

## Oracle Database 12c: Clusterware Administration

**Duration:** 4 Days

### What you will learn

This Oracle Database 12c: Clusterware Administration training will explore general cluster concepts and Oracle Clusterware architecture. Work with expert Oracle University instructors through interactive instruction and hands-on exercises to reinforce your learning.

### Learn To:

Perform Grid Infrastructure pre-installation tasks.

Install both Standard and Flex clusters.

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

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

Use Oracle Clusterware to make applications highly available.

### Benefits to You

Learn how to make applications highly available using Oracle Clusterware. You'll walk away with the ability to install, configure, manage and troubleshoot both standard and flex clusters. Furthermore, you will have developed the skills to upgrade and patch Clusterware environments.

### Audience

Administrator

Database Administrators

### Related Training

#### *Required Prerequisites*

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

#### *Suggested Prerequisites*

Working knowledge of Oracle Clusterware, ASM & RAC on Linux

### Course Objectives

Understand Flex Clusters architecture and components

Understand effect of node failure in Flex Clusters

Understand the scope and capabilities of what-if command evaluation

Perform the different types of what-if command evaluation

Install Grid Infrastructure for Standard and Flex clusters

Verify the installation

Configure ASM disk groups

Perform the prerequisite steps for extending a cluster

Add a Leaf node and a Hub node to a Flex cluster

Delete a node from a cluster

Explain the principles and purposes of clusters

Describe Cluster hardware best practices

Describe the Oracle Clusterware architecture

Describe Clusterware architecture

Install and configure Flex Clusters

Understand effect of node failure in Flex Clusters

## Course Topics

### Introduction to Grid Infrastructure

What is a Cluster?

What is a Flex Cluster?

Clusterware Characteristics

Oracle Clusterware

Hardware and Software Concepts (High level)

Shared Storage Overview

### Oracle Clusterware Architecture

Cluster Storage Requirements

Clusterware Initialization and OHASD

Clusterware Process Architecture

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

Shared GNS Background and Architecture

Configuring shared GNS

Migrating to shared GNS

Moving GNS to Another Cluster

### Flex Cluster Architecture

Flex Cluster Architecture

Configuring Flex Cluster

Flex Clusters and Node Failure

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

- Shared Storage for Oracle Clusterware
- Checking System Requirements
- Single Client Access Name for the Cluster
- Redundant Interconnect Usage
- Kernel Requirements
- Groups and Users
- Shell Settings
- Oracle Validated Configuration

## **Installing Grid Infrastructure**

- Installing Oracle Grid Infrastructure
- Installing Flex Cluster
- 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**

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

## **Policy-Based Cluster Management**

- Policy-Based Cluster Management Overview
- Server Categorization
- Policy Set

## **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

## **Troubleshooting Oracle Clusterware**

- Diagnostic Framework Support for CRS
- Cluster Health Monitor Enhancements Overview
- Component level checks - cluvfy with -comp
- Resource Debugging - Java Tools and Dynamic Debugging
- Troubleshooting Node Evictions
- Log files and Diagnostic Collection

The oclumon Utility

### **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 (crs\_profile, crs\_register, crs\_start...)

Clusterware Resource Modeling

Creating an Application VIP

ONS and FAN overviews