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Oracle Database 12c Backup & Recovery Workshop

Course Summary

Description

All of the data within a database installation is at risk unless one has designed, tested and implemented a robust backup and recovery strategy. The objective of this training textbook is to assist you in doing just that, and this is one of the most essential modules in the entire Oracle 12c database administrator curriculum.

Among the tools and facilities that you will learn to use are the Oracle Recovery Manager (RMAN), the Enterprise Manager 12c Cloud Control, the Data Recovery Advisor, Oracle Flashback technologies, Redo Log File Size Advisor and the MTTR Advisor. Since it can be tempting to short-cut appropriate backup procedures if these perform poorly, special attention is given to backup performance and optimization.

Objectives
By the end of this course, students will be able to:

- Automatically managed backup strategies and database recovery operations using RMAN, the Enterprise Manager Cloud Control, and other database facilities.
- Database instance recovery, tuning checkpoints, the Redo Log File Size Advisor and the MTTR Advisor.
- User-managed recovery scenarios, including recovery from temporary, read-only and index tablespaces.
- Complete and incomplete media recovery, including database point-in-time, tablespace and table point-in-time recovery.
- Configure a centralized recovery catalog. Deploy standardized and consistent backup and recovery procedures throughout the enterprise by means of dynamic stored scripts and variable substitution.
- Optimizing backups for faster performance and parallelization of operations, employing compression algorithms and other strategies for optimum efficiency.
- Achieve data preservation through archival backups.
- Duplicate and clone databases for regulatory compliance, Real Application Testing database replay, test configuration and other purposes.
- Tablespace transportation, database transportation, cross-platform transportation and endian format conversion.
- Detect and handle failures and corruption, including the use of RMAN block recovery and the Data Recovery Advisor.
- Newly released or enhanced features such as backup file compression, encryption, parallelization and others.
- Recovering from logical failure using appropriate Oracle Flashback technologies, such as Flashback Table, Flashback Drop and Flashback Database.

Topics

- Getting started: About Database Failure & Recovery
- Getting Started: Configure The Database For Recovery
- Getting Started: Automatic Instance Recovery
- Backup: Configure RMAN
- Backup: Perform RMAN Backups
- Backup: RMAN Management With EM
- The RMAN Recovery Catalog
- Recovery: User
- Recovery: RMAN Recovery
- Advanced: Enhanced RMAN Capabilities
- Advanced: Database Duplication & Cloning
- Advanced: Data Transportation
- Advanced: Handling Corruption With Data Recover Advisor
- Flashback: About Oracle Flashback Technology
- Flashback: Recovery Using Oracle Flashback Technology

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Course Summary (cont'd)

Audience

The primary target audiences for this textbook are:

- Database administrators
- Web server administrators
- System administrators
- Implementation specialists
- Data center support engineers
- Senior application designers and developers

Prerequisites

Specific prerequisites for this textbook are the following titles, or equivalent experience:

- Oracle Database 12c: SQL Fundamentals (Levels I & Ii)
- Oracle Database 12c: Install & Upgrade Workshop
- Oracle Database 12c: Architecture & Internals
- Oracle Database 12c: Administration Workshop

Duration

Five days

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Course Outline

I. GETTINGSTARTED: ABOUT DATABASE FAILURE & RECOVERY
- A. BACKUP & RECOVERY FACILITIES
- B. THE BACKUP ADMINISTRATOR
- C. BACKUP STORAGE TECHNOLOGIES

II. GETTING STARTED: CONFIGURE THE DATABASE FOR RECOVERY
- A. MANAGE REDO DATA
- B. MANAGE ARCHIVED REDO DATA
- C. ABOUT THE FAST RECOVERY AREA
- D. RECOVERABILITY CHECKLIST

III. GETTING STARTED: AUTOMATIC INSTANCE RECOVERY
- A. ABOUT INSTANCE RECOVERY
- B. MEAN TIME TO RECOVER (MTTR)
- C. INSTANCE RECOVERY PARALLELISM
- D. MTTR ADVISOR & CHECKPOINT TUNING
- E. REDO LOGFILE SIZE ADVISOR
- F. FAST---START ON---DEMAND PARALLELISM

IV. BACKUP: CONFIGURE RMAN
- A. RMAN ARCHITECTURE
- B. LAUNCH & USE RMAN
- C. CONFIGURE RMAN SETTINGS
- D. RMAN CHANNELS

V. BACKUP: PERFORM RMAN BACKUPS
- A. CONSISTENT VS. INCONSISTENT BACKUPS
- B. BACKUP FILE TYPES
- C. RMAN Backup Sets
- D. RMAN Image Copies
- E. FULL BACKUPS
- F. INCREMENTAL BACKUPS
- G. RETENTION POLICIES & OBSOLETE FILES
- H. EXPIRED BACKUP ENTRIES
- I. RMAN BACKUP REPORTS
- J. REPORT UNRECOVERABLE
- K. REPORT NEED BACKUP
- L. LIST INCARNATION

VI. BACKUP: RMAN MANAGEMENT WITH EM
- A. MONITORING THE FAST RECOVERY AREA
- B. THE EM INTERFACE TO RMAN BACKUP
- C. ABOUT BACKUP GUIDED WORKFLOWS
- D. SCHEDULE CUSTOMIZED BACKUP
- E. SCHEDULE ORACLE---SUGGESTED BACKUP
- F. MANAGE CURRENT BACKUPS
- G. BACKUP REPORTS
- H. RESTORE POINTS
- I. BACKUP ENCRYPTION

VII. THE RMAN RECOVERY CATALOG
- A. RMAN CATALOG CONCEPTS
- B. CREATE THE BASE CATALOG
- C. REGISTER A TARGET DATABASE
- D. MANAGE THE CENTRALIZED CATALOG
- E. VIRTUAL PRIVATE CATALOGS
- F. PROTECTION OF THE RECOVERY CATALOG
- G. USING RMAN SCRIPTS

VIII. RECOVERY: USER
- A. MANAGED RECOVERY
- B. RECOVERY CONCEPTS
- C. RECOVER TEMPORARY TABLESPACES
- D. RECOVER READ---ONLY TABLESPACES
- E. RECOVER INDEX TABLESPACES
- F. RECOVER REDO LOG GROUP MEMBER
- G. RECREATE THE PASSWORD FILE

IX. RECOVERY: RMAN RECOVERY
- A. COMPLETE RECOVERY
- B. PARTIAL BUT COMPLETE RECOVERY
- C. RMAN Failure Diagnosis
- D. INCOMPLETE RECOVERY
- E. RECOVERY USING EM
- F. EM USER DIRECTED RECOVERY
- G. EM ORACLE ADVISED RECOVERY
- H. DECRYPTION DURING RESTORE

X. ADVANCED: ENHANCED RMAN CAPABILITIES
- A. BACKUP OPTIMIZATION
- B. PARALLELISM WITH SECTION SIZES
- C. BACKUP PERFORMANCE & CONTROL
- D. MINIMIZE TIME vs. MINIMIZE LOAD
- E. ARCHIVAL BACKUPS

XI. ADVANCED: DATABASE DUPLICATION & CLONING
- A. WHY PERFORM DATABASE DUPLICATION?
- B. RMAN DUPLICATE OPERATION
- C. RMAN DUPLICATE
- D. DATABASE CLONING WITH EM

XII. ADVANCED: DATA TRANSPORTATION
- A. ABOUT TRANSPORTATION
- B. READ---ONLY TS TRANSPORTATION
- C. READ---WRITE TS TRANSPORTATION
- D. CROSS---PLATFORM TS TRANSPORTATION
- E. DATABASE TRANSPORTATION
- F. EM TABLESPACE TRANSPORTATION

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Course Outline (cont'd)

XIII. ADVANCED: HANDLING CORRUPTION WITH DATA RECOVER ADVISOR

A. UNDERSTANDING FAILURE & CORRUPTION
B. HOW DOES CORRUPTION OCCUR?
C. DETECTING CORRUPTION
D. ANALYZE
E. DB_BLOCK_CHECKING
F. DB_BLOCK_CHECKSUM
G. DB_LOST_WRITE_PROTECT
H. DB_ULTRA_SAFE
I. RECOVERING FROM CORRUPTION
J. BLOCK MEDIA RECOVERY
K. ISOLATING CORRUPTION
L. DBMS_REPAIR() Units
M. About ADMIN_TABLES()
N. About CHECK_OBJECT()
O. About FIX_CORRUPT_BLOCKS()
P. About SKIP_CORRUPT_BLOCKS()
Q. About DUMP_ORPHAN_KEYS()
R. About SEGMENT_FIX_STATUS()

XIV. FLASHBACK: ABOUT ORACLE FLASHBACK TECHNOLOGY

A. ABOUT FLASHBACK TECHNOLOGY
B. FLASHBACK &DATABASE SECURITY
C. CONFIGURATION FOR FLASHBACK

XV. FLASHBACK: RECOVERY USING ORACLE FLASHBACK TECHNOLOGY

A. FLASHBACK TABLE
B. FLASHBACK DROP
C. FLASHBACK TABLE...TO BEFORE DROP
D. FLASHBACK DATABASE