

EXADATA X6 DATABASE MACHINE ADMINISTRATION

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COURSE CONTENT

1) Introduction

- Describe the key capabilities of Exadata Database Machine
- Identify the benefits of using Exadata Database Machine for different application classes
- Describe the architecture of Exadata Database Machine and its integration with Oracle Database, Clusterware, and ASM
- Complete the initial configuration of Exadata Database Machine
- Describe various recommended approaches for migrating to Exadata Database Machine
- Configure I/O Resource Management
- Monitor Exadata Database Machine health and optimize performance

2) Exadata Database Machine: Overview

- Provide an overview-level description of Exadata Storage Server and the different Exadata Database Machine configurations
- Outline the key capacity and performance specifications for Exadata Database Machine

3) Exadata Database Machine Architecture

- Describe the Exadata network architecture
- Describe the Exadata software architecture
- Describe the Exadata Storage Server storage entities and their relationships
- Describe how multiple Exadata racks can be interconnected

4) Key Capabilities of Exadata Database Machine

- Exadata Smart Scan Model
- Exadata Smart Storage Capabilities
- Hybrid Columnar Compression: Overview
- Exadata Smart Flash Cache: Overview
- Columnar Flash Caching
- Exadata Smart Flash Log: Overview
- Exadata Storage Index: Overview

- Exafusion Direct-to-Wire Protocol
- Exadata Network Resource Management
- I/O Resource Management: Overview
- Exadata Benefits for Data Warehousing and Analytics
- Exadata Benefits for OLTP

5) Exadata Database Machine Initial Configuration

- Installation and configuration process for Exadata
- Default configuration for Exadata
- Supported and unsupported customizations for Exadata

6) Exadata Storage Server Configuration

- Configure Exadata Storage Server software
- Create and configure ASM disk groups using Exadata storage

7) I/O Resource Management

- I/O Resource Management: Overview
- I/O Resource Management Plans
- IORM Architecture
- I/O Resource Management for Flash
- Using Exadata I/O Resource Management
- with Oracle Database 12c

8) Recommendations for Optimizing Database Performance

- Areas for special consideration:
 - Flash memory usage
 - Compression usage
 - Index usage
 - ASM allocation unit size
 - Extent size
 - Exadata specific system statistics
 - Setting the I/O timeout threshold

9) Using Smart Scan

- Describe Smart Scan and the query processing that can be offloaded to Exadata Storage Server
- Describe the requirements for Smart Scan
- Describe the circumstances that prevent using Smart Scan
- Identify Smart Scan in SQL execution plans
- Use database statistics and wait events to confirm how queries are processed

10) Consolidation Options and Recommendations

- Describe the options for consolidating multiple databases on Exadata
- Explain the benefits and costs associated with the different options

11) Migrating Databases to Exadata Database Machine

- Describe the general steps to migrate your database to Exadata
- List the main approaches for migrating your database to Exadata
- Identify the most appropriate approach for different circumstances

12) Bulk Data Loading

- Describe alternative architectures for bulk data loading into Exadata
- Configure the Database File System (DBFS) feature for staging input data files
- Use external tables to perform high-performance data loads

13) Exadata Database Machine Platform Monitoring: Introduction

- Describe the key monitoring infrastructure technologies associated with Exadata Database Machine

14) Configuring Enterprise Manager Cloud Control to Monitor Exadata Database Machine

- Describe Enterprise Manager Cloud Control architecture as it specifically applies to Exadata
- Explain how to configure Enterprise Manager Cloud Control to monitor Exadata
- Explain the guided discovery process for Exadata
- Describe how to configure a dashboard for Exadata

15) Monitoring Exadata Storage Servers

- Describe Exadata Storage Server metrics, alerts, and active requests
- Identify the recommended focus areas for Exadata Storage Server monitoring
- Describe how to monitor the recommended Exadata Storage Server focus areas

16) Monitoring Exadata Database Machine Database Servers

- Describe the monitoring recommendations for Exadata database servers

17) Monitoring the InfiniBand Network

- Describe the InfiniBand network monitoring capabilities provided by Enterprise Manager Cloud Control
- Explain how to monitor the Exadata InfiniBand network without Enterprise Manager

18) Monitoring Other Exadata Database Machine Components

- Monitor the following additional Exadata components:
 - Cisco Ethernet Switch
 - Sun Power Distribution Units
 - KVM Switch

19) Other Useful Exadata Monitoring Tools

- Describe the following tools:
 - Exachk
 - ExaWatcher
 - TFA Collector
 - ADRCI
 - Imageinfo and Imagehistory
 - ILOM

20) Backup and Recovery

- Explain how Recovery Manager (RMAN) backups are optimized using Exadata Storage Server
- Describe the recommended approaches for disk- and tape-based backups of databases on Exadata
- List the recommended best practices for backup and recovery on Exadata

21) Exadata Database Machine Maintenance Tasks

- Perform the following Exadata maintenance tasks:
 - Powering Exadata on and off
 - Safely shutting down a single Exadata Storage Server
 - Replacing a damaged physical disk on a cell
 - Replacing a damaged flash card on a cell
 - Moving all disks from one cell to another
 - Using the Exadata cell software rescue procedure

22) Patching Exadata Database Machine

- Describe how software is maintained on different Exadata components
- Locate the recommended patches for Exadata
- Describe the recommended patching process for Exadata
- Describe the characteristics of an effective test system

23) Exadata Database Machine Automated Support Ecosystem

- Describe the Auto Service Request (ASR) function and how it relates to Exadata
- Explain the implementation requirements for ASR
- Explain the ASR configuration process
- Describe Oracle Configuration Manager (OCM) and how it relates to Exadata