

# Oracle Database 11g R2: Administration I

Length of Course: 5 Days

Administration of the Oracle database management system (DBMS) software environment and of the server systems on which the DBMS runs is one of the primary tasks required of database administrators. While it is true that the hardware and software platforms on which the DBMS runs have become increasingly complex, as has the database software itself, the capabilities provided by the Oracle database have correspondingly become more sophisticated.

## Target Audience

The primary audiences for this course are:

- Database administrators
- Web server administrators
- System administrators
- Implementation specialists
- Data center support engineers
- Senior application designers and developers

## Prerequisites

Many students taking this course have familiarity with system administration and administration of other non-Oracle databases, and this is helpful though not mandatory. Specific course prerequisites for this course are:

- ORACLE DATABASE 11G R2: SQL FUNDAMENTALS – COMPLETE LIBRARY
- ORACLE DATABASE 11G R2: PROGRAM WITH PL/SQL – COMPLETE LIBRARY

## Suggested Next Course

This course should be considered the first part of the Sideris integrated database administrator curriculum. Therefore, in the not-too-distant future one should proceed to the follow-up course:

- ORACLE DATABASE 11G: ADMINISTRATION II

## Objectives

The overall objective of this training course is to allow the student to gain the skills necessary for day-to-day administration of an Oracle database. These training materials are the starting point for Oracle database administrators and sets the foundation for advanced administrator training and certification. Major tasks to be considered within this course are:

- Configuration of the Linux and MS Windows operating systems in anticipation of a database installation
- Server Class installation of the Oracle 11g R2 Enterprise Edition database
- Verification of a valid database installation
- Database administrator interface options, including the use of Enterprise Manager, command-line SQL\*Plus, and terminal console SSH
- Database de-installation
- Online software patching
- Startup and shutdown of database services and related software components
- Super administrator authentication options
- An in-depth exploration of the database architecture, including memory, process and data structures, and the management of those structures.
- Management of database files.
- Specialized facilities intended to maximize performance of enterprise-scale transactional applications, such as the shared SQL and PL/SQL cache, the Result Cache, the database buffer cache, and other similar components.



- Management of security policies and procedures, including administration of user accounts, roles, privileges and profiles.
- Utilization of advanced self-tuning and self-management capabilities, including the use of Oracle-Managed Files, database Advisors and other components of the Management Framework.
- Performance monitoring, problem troubleshooting, and resolving lock and conflict issues.
- Using the Oracle Enterprise Manager and SQL interfaces for administration tasks.
- Control over database support services, including the Database Control, Oracle Net and others.
- A primer on backup and recovery structures and strategies.
- Operating system-specific considerations for various platforms, especially Linux and MS Windows Server.

## Contents

### Installation & Upgrade Volume

#### Configuring The Server For Installation

- identify system requirements
- optimal flexible architecture (ofa)
- Oracle\_base
- Oracle\_home
- configure Linux installation
- configure ms windows installation
- prerequisite checks & fixup utility

#### Enterprise Edition Installation

- more about the installation
- start the installation
- desktop class installation 11g r2
- server class installation 11g r2
- post-installation configuration

#### Verify The Installation

- accessing the em database control
- using the em interface
- using SQL\*PLUS
- using em SQL worksheet
- using SSH

#### Upgrade, Deinstallation & Patching

- database upgrade
- NETCA
- DBUA
- online patching
- Oracle deinstaller

#### Volume A:

#### Manually Starting & Stopping Database Services

- starting & stopping database control
- starting & stopping the listener
- starting & stopping the database
- SYSDBA



### Exploring The Oracle Database Architecture: General

- the Oracle enterprise architecture
- general database architecture
- V\$VERSION

### Exploring The Oracle Database Architecture: Instance Memory

- more about database instances
- using V\$SGA\_DYNAMIC\_COMPONENTS
- about the PGA
- managing memory

### Exploring The Oracle Database Architecture: Instance Processes

- instance background processes
- SQL execution processes
- using V\$SESSION

### Creating An Oracle Database

- Create a new database
- configure an existing database
- drop a database
- manage DBCA templates
- manually create a database
- more about the database files

### Enabling Transparent Data Encryption

- transparent data encryption
- managing TDE
- implementing column encryption

### Manage Database Storage Structures: Tablespaces

- about tablespaces
- tablespace management
- autoextend options
- drop tablespace
- alter tablespace

### Manage Database Storage Structures: Advanced Tablespaces

- more about temporary tablespaces
- using V\$SORT\_SEGMENT
- about temporary tablespace groups
- more about permanent tablespaces
- about database\_properties
- more about bigfile tablespaces
- more about the SYSAUX tablespace

### Manage Database Storage Structures: Data Files & Temp Files

- managing data files
- managing temp files
- enable Oracle-managed files (OMF)

### Managing Undo Data

- about undo space management



- configure undo management
- UNDO\_MANAGEMENT
- UNDO\_TABLESPACE
- UNDO\_RETENTION
- guarantee undo retention
- monitor undo space
- use the undo advisor

### Volume B:

#### Network Environment: Oracle Net Services

- Oracle net services architecture
- Oracle net configuration assistant
- Oracle net manager
- configuration using em
- troubleshooting network problems
- countering database attacks

#### Network Environment: Oracle Shared Servers

- shared servers architecture
- configure shared servers
- monitor shared servers
- V\$SHARED\_SERVER
- V\$SHARED\_SERVER\_MONITOR
- V\$SESSION
- V\$CIRCUIT
- V\$DISPATCHER & V\$DISPATCHER\_CONFIG
- V\$QUEUE

#### Security: Implementing Database Security

- database system privileges
- database object privileges
- auditing of database activity
- AUDIT\_TRAIL parameter
- enhanced default security settings

#### Security: Administering User Security

- create & manage database accounts
- grant & revoke database privileges
- resource limits via profiles
- alter profile
- drop profile
- password management via profiles
- about role-based security
- with admin option
- with admin option & system privileges
- with grant option & object privileges
- alter user...default role
- set role
- enhanced default security settings
- SEC\_CASE\_SENSITIVE\_LOGON setting



### **Moving data: SQL loader**

- loader concepts
- control file options
- load methods
- using the em interface

### **Moving Data: Export & Import**

- manage directory objects
- about the data pump architecture
- data pump import
- data pump data dictionary views
- using the em interface

### **Database Maintenance & Performance Monitoring**

- management & advisory framework
- manage AWR
- ADDM
- use metrics & alert thresholds
- automatic maintenance tasks

### **Managing Concurrency & Locks**

- about latches & locks
- manage & monitor latches
- V\$LOCK
- V\$LOCKED\_OBJECT
- V\$SESSION
- V\$SESSION\_WAIT
- DBA\_BLOCKERS & DBA\_WAITERS
- DBA\_DML\_LOCKS & DBA\_DDL\_LOCKS
- DML\_LOCKS

### **Backup & Recovery Concepts & Configuration**

- about backup & recovery structures
- managing redo data
- managing archival data
- automatic crash recovery
- creating a basic backup strategy

