Overview
- Oracle-Managed Files (OMF)
- Row Chaining and Migrating
- Proactive Tablespace Monitoring
- Managing Resumable Space Allocation
- SYSAUX Tablespace
- Monitoring table and index space usage

### **Monitoring and Managing Storage II**

- Automatic Undo Management
- Redo Log Files
- Table Types
- Partitioned Tables
- Index-Organized Tables (IOT)
- Managing index space with SQL



- Configure optimal redo log file size
- View “Automatic Tuning of Undo Retention”

### **Automatic Storage Management**

- ASM General Architecture and Functionalities
- Dynamic Performance View Additions
- Managing an ASM Instance
- ASM Disk Groups
- Using asmcmd Command Line
- Migrating Your Database to ASM Storage
- Creating an ASM instance in a separate Oracle Home
- Migrating a tablespace to use ASM storage

### **VLDB Support**

- Creating Bigfile Tablespaces
- Packages and data dictionary changes to support VLDB
- Creating and maintaining temporary tablespace groups (TTG)
- Partitioning and Partitioned Indexes
- Skipping unusable indexes
- Creating and using hash-partitioned global indexes
- DML Error Logging
- Interpreting Bigfile ROWIDs

### **Managing Resources**

- Database Resource Manager Concepts and Configuration
- Creating a New Resource Plan
- Active Session Pool Mechanism
- Maximum Estimated Execution Time
- Creating a Complex Plan
- Administering and Monitoring Resource Manager
- Resource Plan Directives
- Creating Resource Consumer Groups

### **Automating Tasks with the Scheduler**

- Scheduler Concepts
- Creating a Job Class and a Window
- Managing Jobs, Programs, Chains, Events, Schedules, priority
- Viewing and Purging Job Logs
- Creating a program and a schedule



- Creating a job that uses a program and a schedule
- Altering the program and schedule for the job and observing the behavior change of the job
- Monitoring job runs

### **Database Security**

- Virtual Private Database: Overview
- Creating a Column-Level Policy
- Writing a Policy Function
- Policy Types
- Column level VPD with column masking
- Transparent Data Encryption
- Setting the listener password
- Implement VPD

### **Data Movement**

- External Tables Concepts
- Creating a Directory object and External Table
- Data Pump
- Transport Database
- RMAN CONVERT DATABASE Command
- Transport Tablespace
- Create a Directory Object
- Create a Temporary Table

### **Using Globalization Support**

- Globalization Support Features
- Encoding Schemes
- Database Character Sets and National Character Sets
- Specifying Language-Dependent Behavior
- Locale Variants
- Using Linguistic Comparison and Sorting
- Data Conversion Between Client and Server Character Sets
- Determining the Default NLS Settings



## **AT COURSE COMPLETION:**

Participants will become successful Oracle 10g DBAs and will be able to perform the entire day to day routine DBA tasks on Oracle 10g Enterprise Database