

Oracle 11g: RAC and Grid Infrastructure Administration Accelerated R2 (48 hrs.)

This Oracle 11g: RAC and Grid Infrastructure Administration Accelerated training teaches you about the Oracle Grid Infrastructure products, including Oracle Automatic Storage Manager (ASM), ASM Cluster File System and Oracle Clusterware. You will also learn to administer the Oracle Clusterware and storage products using both command line utilities and graphical tools using both command line and graphical user interface clients.

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.

Troubleshoot the Oracle Clusterware by examining log files, enabling debugging and enabling tracing for various utilities.

Add and remove nodes and explore quality of service concepts.

Upgrade or patch the Grid Infrastructure environment.

Upgrade and patch Oracle RAC databases.

Required Prerequisites:

Oracle Database Administration experience

Oracle Database 11g: Administration Workshop I

Suggested Prerequisites:

Oracle Database 11g: Administration Workshop II

Course Topics:

Oracle Grid Infrastructure Concepts

- Oracle Grid Infrastructure
- Oracle Clusterware Architecture and Services
- Goals for Oracle Clusterware
- Oracle Clusterware Networking
- Grid Naming Service, Single-Client Access Name
- Grid Plug and Play
- GPnP Domain, Components, Profile
- Oracle Automatic Storage Management (ASM) and Grid Infrastructure

Oracle Clusterware Architecture

- Oracle Grid Infrastructure for a Cluster
- Oracle Cluster Registry (OCR)
- CSS Voting Disk Function
- Oracle Local Registry and High Availability
- Oracle Clusterware Initialization, Controlling Oracle Clusterware
- Verifying the Status of Oracle Clusterware, Viewing the High Availability Services Stack
- GPnP Architecture: Overview
- Automatic Storage Management

Grid Infrastructure Pre-installation Tasks

- Pre-installation Planning
- Shared Storage Planning for Grid Infrastructure
- Sizing Shared Storage for Oracle Clusterware
- Storing the OCR in ASM
- Managing Voting Disks in ASM

- Installing & Preparing ASMLib
- Grid Infrastructure Pre-installation Tasks
- Oracle Grid Infrastructure 11g

Grid Infrastructure Installation

- Choosing an Installation Type
- Grid Plug and Play Support
- Cluster Node Information
- Specify Network Interface Usage
- Storage Option Information
- Specify Cluster Configuration: Typical Installation
- Verifying the Grid Infrastructure Installation
- Modifying Oracle Clusterware Binaries after Installation

Adding and Removing Cluster Nodes

- Adding Oracle Clusterware
- Prerequisite Steps for Running addNode.sh
- Adding a Node with addNode.sh
- Completing OUI Node Addition
- Removing a Node from the Cluster
- Deleting a Node from the Cluster
- Deleting a Node from a Cluster (GNS in Use)
- Deleting a Node from the Cluster

Administering Oracle Clusterware

- Managing Oracle Clusterware
- Managing Clusterware with Enterprise Manager
- Controlling Oracle High Availability Services
- Determining the Location of Oracle Clusterware Configuration Files
- Checking the Integrity of Oracle Clusterware Configuration Files
- Backing Up and Recovering the Voting Disk
- Adding, Deleting, or Migrating Voting Disks
- Locating the OCR Automatic Backups

Upgrading and Patching Grid Infrastructure

- Out-of-Place Oracle Clusterware Upgrade
- Oracle Clusterware Upgrade
- Types of Patches, Patch Properties
- Configuring the Software Library
- Setting Up Patching, Starting the Provisioning Daemon
- Obtaining Oracle Clusterware Patches
- Rolling Patches, Checking Software Versions
- Installing a Rolling Patchset with OUI, Installing a Rolling Patch with OPatch

Troubleshooting Oracle Clusterware

- Golden Rule in Debugging Oracle Clusterware
- Monitoring Oracle Clusterware
- Cluster Health Monitor (CHM)
- oclumon Utility
- oclumon debug Command
- clumon dumpnodeview Command
- oclumon dumpnodeview Command
- oclumon manage Command

Making Applications Highly Available with Oracle Clusterware

- Oracle Clusterware High Availability (HA)
- Resource Management Options

- Server Pools
- GENERIC and FREE Server Pools
- Assignment of Servers to Server Pools ew
- Server Attributes and States
- Creating Server Pools with srvctl and crsctl
- Managing Server Pools with srvctl and crsctl

ASM: Overview

- ASM and ASM Cluster File System
- ASM Key Features and Benefits
- ASM Instance Designs: Nonclustered ASM and Oracle Databases
- ASM Instance Designs: Clustered ASM for Clustered Databases
- ASM Instance Designs: Clustered ASM for Mixed Databases
- ASM System Privileges
- ASM OS Groups with Role Separation
- Authentication for Accessing ASM Instances

Administering ASM

- Managing ASM with ASMCA
- Starting and Stopping ASM Instances by Using ASMCA and ASMCMD
- Starting and Stopping ASM Instances by Using srvctl
- Starting and Stopping ASM Instances by Using SQL*Plus
- Starting and Stopping ASM Instances Containing Cluster Files
- ASM Initialization Parameters
- AASM_DISKGROUPS
- Disk Groups Mounted at Startup

Administering ASM Disk Groups

- Disk Group: Overview
- Creating a New Disk Group
- Creating a New Disk Group with ASMCMD
- Creating an ASM Disk Group with ASMCA
- Creating an ASM Disk Group: Advanced Options
- Creating a Disk Group with Enterprise Manager
- Disk Group Attributes
- V\$ASM_ATTRIBUTE

Administering ASM Files, Directories, and Templates

- ASM Clients
- Interaction between Database Instances and ASM
- Accessing ASM Files by Using RMAN
- Accessing ASM Files by Using XML DB
- Accessing ASM Files by Using DBMS_FILE_TRANSFER
- Accessing ASM Files by Using ASMCMD
- Fully Qualified ASM File Names
- Other ASM File Names

Administering ASM Cluster File Systems

- ASM Files and Volumes
- ACFS and ADVM Architecture: Overview
- ASM Cluster File System
- Striping Inside the Volume
- Creating an ACFS Volume
- Creating an ASM Dynamic Volume with Enterprise Manager
- Managing ADVM Dynamic Volumes
- Creating an ASM Cluster File System with Enterprise Manager

RAC Concepts

- Overview of Oracle RAC
- RAC One Node Single-Instance High Availability
- Oracle RAC One Node and Oracle Clusterware
- Cluster-Aware Storage Solutions
- Oracle Cluster File System
- Benefits of Using RAC
- Clusters and Scalability
- Levels of Scalability

Installing and Configuring Oracle RAC

- Installing the Oracle Database Software, Creating the Cluster Database
- Database Type Selection, Database Identification
- Cluster Database Management Options
- Database File Locations, Recovery Configuration, Database Content
- Create the Database
- Background Processes Specific to Oracle RAC
- Considerations for Converting Single-Instance Databases to Oracle RAC
- Single-Instance Conversion Using the DBCA and rconfig

Oracle RAC Administration

- Configuration Section, Topology Viewer
- Enterprise Manager Alerts and RAC, Metrics and RAC
- Enterprise Manager Alert History and RAC, Enterprise Manager Blackouts and RAC
- Redo Log Files and RAC, Automatic Undo Management and RAC
- Starting and Stopping RAC Instances
- Switch Between Automatic and Manual Policies
- RAC Initialization Parameter Files

Managing Backup and Recovery for RAC

- RAC and Instance Recovery
- Instance Recovery and Database Availability
- Instance Recovery and RAC
- Protecting Against Media Failure
- Media Recovery in Oracle RAC
- Parallel Recovery in RAC
- Archived Log File Configurations
- RAC and the Fast Recovery Area, RAC Backup and Recovery Using EM

RAC Database Monitoring and Tuning

- CPU and Wait Time Tuning Dimensions, RAC-Specific Tuning
- Analyzing Cache Fusion Impact in RAC
- Typical Latencies for RAC Operations
- Wait Events for RAC, Wait Event Views
- Global Cache Wait Events: Overview, Global Enqueue Waits
- Session and System Statistics
- Most Common RAC Tuning Tips
- AWR Reports and RAC: Overview

Oracle RAC One Node

- Verifying an Existing RAC One Node Database
- Oracle RAC One Node Online Migration, Online Migration Considerations
- Performing an Online Migration
- Online Migration Illustration, Online Maintenance: Rolling Patches
- Adding an Oracle RAC One Node Database to an Existing Cluster
- Converting a RAC One Node Database to RAC

- Converting a Single Instance Database to RAC One Node
- Converting a RAC Database to RAC One Node

Quality of Service Management

- QoS Management Overview
- QoS Management and Exadata Database Machine
- QoS Management Focus, Benefits, Functional Overview and Policy Sets
- Server Pools, Performance Classes
- Classification and Tagging
- Performance Policies, Performance Class Ranks, Performance Objectives
- Server Pool Directive Overrides, Overview of Metrics
- QoS Management Architecture

Design for High Availability

- Causes of Unplanned Down Time, Causes of Planned Down Time
- Oracle's Solution to Down Time
- RAC and Data Guard Complementarily
- Maximum Availability Architecture
- RAC and Data Guard Topologies, RAC and Data Guard Architecture
- Data Guard Broker (DGB) and Oracle Clusterware (OC) Integration
- Hardware RAID–Striped LUNs, Hardware RAID–Striped LUNs HA
- Extended RAC: Overview, Connectivity and Disk Mirroring