

## Oracle 11g: RAC and Grid Infrastructure Administration Accelerated Release 2

**Duration:** 5 Days

### What you will learn

In this intensive course, students will learn about the Oracle Grid Infrastructure products. This includes Oracle Automatic Storage Manager (ASM), ASM Cluster File System and Oracle Clusterware. Students will also learn to administer the Oracle Clusterware and storage products using both command line utilities and graphical tools. Administration of ASM and ACFS will be done using both command line and graphical user interface clients. Students will learn how to leverage the Oracle Clusterware to make applications highly available, supporting monitoring and failover to other nodes. Students will learn to troubleshoot the Oracle Clusterware by examining log files, enabling debugging, and enabling tracing for various utilities. Students will learn about RAC database administration in the Oracle Grid Infrastructure environment. Students will learn to administer cluster databases using Enterprise Manager and command-line utilities like SRVCTL, CRSCTL, and SQL\*Plus. Students will study the new connection architecture and how to make those connections highly available. Backup and recovery issues relative to cluster database environments will also be studied.

This is an accelerated course, covering seven days' worth of content in only five days. Because of the extra content to be accommodated each day, the duration of classes each day can be slightly longer than usual.

This course is based on Oracle Database 11g Release 2.

### Learn To:

- Describe the Oracle Database 11g Grid Infrastructure
- Administer both Policy and Administrator managed RAC databases
- Install and configure Grid Infrastructure
- Describe Oracle Database 11g RAC enhancements and new features
- Describe Grid Plug and Play
- Use Oracle Clusterware to make applications highly available

### Audience

- Data Warehouse Administrator
- Database Administrators
- Database Designers
- Support Engineer
- Technical Administrator

### Prerequisites

#### *Required Prerequisites*

- Oracle Database Administration experience

#### *Suggested Prerequisites*

- Oracle Database 11g: Administration Workshop II DBA Release 2
- Oracle Database 11g: Administration Workshop I DBA Release 2

## Course Objectives

- Understand Oracle Clusterware architecture
- Describe how Grid Plug and Play affects Clusterware
- Describe Automatic Storage Management (ASM) architecture
- Perform Grid Infrastructure installation and create RAC database
- Demonstrate Clusterware management proficiency
- Manage application resources
- Troubleshoot Oracle Clusterware
- Administer ASM Instances and disk groups
- Administer ASM Cluster File Systems
- Install Oracle Database 11gR2 software and create RAC database
- Manage RAC databases
- Manage backup and recovery for RAC
- Determine RAC-specific tuning components
- Configure and manage services in a RAC environment
- Describe high availability architectures

## Course Topics

### Grid Infrastructure Concepts

- What is a Cluster
- Grid Foundation Components
- Oracle Clusterware Architecture
- Oracle Clusterware Software and Storage
- Describe ASM Architecture
- Creating and Managing ASM Disk Groups
- Creating and Managing ASM Cluster Filesystems
- Job Role Separation

### Grid Infrastructure Installation and Configuration

- Hardware Requirements
- Network Requirements
- DNS and DHCP Configuration
- Grid Plug and Play Considerations
- Single Client Access Names
- Post installation tasks

### Administering Oracle Clusterware

- Managing Clusterware with Enterprise Manager
- Determining the Location of the Oracle Clusterware Configuration Files
- Backing Up and Recovering the Voting Disk
- Adding, Deleting, or Migrating Voting Disks
- Locating the OCR Automatic Backups
- Oracle Local Registry
- Migrating OCR Locations to ASM
- Managing Network Settings

### Managing Oracle Clusterware

- Prerequisite Steps for Extending a Cluster
- Using addNode.sh to Add a Node to a Cluster
- Rolling Patches, And Rolling Upgrades

Comparing Software Versions With the Active Version

Installing A Patchset With the OUI Utility

Installing A Patch With The opatch Utility

### **Oracle Clusterware High Availability**

Oracle Clusterware high availability components

Contrasting policy-managed and administration managed databases

Server pool functionality

The Generic and Free Server Pools

Application placement policies

Application Virtual IPs

Managing application resources

High availability events

### **Troubleshooting Oracle Clusterware**

Oracle Clusterware Log Files

Gathering Log Files Using diagcollection.pl

Resource Debugging

Component-level Debugging

Tracing For Java-based Tools

Troubleshooting the Oracle Cluster Registry

### **Administering ASM Instances**

ASM Initialization Parameters

Adjusting ASM Instance Parameters in SPFILEs

Starting and Stopping ASM Instances Using srvctl

Starting and Stopping ASM Instances Using ASMCA and ASMCMD

Starting and Stopping ASM Instances Containing Cluster Files

Starting and Stopping the ASM Listener

### **Administering ASM Disk Groups**

Creating And Deleting ASM Disk Groups

ASM Disk Group Attributes

ASM Disk Group Maintenance Tasks

Preferred Read Failure Groups

Viewing ASM Disk Statistics

Performance And Scalability Considerations For ASM Disk Groups

### **ASM Files, Directories, and Templates**

Using Different Client Tools to Access ASM Files

Fully Qualified ASM File Name Format

Creating and Managing ASM files, Directories and Aliases

Managing Disk Group Templates

Managing ASM ACL With Command Line Utilities

Managing ASM ACL with Enterprise Manager

### **Administering ASM Cluster File Systems**

ASM Dynamic Volume Manager

Managing ASM Volumes

Implementing ASM Cluster File System

Managing ASM Cluster File System (ACFS)

ACFS Snapshots

Using Command Line Tools To Manage ACFS

## **Real Application Clusters Database Installation**

Installing The Oracle Database Software

Creating A Cluster Database

Post-database Creation Tasks

Single-Instance Conversion Using the DBCA

Single-Instance Conversion Using rconfig

Background Processes Specific to Oracle RAC

## **Oracle RAC Administration**

Enterprise Manager Cluster Database Pages

Redo Log Files In A RAC Environment

Undo Tablespaces In A RAC Environment

Starting And Stopping RAC Databases And Instances

Initialization Parameters In A RAC Environment

Transparent Data Encryption and Wallets in RAC

Quiescing RAC Databases

## **Managing Backup and Recovery for RAC**

Protecting Against Media Failure

Parallel Recovery in RAC

Archived Log File Configurations

RAC Backup and Recovery Using EM

Archived Redo File Conventions in RAC

Channel Connections to Cluster Instances

Distribution of Backups

## **Monitoring and Tuning the RAC Database**

Determining RAC-Specific Tuning Components

Tuning Instance Recovery in RAC

RAC-Specific Wait Events, Global Enqueues, and System Statistics

Implementing the Most Common RAC Tuning Tips

Using the Cluster Database Performance Pages

Using the Automatic Workload Repository in RAC

Using Automatic Database Diagnostic Monitor in RAC

## **Services**

Configure and Manage Services in a RAC environment

Using Services with Client Applications

Using Services with the Database Resource Manager

Use Services with the Scheduler

Configuring Services Aggregation and Tracing

Managing Services From the Command Line

Managing Services With Enterprise Manager

## **Design for High Availability**

Designing a Maximum Availability Architecture

Determine the Best RAC and Data Guard Topologies

Data Guard Broker Configuration files in a RAC Environment

Identifying Successful Disk I/O strategies