

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

Duration: 5 Days

What you will learn

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.

Benefits to You

Enrolling in this advanced course will help you develop the skills to leverage the Oracle Clusterware to make applications highly available. You'll leave the class with the ability to support monitoring and failover to other nodes as well.

RAC Database Administration in the Oracle Grid Infrastructure Environment

Furthermore, you'll get hands-on training administering cluster databases using Enterprise Manager and command-line utilities like SRVCTL, CRSCTL and SQL*Plus. Expert Oracle University instructors will help you 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 covered, along with Oracle RAC One Node and online migration.

Accelerated Course

This course is based on Oracle Database 11g Release 2. Please note that this is an accelerated course, covering 9 days' worth of content in only 5 days. Because of the extra content covered each day, the daily class duration may be

slightly longer than usual.

Audience

Data Warehouse Administrator

Database Administrators

Database Designers

Support Engineer

Technical Administrator

Related Training

Required Prerequisites

Oracle Database Administration experience

Oracle Database 11g: Administration Workshop I Release 2

Suggested Prerequisites

Oracle Database 11g: Administration Workshop II 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

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
- 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
- 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