

## Oracle Database 12c: Clusterware & RAC Admin Accelerated Ed 1

**Duration:** 5 Days

### What you will learn

This Oracle Database 12c: Clusterware & RAC Admin Accelerated training covers 8 days worth of content in only 5 days. It starts with the Oracle Database 12c: Clusterware Administration course (4 days) and then covers the Oracle RAC database architecture(4 days); learn how these products work together. In this course, you will be introduced to Oracle Database Exadata Cloud Service.

### 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.

Install Oracle RAC software.

Create cluster databases.

Administer both administrator and policy-managed Oracle RAC databases.

Monitor and address performance issues.

Learn about services in a RAC environment as well as highly available connection features including Application Continuity and Transaction Guard.

Create and administer a RAC One Node Database.

Create and manage multitenant RAC databases.

Gain an understanding of the Oracle Database Exadata Cloud Service.

### Benefits to You

By taking this course, you'll know how to make applications highly available using Oracle Clusterware and RAC. You'll walk away with the ability to install, configure, manage and troubleshoot both Oracle Clusterware and Oracle RAC software. Ensure fast, reliable, secure and easy to manage performance as you learn to optimize database workloads, lower IT costs and deliver a higher quality of service by enabling consolidation onto database clouds.

### Audience

Administrator

Database Administrators

Support Engineer

Technical Administrator

Technical Consultant

## Related Training

### *Required Prerequisites*

Oracle Database 12c: Oracle Automatic Storage Management Administration

Oracle Database 12c: Grid Infrastructure Administration

Working knowledge of Oracle Database 11g: Release 2, including Clusterware, ASM and RAC

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### *Suggested Prerequisites*

Oracle Database 11g: RAC Administration Release 2

Oracle Grid Infrastructure 11g: Manage Clusterware and ASM - Release 2

## Course Objectives

Configure the RAC database to use ARCHIVELOG mode and the fast recovery area

Configure RMAN for the RAC environment

Gain an understanding of the Oracle Database Exadata Cloud Service

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

Configure ASM disk groups

Perform the prerequisite steps for extending a cluster

Describe the benefits of Oracle RAC

Convert a single-instance Oracle database to RACs

Understand Flex Clusters architecture and components

Define redo log files in a RAC environment

Define undo tablespaces in a RAC environment

Start and stop RAC databases and instances

Modify initialization parameters in a RAC environment

## 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

## **RAC Databases Overview & Architecture**

Overview of Oracle RAC  
RAC One Node  
Cluster-Aware Storage Solutions  
Benefits of Using RAC  
Scaleup and Speedup  
I/O Throughput Balanced  
Global Resources  
RAC and Flex ASM

## **Installing and Configuring Oracle RAC**

Installing the Oracle Database Software  
Installation options  
Creating the Cluster Database  
Post-installation Tasks

Single Instance to RAC Conversion  
Cleaning Up Unsuccessful Installs

## **Oracle RAC Administration**

Parameters and RAC - SPFILE, Identical and Unique Parameters  
Instance Startup, Shutdown and Quiesce  
Undo Tablespace  
Redo Threads  
Use Enterprise Manager Cluster Database Pages  
RAC Alerts  
RAC Metrics  
Session management on RAC instances

## **RAC Backup and Recovery**

Instance Failure And Recovery In RAC - LMON and SMON  
Redo Threads and Archive Log Configurations and Admin  
Parameter Settings Affecting Parallel Recovery and MTTR  
Instance Failure And Recovery In RAC - LMON and SMON  
RAC and the Fast Recovery Area  
RMAN Configuration  
RMAN Admin For RAC: Channels, Instances, Backup Distribution  
RMAN Restore And Recovery RAC Considerations

## **RAC Global Resource Management and Cache Fusion**

Globally Managed Resources and Management  
Library Cache Management  
Row cache management  
Buffer cache fusion  
Buffer Cache Management Requirements  
Accessing single blocks in RAC  
Multi-block read considerations in RAC  
Undo and read consistency considerations in RAC

## **RAC Monitoring and Tuning**

OCPU and Wait Time Latencies  
Wait Events for RAC  
Common RAC Tuning  
Session and System Statistics  
RAC specific V\$ Views  
Automatic Database Diagnostic Monitor for RAC

## **Managing High Availability of Services in a RAC Environment**

Oracle Services  
Services for Policy - and Administrator-Managed Databases  
Creating Services  
Managing Services  
Use Services with Client Applications  
Services and Connection Load Balancing  
Services and Transparent Application Failover  
Services and the Resource Manager

## **Upgrading and Patching RAC**

- Overview of Upgrades and Patching
- Release and Patch Set Upgrades
- PSU, CPU and Interim Patches
- Merge Patches
- Performing Out Of Place Database Upgrades
- Planning and Preparing for Upgrade
- Performing Out of Place Release Install or Upgrade
- Post Upgrade Tasks

## **Application Continuity**

- What is AC?
- What problem does it solve?
- Benefits of AC
- How AC works
- AC Architecture
- Side Effects
- Restrictions
- Application requirements

## **Design for High Availability**

- Causes of Planned and Unplanned Down Time
- Oracle's Solution to Down Time
- RAC and Data Guard
- Maximum Availability Architecture
- Fast-Start Failover
- Hardware Assisted Resilient Data
- Database High Availability Best Practices
- RAID Configuration for High Availability

## **Oracle Database Exadata Cloud Service Overview**

- Introducing Exadata Cloud Service
- Service Configuration Options & Service Connection Options
- Service Architecture & Availability
- Management Responsibilities
- Storage Configuration & Management Details
- Simple Web-Based Provisioning & Management
- REST APIs
- Migrating to Exadata Cloud Service