Oracle Exadata Database Machine: Implementation and Administration

Introduction

- Course Objectives
- Audience and Prerequisites
- Course Contents
- Terminology
- Additional Resources
- Introducing the Laboratory Environment

Exadata Database Machine Overview

- Introducing Database Machine
- Introducing Exadata Storage Server
- Exadata Storage Server Architecture: Overview
- Exadata Storage Server Features: Overview
- Exadata Storage Expansion Racks
- InfiniBand Network
- Database Machine Support: Overview

Exadata Database Machine Architecture

- Database Machine Architecture: Overview
- Database Machine Network Architecture
- InfiniBand Network Architecture
- InfiniBand Network Topology
- Interconnecting Multiple Racks
- Database Machine Software Architecture: Overview
- Disk Storage Entities and Relationships

Key Capabilities of Exadata Database Machine

- Classic Database I/O and SQL Processing Model
- Exadata Smart Scan Model
- Exadata Smart Storage Capabilities
- Exadata Hybrid Columnar Compression
- Exadata Smart Flash Cache
- Exadata Storage Index
- Database File System
- I/O Resource Management

Exadata Database Machine Initial Configuration

- Database Machine Implementation: Overview
- Database Machine Site Preparation
- Using Oracle Exadata Deployment Assistant
- Choosing the Right Disk Redundancy Setting

- Configuring Oracle Exadata Database Machine
- The Result After Installation and Configuration
- Supported Additional Configuration Activities

Exadata Storage Server Configuration

- Exadata Storage Server Administration: Overview
- Testing Storage Server Performance Using CALIBRATE
- Configuring the Exadata Cell Server Software
- Starting and Stopping Exadata Cell Server Software
- Configuring Cell Disks and Grid Disks
- Configuring ASM and Database Instances to Access Exadata Cells
- Reconfiguring Exadata Storage
- Exadata Storage Security Implementation

I/O Resource Management

- I/O Resource Management Concepts
- IORM Architecture
- Getting Started with IORM
- Enabling Intradatabase Resource Management
- Setting Database I/O Utilization Limits
- Interdatabase Plans and Database Roles
- Using Database I/O Metrics
- IORM and Exadata Storage Server Flash Memory

Recommendations for Optimizing Database Performance

- Flash Memory Usage
- Influencing Caching Priorities
- Choosing the Flash Cache Mode
- Compression Usage
- Index Usage
- ASM Allocation Unit Size
- Minimum Extent Size
- Exadata Specific System Statistics

Using Smart Scan

- Exadata Smart Scan: Overview
- Smart Scan Requirements
- Monitoring Smart Scan in SQL Execution Plans
- Smart Scan Join Processing with Bloom Filters
- Other Situations Affecting Smart Scan
- Exadata Storage Server Statistics: Overview
- Exadata Storage Server Wait Events: Overview

Consolidation Options and Recommendation

- Consolidation: Overview
- Different Consolidation Types
- Recommended Storage Configuration for Consolidation
- Alternative Storage Configurations
- Cluster Configuration Options
- Isolating Management Roles
- Schema Consolidation Recommendations
- Maintenance Considerations

Migrating Databases to Exadata Database Machine

- Migration Best Practices: Overview
- Performing Capacity Planning
- Database Machine Migration Considerations
- Choosing the Right Migration Path
- Logical Migration Approaches
- Physical Migration Approaches
- Post-Migration Best Practices
- Migrating to Database Machine Using Transportable Tablespaces

Bulk Data Loading using Oracle DBFS

- Bulk Data Loading Using Oracle DBFS: Overview
- Preparing the Data Files
- Staging the Data Files
- Configuring the Staging Area
- Configuring the Target Database
- Loading the Target Database

Exadata Database Machine Platform Monitoring Introduction

- Monitoring Technologies and Standards
- Simple Network Management Protocol (SNMP)
- Intelligent Platform Management Interface (IPMI)
- Integrated Lights Out Manager (ILOM)
- Exadata Storage Server Metrics, Thresholds, and Alerts
- Automatic Diagnostic Repository (ADR)
- Enterprise Manager Cloud Control 12c
- Enterprise Manager Database Control

Configuring Enterprise Manager Cloud Control 12c to Monitor Exadata Database Machine

- Enterprise Manager Cloud Control 12c Architecture: Overview
- Cloud Control Monitoring Architecture for Exadata Database Machine

- Configuring Cloud Control to Monitor Exadata Database Machine
- Pre-discovery Configuration and Verification
- Deploying the Oracle Management Agent
- Discovering Exadata Database Machine
- Discovering Additional Targets
- Post-discovery Configuration and Verification

Monitoring Exadata Storage Servers

- Exadata Metrics and Alerts Architecture
- Monitoring Exadata Storage Server with Metrics and Alerts
- Isolating Faults with
- Monitoring Exadata Storage Server with Enterprise Manager: Overview
- Monitoring Hardware Failure and Sensor State
- Monitoring Exadata Storage Server Availability
- Comparing Metrics Across Multiple Storage Servers

Monitoring Exadata Database Machine Database Servers

- Monitoring Database Servers: Overview
- Monitoring Hardware
- Monitoring the Operating System
- Monitoring Oracle Grid Infrastructure
- Monitoring Oracle Database
- Monitoring Oracle Management Agent
- Database Monitoring with Enterprise Manager Cloud Control 12c

Monitoring the InfiniBand Network

- InfiniBand Network Monitoring: Overview
- InfiniBand Network Monitoring with
- Monitoring the InfiniBand Switches
- Monitoring the InfiniBand Switch Ports
- Monitoring the InfiniBand Ports
- Monitoring the InfiniBand Fabric:
- Monitoring the InfiniBand Fabric:

Monitoring Other Exadata Database Machine Components

- Monitoring the Cisco Ethernet Switch
- Monitoring the Sun Power Distribution Units
- Monitoring the KVM Switch

Other Useful Monitoring Tools

- Exachk: Overview

- Running Exachk
- Exachk Daemon
- DiagTools: Overview
- Using ADRCI on Exadata Storage Servers
- Imageinfo: Overview
- Imagehistory: Overview
- OSWatcher: Overview

Backup and Recovery

- Using RMAN with Database Machine
- General Recommendations for RMAN
- Disk-Based Backup Strategy
- Disk-Based Backup Recommendations
- Disk-Based Backup on
- Tape-Based Backup Strategy
- Tape-Based Backup Architecture and Recommendations
- Backup and Recovery of Database Machine Software

Exadata Database Machine Maintenance Tasks

- Database Machine Maintenance: Overview
- Powering Database Machine Off and On
- Safely Shutting Down a Single Exadata Storage Server
- Replacing a Damaged Physical Disk
- Replacing a Damaged Flash Card
- Moving All Disks from One Cell to Another
- Using the Exadata Cell Software Rescue Procedure

Patching Exadata Database Machine

- Patching and Updating: Overview
- Maintaining Exadata Storage Server Software
- Maintaining Database Server Software
- Assisted Patching Using OPlan
- Assisted Patching Using
- Maintaining Other Software
- Recommended Patching Process
- Test System Recommendations