

# S Zero Data Loss Recovery Appliance: Overview

Infrastructure

DURATION

**2 Days**

MODULES

**12 Lectures**

COURSE CODE

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## Course Overview

This course introduces Oracle's Zero Data Loss Recovery Appliance (Recovery Appliance) as a ground-breaking data protection solution that tightly integrates with the Oracle Database in order to address these requirements head-on. The course discusses how the Recovery Appliance eliminates data loss exposure and dramatically reduces data protection overhead on production servers. In addition, the course explains how the Recovery Appliance scales to protect thousands of databases, ensures end-to-end data validation, and implements full lifecycle protection including disk backup, tape backup, and remote replication.

## What You Will Learn

### Introduction

- Course Objectives
- Additional Resources
- How Prepared Are You?

### Zero Data Loss Recovery Appliance Solution

- Objectives
- Agenda
- What Are Engineered Systems?
- Engineered Systems: Oracle Zero Data Loss Recovery Appliance X8M
- Oracle Zero Data Loss Recovery Appliance: Overview
- Engineered System: Simple to Install, Manage, and Maintain
- Agenda
- Oracle Recovery Appliance Cloud-Scale Solution
- Agenda
- Oracle Recovery Appliance Hardware Specifications
- Oracle Recovery Appliance X8-X8M Hardware Details
- Oracle Recovery Appliance X8-X8M: Compute Server
- Oracle Recovery Appliance X8-X8M: Storage Server
- Oracle Recovery Appliance X8: InfiniBand Switches

- Oracle Recovery Appliance X8M: RoCE Switches
- Oracle Recovery Appliance X8-x8M: Management Switch
- Oracle Recovery Appliance X8M: Performance Improvements
- Agenda
- Oracle Recovery Appliance Base Software
- Oracle Integrated Lights Out Manager (Oracle ILOM)
- Agenda
- Implementation Workflow
- Summary

## Recovery Appliance Functions and Features

- Objectives
- Agenda
- Why CIOs Care
- Why Customers Care
- Inadequate Data Recovery = Big Business Impacts
- Key Database Protection Goals
- Agenda
- Backup Appliances Are Not Designed for Database
- Oracle Deduplication and Validation Challenges
- Agenda
- Recovery Appliance: Unique Benefits for Business and IT
- Oracle Zero Data Loss Recovery Appliance: Overview
- Key Architecture Components
- Recovery Appliance: Unique Benefits for Business and IT
- Data Guard-Like Protection for All Databases
- Data Loss Protection from Site Disasters
- Long-Term Data Loss Protection
- Data Loss Protection from Users or Errors
- Data Loss Protection from Corruptions
- Data Loss Protection from Corruptions (Notes only)
- Recovery Appliance: Unique Benefits for Business and IT
- Space-Efficient “Virtual” Full Backups
- Incremental Forever Backup Strategy
- Delta Push
- Real-Time Redo Transport
- Delta Store: Incremental Backups
- Delta Store: Virtual Full Backup Creation
- Delta Store: Efficient Indexing and Storage Management
- Delta Store: Virtual Full Backup Purging
- Delta Store: Virtual Full Backup Optimization
- Delta Store: How It Works
- Delta Store: Receiving Backup Pieces
- Delta Store: Container Files and Delta Pools
- Delta Store: Delta Pool Plans

- Internal Tasks
- Recovery Appliance Metadata Database: CATALOG
- RMAN Recovery Catalog and Virtual Private Catalogs
- Data Encryption
- Protected Databases
- Recovery Appliance Storage
- Recovery Appliance Storage Space Management
- Recovery Appliance: Unique Benefits for Business and IT
- End-to-End Data Protection Visibility
- Fast Recovery with Oracle Recovery Appliance
- Recovery Appliance: Unique Benefits for Business and IT
- Policy-Based Cloud Scale Protection
- Dynamic Policy-Based Space Allocation
- Modern Cloud-Scale Database Protection
- Recovery Appliance Replication
- Media Manager Integration
- Oracle Cloud Integration
- Enterprise Manager Cloud Control
- Reporting
- Summary

## Recovery Appliance Installation

- Objectives
- Agenda
- Oracle Exadata Deployment Assistant (OEDA)
- OEDA
- OEDA Web Server: Installation
- OEDA Web-Based Interface: Access
- OEDA Web-Based Interface: Hardware
- OEDA Web-Based Interface: Operating System
- OEDA Web-Based Interface: Customer Network Requirements
- OEDA Web-Based Interface: Rack Networks
- OEDA Web-Based Interface: Customer Network Requirements
- OEDA Web-Based Interface: Rack Networks
- OEDA Web-Based Interface: Users
- OEDA Web-Based Interface: Clusters
- OEDA Web-Based Interface: Diskgroups
- OEDA Web-Based Interface: Database
- OEDA Web-Based Interface: Customer Network Requirements
- OEDA Web-Based Interface: Cluster Networks
- OEDA Web-Based Interface: Rack Networks
- OEDA Web-Based Interface: Customer Network Requirements
- OEDA Web-Based Interface: Cluster Networks
- OEDA Web-Based Interface: Rack Networks
- OEDA Web-Based Interface: Alerting

- OEDA Web-Based Interface: Email/SNMP Alerting
- OEDA Web-Based Interface: Auto Service Request
- OEDA Web-Based Interface: Oracle Configuration Manager Screen
- OEDA Web-Based Interface: Tape
- OEDA Web-Based Interface: Comments
- OEDA Web-Based Interface: Generated Files
- OEDA Web-Based Interface: Other Configuration Options
- OEDA Web Server: Management Tasks
- Recovery Appliance Installation: Steps
- Recovery Appliance Installation: Get the Current Software – Step 1
- Recovery Appliance Installation: Pre-Install Check – Step 2
- Recovery Appliance Installation: Installation Script – Step 3
- Recovery Appliance Installation: Recovery Appliance Installation Script – Step 4
- Recovery Appliance Installation: EM Discovery – Step 5
- Agenda
- Expanding the Recovery Appliance
- Extending the Recovery Appliance
- Summary

## Zero Data Loss Recovery Appliance Configuration

- Objectives
- Agenda
- Recovery Appliance Configuration Tasks
- Agenda
- Recovery Appliance Administrative Interfaces
- Agenda
- Recovery Appliance Discovery
- Agenda
- Recovery Appliance Administration Roles
- Cloud Control User Accounts: Cloud Control Super-Administrator
- Cloud Control User Accounts: Discovering and Managing a Recovery Appliance
- Target
- Cloud Control User Accounts: Managing Protected Databases with Recovery Appliance
- Recovery Appliance User Accounts: Creating a VPC User
- Agenda
- Protection Policies: Defined Classes of Service
- Protection Policies: Using Cloud Control
- Protection Policies: Using PL/SQL code
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- Agenda

- Recovery Appliance Metadata: Database System
- Recovery Appliance Metadata: Clusterware and RAC Database
- Recovery Appliance Metadata: Architecture
- Recovery Appliance Storage: Compute Nodes – DBMCLI
- Recovery Appliance Metadata: SCAN Listeners
- Recovery Appliance Metadata: ASM Disk Groups
- Recovery Appliance Metadata: RASYS Schema
- Recovery Appliance Metadata: Database Scheduler
- Agenda
- Recovery Appliance Storage: Storage Locations
- Recovery Appliance Storage: Creating Additional Delta Store
- Recovery Appliance Storage: Deleting an Existing Delta Store
- Recovery Appliance Storage: Provisioning More Storage Nodes
- Recovery Appliance Storage – Storage Nodes: Disk Storage Entities and Relationships
- Recovery Appliance Storage – Storage Nodes: Flash Storage Entities and Relationships
- Recovery Appliance Storage – Storage Nodes: Disk Group Configuration
- Recovery Appliance Storage – Storage Nodes: CellCLI
- Recovery Appliance Storage – Storage Nodes: User Accounts
- Recovery Appliance Storage – Storage Nodes: Distributed CLI
- Recovery Appliance Storage – Storage Nodes: Testing by Using CALIBRATE
- Recovery Appliance Storage – Storage Nodes: Starting and Stopping Cell Services
- Recovery Appliance Storage – Storage Nodes: Configuring Cell Disks
- Recovery Appliance Storage – Storage Nodes: Configuring Grid Disks
- Recovery Appliance Storage – Storage Nodes: Configuring Hosts to Access Grid/ASM Disks
- Recovery Appliance Storage – Storage Nodes: Configuring ASM Instances to Access Grid/ASM Disks
- Summary

## ZDLRA Protected Databases Configuration

- Objectives
- Agenda
- Oracle Database 19c: Multitenant Database Architecture Overview
- Protected Database Administration: Task Overview
- Protected Database Administration: Tools
- Protected Databases: Supported Features
- Agenda
- Recovery Appliance Backup Module: Protected Database Configuration
- Recovery Appliance Backup Module: Sample Installation
- Recovery Appliance Backup Module: Oracle Wallet
- Agenda
- Real-Time Redo: Configuration
- Agenda

- Enrolling Protected Databases: Registration
- Configuring Protected Databases: Backup Settings
- Agenda
- Backing Up Protected Databases: Task
- Monitoring Protected Databases: Job
- Protected Databases: Compression and Encryption
- Protected Databases: Long Term Backups
- Migration: Planning Migration
- Migration: RMAN Differences
- Migration: RMAN Channels
- Migration: Import Backup Metadata
- Migration: Import Existing Backups
- Agenda
- Recovering Protected Databases: Task
- Summary

## Optimizations and Performance Tuning

- Objectives
- Agenda
- Recovery Appliance Sizing
- Optimization
- Agenda
- Optimization: Section Size
- Optimization: Best Practices
- Optimization: Sample Backup
- Tasks
- Recovery Appliance Users
- Migration
- Protected Databases
- Agenda
- rastat.pl
- network\_throughput\_test.sh
- Agenda
- Oracle Enterprise Manager: Performance Pages
- Summary

## Disaster Recovery with Replication

- Objectives
- Agenda
- Data Loss Protection from Site Disasters
- Recovery Appliance Replication Concepts
- Agenda
- Recovery Appliance Replication Process
- Agenda
- Recovery Appliance Replication Interfaces

- Recovery Appliance Replication Status
- Agenda
- Recovery Appliance Replication Configuration
- Recovery Appliance Replication Status
- Summary

## Recovery Appliance Integrated Media Management

- Objectives
- Agenda
- Tape Archival
- Recovery Appliance Tape Configuration
- Recovery Appliance Alternative Tape Configurations
- Agenda
- Integrated Media Manager Components
- Integrated Media Manager Concepts
- Integrated Media Manager Interfaces
- Media Manager Implementation in the Recovery Appliance
- Oracle Clusterware Media Manager Services in the Recovery Appliance
- Oracle Clusterware Media Manager Directories in the Recovery Appliance
- Copy-to-Tape Backup Operations in the Recovery Appliance
- Integrated Media Manager Concepts in the Recovery Appliance
- Integrated Media Manager in the Recovery Appliance
- Integrated Media Manager
- Agenda
- Archiving Backups to Cloud
- Prerequisites for Archive-to-Cloud
- Flow for Archive-to-Cloud Storage
- Summary

## Maintenance and Patching

- Objectives
- Agenda
- Recovery Appliance Upgrade/Patch Overview
- Recovery Appliance Upgrade/Patch Planification
- Recovery Appliance Upgrade/Patching
- Recovery Appliance Patching
- Recovery Appliance Upgrade/Patching
- Recovery Appliance Patching
- Agenda
- Recovery Appliance Oracle Enterprise Manager Plug-In
- Agenda
- Recovery Appliance Powering Off, Powering On
- Agenda
- Replacing a Damaged Physical Disk
- Safe Disk Removal

- Replacing a Damaged Flash Card
- Moving All Disks from One Cell to Another
- Using the Cell Software Rescue Procedure
- Summary

## Diagnostics and Troubleshooting

- Objectives
- Agenda
- Recovery Appliance Main Areas for Issues
- Generic Troubleshooting Questions
- Agenda
- Diagnostic Collection
- Other Useful Diagnostic Tools: Exachk
- Other Useful Diagnostic Tools: ExaWatcher
- Items to Collect
- Agenda
- OEM Monitoring Home Page
- OEM Protected Database Metrics
- OEM Incidents
- imageinfo and imagehistory
- Agenda
- Automatic Service Request
- ASR Process
- Agenda
- Oracle Configuration Manager Overview
- Configuring OCM
- Summary

## Reporting with BI Publisher

- Objectives
- Agenda
- Introduction to BI Publisher
- Recovery Appliance Reporting Workflow
- Agenda
- Oracle-Provided Reports with the Recovery Appliance
- Agenda
- Reporting on Recovery Appliance Components
- Agenda
- Reporting on Protected Databases
- Summary