

## Exadata and Database Machine Administration Workshop NEW

**Duration:** 3 Days

### What you will learn

This course covers two main subject areas:

The first section introduces students to Exadata Storage Server X2-2 (formerly known as Exadata Storage Server Version 2). Students learn about the architecture and key capabilities of Exadata along with how to configure, monitor and optimize it. The topics are reinforced through the student's participation in structured hands-on lab exercises.

The second section introduces students to Oracle Exadata Database Machine. Students learn about the various Database Machine configurations. The installation and configuration process is covered so that students are equipped to make appropriate up-front configuration decisions. They also learn how to maintain, monitor and optimize Database Machine after initial configuration. Students are introduced to various options for migrating to Database Machine and learn how to select the best approach. Where possible, the topics are reinforced through the student's participation in structured hands-on lab exercises. There will also be some demonstrations included with the course.

### Learn To:

Describe what is Exadata and how is it different from traditional database storage

List the key capabilities and features of Exadata and DBM

Configure DBM

Implement Exadata security

Maintain DBM and perform various maintenance tasks

Monitor DBM using alerts, thresholds, metrics, current activities, SQL plans, V\$ views and database statistics

This course counts towards the Hands-on course requirement for the Oracle Database 11g Administrator Certification. Only instructor-led inclass or instructor-led online formats of this course will meet the Certification Hands-on Requirement. Self Study CD-Rom and Knowledge Center courses DO NOT meet the Hands-on Requirement.

### Audience

Data Warehouse Administrator

Database Administrators

Database Designers

Technical Administrator

### Prerequisites

#### *Required Prerequisites*

System and Storage Administration Concepts

Networking (inc. Infiniband)

Oracle Enterprise Linux: System Administration

### *Suggested Prerequisites*

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

Oracle Database 11g: Administration Workshop I DBA Release 2

Oracle Database 11g: Administration Workshop II DBA Release 2

Oracle 11g: RAC and Grid Infrastructure Overview Seminar Release 2

### **Course Objectives**

Describe the key capabilities of Exadata and Database Machine

Identify the benefits of using Database Machine for different application classes

Describe the architecture of Database Machine and its integration with Oracle Database, Clusterware and ASM

Complete the initial configuration of Database Machine

Describe various recommended approaches for migrating to Database Machine

Configure Exadata I/O Resource Management

Monitor Database Machine health and optimize performance

### **Course Topics**

#### **Introduction**

Course Objectives

Audience and Prerequisites

Course Scope

Course Contents

Terminology

Additional Resources

#### **Exadata Overview**

Traditional Enterprise Database Storage Deployment

Exadata Storage Deployment & Exadata Implementation Architecture Overview

Introducing Exadata

Exadata Hardware Details (Sun Fire X4270 M2) & Exadata Specifications

InfiniBand Network

Classic Database I/O and SQL Processing Model

Exadata Smart Scan Model & Exadata Smart Storage Capabilities

Exadata Hybrid Columnar Compression Architecture Overview, Exadata Smart Flash Cache & Exadata Storage Index

#### **Exadata Architecture**

Exadata Software Architecture Overview

Exadata Software Architecture Details

Exadata Smart Flash Cache Architecture

Exadata Monitoring Architecture

Disk Storage Entities and Relationships

Interleaved Grid Disks

Flash Storage Entities and Relationships

Disk Group Configuration

#### **Exadata Configuration**

Exadata Installation and Configuration Overview

Initial Network Preparation

Configuration of New Exadata Servers

Exadata Administrative User Accounts  
Configuring a New Exadata Cell  
Important I/O Metrics for Oracle Databases  
Testing Performance Using CALIBRATE  
Configuring the Exadata Cell Server Software & Configuring ASM and Database Instances for Exadata

## **Exadata Performance Monitoring and Maintenance**

Exadata Metrics and Alerts Architecture  
Monitoring Exadata with Metrics, Monitoring Exadata Cells with Alerts & Monitoring Exadata Cells with Active Requests  
Monitoring SQL Execution Plans & Smart Scan Execution Plan Example  
Monitoring Exadata from Your Database, Monitoring Exadata with Wait Events & Monitoring Exadata with Enterprise Mar  
Additional Monitoring Tools and Utilities & Cell Maintenance Overview  
Automated Cell Maintenance Operations  
Replacing a Damaged Physical Disk & Replacing a Damaged Flash Card  
Moving All Disks from One Cell to Another & Using the Exadata Software Rescue Procedure

## **Exadata and I/O Resource Management**

I/O Resource Management Concepts & Plans  
IORM Architecture  
Enabling Intradatabase Resource Management  
Intradatabase Plan Example  
Enabling IORM for Multiple Databases  
Interdatabase Plan Example & Category Plan Example  
Complete Example  
Using Database I/Os Metrics

## **Optimizing Database Performance with Exadata**

Optimizing Performance  
Flash Memory Usage  
Compression Usage  
Index Usage  
ASM Allocation Unit Size  
Minimum Extent Size

## **Database Machine Overview and Architecture**

Introducing Database Machine  
Database Machine X2-2 Full Rack & X2-2 Database Server Hardware Details (Sun Fire X4170 M2)  
Database Machine X2-8 Full Rack  
X2-8 Database Server Hardware Details (Sun Fire X4800)  
Database Machine Capacity & Database Machine Performance  
Database Machine X2-2 Architecture & InfiniBand Network Architecture  
X2-2 Leaf Switch Topology & Full Rack Spine and Leaf Topology  
Scale Performance and Capacity & Scaling Out to Multiple Full Racks

## **Database Machine Configuration**

Database Machine Implementation Overview & Configuration Worksheet Overview  
Configuration Worksheet Example  
Configuring ASM Disk Groups with Configuration Worksheet  
Generating the Configuration Files  
Other Pre-Installation Tasks  
The Result After Installation and Configuration  
Supported Additional Configuration Activities

## **Migrating Databases to Database Machine**

- Migration Best Practices Overview
- Performing Capacity Planning
- Database Machine Migration Considerations
- Choosing the Right Migration Path
- Logical Migration Approaches
- Physical Migration Approaches
- Other Approaches
- Post-Migration Best Practices

## **Bulk Data Loading with Database Machine**

- Bulk Data Loading Overview
- Preparing the Data Files
- Staging the Data Files
- Configuring the Staging Area
- Configuring the Target Database
- Loading the Target Database

## **Backup and Recovery with Database Machine**

- Using RMAN with Database Machine
- General Recommendations for RMAN
- Disk Based Backup Strategy
- Disk Based Backup Configuration
- Tape Based Backup Strategy & Tape Based Backup Configuration
- Hybrid Backup Strategy
- Restore and Recovery Recommendations
- Backup and Recovery of Database Machine Software

## **Monitoring and Maintaining Database Machine**

- ILOM Overview
- DCLI Overview
- InfiniBand Diagnostic Utilities
- Database Machine Support Overview
- Patching and Updating Overview
- Maintaining Exadata Software
- Maintaining Database Server Software
- Maintaining Other Software

## **New Features in Update Release 11.2.1.3.1**

- New Features Overview
- Auto Service Request (ASR)
- The ASR process
- ASR requirements
- Oracle Linux 5.5
- Enhanced operating system security
- Pro-active disk quarantine
- Other new features