

## Oracle Database 12c R2: Clusterware & ASM Admin Accelerated Ed 2

**Duration:** 5 Days

### What you will learn

Oracle Database 12c R2: Clusterware & ASM Admin Accelerated training covers 6 days worth of content in only 5 days. It starts with the Oracle Database 12c R2: Clusterware Admin Ed 2 course (4 days) and then covers the Oracle Database 12c R2: ASM Administration course (2 days). Learn about Oracle Clusterware and ASM architectures and how these products work together.

### Learn To:

Describe available cluster configuration options.

Install Standalone Flex clusters.

Add and remove nodes from a cluster in addition to upgrading and patching existing Grid Homes

Manage and administer both Traditional Clusters and Policy-Managed Clusters.

Monitor and Troubleshoot Oracle Clusterware.

Use Oracle Clusterware to make applications highly available.

Administer ASM files, directories, templates, and disk groups.

Manage and administer Oracle ASM File System and its components.

Gain an understanding of ASM New Features.

### Benefits to You

Ensure fast, reliable, secure and easy to manage performance. Optimize database workloads, lower IT costs and deliver a higher quality of service by enabling consolidation onto database clouds by learning about the Oracle Database 12c R2 Grid Infrastructure, specifically about Oracle Cluster and Oracle ASM.

### Related Training

#### *Required Prerequisites*

Working knowledge of Oracle Database 11g: Release 2 on Linux Operating System

#### *Suggested Prerequisites*

Oracle Database 12c R2: RAC Administration

Oracle Database 12c R2: RAC Administration Ed 2

Oracle Database 12c: RAC Administration Ed 1

Working knowledge of Oracle Clusterware, ASM & RAC on Linux

## Course Objectives

Describe the Oracle Clusterware architecture

Describe Available Cluster Options

Perform an image-based Grid Infrastructure installation

Describe the scope and capabilities of what-if command evaluation

Implement load-ware resource placement

Implement server weight-based node eviction

Describe the components and functions of Oracle Autonomous Health Framework

Use the Cluster Resource Activity Log

Describe and implement Clusterware resource groups

Describe the Automatic Storage Management (ASM) architecture

Understand Flex ASM architecture and components

Manage Flex ASM Disk Group

Create and delete Automatic Storage Management (ASM) disk groups

Perform ongoing maintenance tasks on ASM disk groups

Describe the Oracle Database 12c R2 ASM new features

## Course Topics

### Introduction to Clusterware

Cluster in general

Oracle Clusterware Characteristics

Oracle Clusterware Architecture and Cluster Services Overview

Oracle Clusterware Requirements: OS, Public/Private Networks, and IP addresses

Grid Naming Service (GNS), Shared GNS, and Highly Available GNS

GNS Configuration Options

Single Client Access Name (SCAN)

### Oracle Clusterware Architecture

Clusterware Process Architecture: HA Technology Stack and CRS Technology stack

Oracle Clusterware Repositories: OCR and Voting Disks

Clusterware Initialization and OHASD

Controlling Oracle Clusterware Processes

Location Independent Names, Addresses and Name Resolution (GNS, SCAN, VIP..)

Grid Plug and Plug (GPnP) Architecture

## **Cluster Configuration Options**

- Oracle Standalone Clusters
- Oracle Domain Services Cluster
- Oracle Member Cluster for Oracle Databases
- Oracle Member Cluster for Applications
- Oracle Extended Clusters

## **Grid Infrastructure Pre-Installation Tasks**

- Shared Storage for Oracle Clusterware
- Sizing Storage for Oracle Standalone Cluster
- Grid Infrastructure Management Repository Details
- Checking System Requirements
- Single Client Access Name for the Cluster
- Redundant Interconnect Usage
- Kernel Requirements
- Groups and Users & Shell Settings

## **Grid Infrastructure Installation**

- Performing an image-based Grid Infrastructure Installation
- Choosing a Cluster Configuration Option
- Grid Plug and Play Support for Flex Cluster Configuration
- Configuring Shared GNS
- Verifying the Oracle Clusterware Installation

## **Managing Cluster Nodes**

- Adding Oracle Clusterware Homes
- Prerequisites for Running addNode.sh
- Adding a Node with addNode.sh
- Configuring the node role
- Removing a Node from the Cluster

## **Traditional Clusterware Management**

- Clusterware Admin Tools Review
- Oracle Clusterware startup and shutdown
- Administering the Voting Disk file
- Administering the Oracle Cluster Registry Disk file
- Network Administration
- Reasoned What-If Command Evaluation

## **Policy-Based Cluster and Capacity Management**

- Policy-Based Cluster Management Overview
- Server Categorization
- Policy Set
- Load-Aware Resource Placement
- Server Weight-Based Node Eviction

## **Patching Grid Infrastructure**

- Out-of-Place Oracle Clusterware Upgrade
- Types of Patches
- Obtaining Oracle Clusterware Patches
- Rolling Patches
- Installing a Rolling Patchset with OUI

- OPatch Overview
- Installing a Rolling Patch with OPatch
- OPatch Automation

## **Monitoring and Troubleshooting Oracle Clusterware**

- Using Oracle Autonomous Health Framework Overview
- Cluster Verify Utility (CVU)
- Cluster Health Monitor (CHM)
- Cluster Health Advisor (CHA)
- Trace File Analyzer (TFA) Collector
- Using the Cluster Resource Activity Log (CALOG)
- Using Oracle Clusterware Diagnostic and Alert Log Data
- Node Eviction

## **Making Applications Highly Available**

- Overview of Using Oracle Clusterware to Enable HA
- Oracle Clusterware HA Components
- Resource Management Options
- Server Pools
- Overall flow diagram of HA lifecycle
- Clusterware Resource Modeling
- Creating an Application VIP
- Clusterware Resource Group

## **Oracle ASM Overview**

- Overview of ASM
- ASM Placement in Storage Stack
- ASM Cluster Configuration for Oracle RAC
- ASM Software Installation
- ASM Key Components
- ASM Instance Designs
- ASM Utilities

## **Administering ASM Instance**

- Operating with Different releases of Oracle ASM and Database Instances
- Managing ASM instance with various tools
- Instance Startup and Shutdown
- ASM Instance Parameters
- Adjusting ASM Instance Parameters in SPFILEs
- ASM System Privileges
- ASM OS Groups and Role Separation
- ASM Instance Connection modes

## **Flex ASM**

- Flex ASM Architecture
- Background and Overview
- ASM Deployment Alternatives
- Configuring Flex ASM
- Managing Flex ASM
- Relocating an ASM Client
- ASM IO Services and Configuration

## **Administering ASM Disk Groups Part 1**

- ASM Disk Group Overview
- Disk Group Attributes
- Compatibility Attributes
- Disk Group Management
- Disk Group Metadata
- Viewing Connected Clients
- Extending an Existing Disk Group
- Dropping Disks from an Existing Disk Group

## **Administering ASM Disk Groups Part 2**

- Adding and Dropping in the same command
- Undropping Disks in Disk Groups
- Replacing Disks in Disk Group
- Renaming Disk Groups
- Renaming Disks in Disk Groups
- Resizing Disks in Disk Groups
- Mounting and Dismounting Disk Groups
- Dropping Disk Groups

## **Administering ASM Disk Groups Part 3**

- ASM Disk Group Rebalance and Priority Ordered Rebalance
- Capacity Management
- Proactive Content Checking and Recovery
- ASM Fast Mirror Resync at the failure group and disk group level
- Configuring Preferred Read Failure Group

## **Flex ASM Disk Group**

- ASM Database-Oriented Storage Management
- ASM Flex Disk Groups Characteristics
- ASM File Groups
- ASM Quota Groups
- Administering File Groups and Quota Groups
- Prioritized Rebalancing for File Groups

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

- Interaction Between Database Instances and ASM
- Accessing ASM Files
- Fully Qualified ASM File Names
- ASM File Creation
- View ASM Aliases, Files, and Directories
- ASM Directories Overview
- Managing ASM Directories
- Managing Alias File Names

## **Administering Oracle ASM Cluster File System**

- Overview of Oracle ACFS
- Oracle ASM Dynamic Volume Manager
- Oracle ACFS Integration with Oracle ASM
- Oracle ACFS Administration
- Clusterware Resources and ACFS Administration
- ACFS and Dismount or Shutdown Operations

ACFS Snapshots

**ACFS/ADVM Enhancements**

Oracle ACFS Automatic Resize

Oracle ACFS Scrubbing

Oracle ACFS Defragger

Oracle ACFS Metadata Collection

Oracle Metadata Acceleration

4K Sector Support for Oracle ACFS and Metadata

Oracle ACFS Compression

Oracle ACFS Spare Files & Loopback Devices