

## Oracle 18c Database Administration 2 - Advanced Administration & Backup and Recovery

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### Course Summary

#### Description

This course provides follow on education for moderately experienced administration of the Oracle database. The course includes coverage of conceptual topics needed for more in-depth understanding of increasingly complex administrative tasks, extensive coverage of Oracle network interaction, specialized database structures, advanced administrative tools, and comprehensive backup and recovery strategies and methodologies.

Backup and recovery concepts are reviewed followed by in-depth coverage of user managed and RMAN backup and recovery techniques. Using Oracle Recovery Manger (RMAN) to perform backups (cold and hot) and database recoveries (complete and point in time 'PITR') are a primary focuses of the class.

The Oracle instance, background processes, the SGA and memory structures are explored. Various models of data concurrency and consistency and alternative isolation levels are explained along with their uses.

Oracle provides many, many network-centric features for configuring the database to make optimal use of a network and to provide custom quality of service. The high-end options, configuration, optimization and ruggedization of the Oracle network interaction is given broad coverage.

Specialized database objects that serve as alternatives to traditional relational tables are reviewed as are their appropriate uses.

The many optional styles of indexes provided by Oracle are covered, with emphasis on the correct situations in which they can be deployed to best advantage.

#### Topics

- Oracle Architecture
- Concurrency and Consistency
- Oracle Net Services
- Alternative Data Types
- Table Alternatives
- Advanced Indexing
- Database Resource Management
- The Oracle Scheduler
- Database Startup and Shutdown
- Database Backup and Recovery Concepts
- User Managed Backup and Recovery
- Segment and Block Storage Management
- Block Corruption Recovery
- Recovering from Non-Critical Losses
- RMAN Overview
- Configuring RMAN
- RMAN Backup Management
- RMAN Recovery Techniques
- Flashback Techniques
- Flashback Database

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### Course Summary (cont.)

#### Audience

This course is designed for:

- Oracle developers and moderately experienced DBAs
- Oracle developers and DBAs wishing to 'back fill' gaps in their expertise
- Administrators responsible for performing or managing Oracle backup and recovery
- Technical managers needing Oracle expertise for project administration

#### Prerequisite

- Skill with GUI interfaces
- Data processing background
- An understanding of SQL is required to succeed in this class

#### Duration

Four Days

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### Course Outline

- I. Oracle Architecture**
  - A. The instance vs. the database
  - B. The System Global Area (SGA)
  - C. The critical background processes
- II. Concurrency and Consistency**
  - A. What these two words mean
  - B. How Oracle manages concurrency and consistency
  - C. What part UNDO plays
  - D. Alternative isolation levels
- III. Oracle Net Services**
  - A. Understanding client and server sessions
  - B. How TNS (Transparent Network Substrate) operates
  - C. Main components of Oracle Net Services
  - D. Managing the Oracle LISTENER
  - E. Configuring Oracle Net for security, redundancy and speed
- IV. Alternative Data Types**
  - A. DATES, TIMESTAMPS and INTERVALs
  - B. The EXTRACT function
  - C. Persistent collections: VARRAY and Nested Tables
- V. Table Alternatives**
  - A. Global temporary tables
  - B. Materialized views
  - C. Index organized tables
  - D. External tables
- VI. Advanced Indexing**
  - A. Creating bitmap indexes
  - B. Creating function-based indexes
  - C. Creating reverse key indexes
  - D. Invisible indexes
- VII. Database Resource Management**
  - A. Understanding resource plans
  - B. Defining consumer groups
  - C. Creating plan directives
  - D. Advanced resource management techniques
- VIII. The Oracle Scheduler**
  - A. Creating bitmap indexes
  - B. Creating function-based indexes
  - C. Creating reverse key indexes
  - D. Invisible indexes
- IX. Database Startup and Shutdown**
  - A. What happens at startup
  - B. The different startup modes
  - C. What happens at shutdown
  - D. The different shutdown options
- X. Database Backup and Recovery Concepts**
  - A. Backup and recovery fundamentals
  - B. Types of backups
  - C. Recovery and restore
- XI. User Managed Backup and Recovery**
  - A. Performing cold complete database backups
  - B. Performing hot complete database backups
  - C. Performing full database recovery
- XII. Segment and Block Storage Management**
  - A. The structure of database blocks
  - B. Types of segments
  - C. The segment high water mark
  - D. Monitoring segment sizing
- XIII. Block Corruption Recovery**
  - A. When bad things happen to good data blocks
  - B. Discovering and measuring block corruption
  - C. Block repair techniques
  - D. Row chaining

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### Course Outline (cont.)

- XIV. *Recovering from Non-Critical Losses***
  - A. Sources of recovery for auxiliary files
  - B. Recovering a lost member of a multiplexed file
  - C. Recovering from the loss of all control files
  - D. What the ALERT LOG contains
  - C. Full database recovery using FLASHBACK
- XV. *RMAN Overview***
  - A. Working with the RMAN interface
  - B. Logging into RMAN
  - C. The recovery catalog
- XVI. *Configuring RMAN***
  - A. What RMAN 'remembers'
  - B. Setting persistent RMAN parameters
  - C. Configuring and allocating a Fast Recovery Area
  - D. What the ALERT LOG contains
- XVII. *RMAN Backup Management***
  - A. Making disk image backups
  - B. Making recovery set backups
  - C. Full vs. incremental backups
- XVIII. *RMAN Recovery Techniques***
  - A. Performing a full database recovery
  - B. Performing point in time recovery (PITR)
  - C. The implications of resetting logs
  - D. When to not use RMAN
- XIX. *Flashback Techniques***
  - A. Flashback query
  - B. Flashback table
  - C. Flashback drop
  - D. Flashback transaction
  - E. Flashback versions
  - F. Total Recall
- XX. *Flashback Database***
  - A. Necessary pre-requisites
  - B. Estimating storage requirements for the fast recovery area