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: Grid Infrastructure Administration

Oracle Database 12c: Oracle Automatic Storage Management 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

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 Tablespaces
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