



CENTRAL PIEDMONT COMMUNITY COLLEGE

CORPORATE & CONTINUING EDUCATION

Course Number: DPT7978

Last Revised On: 7/3/08

Course Title: Oracle 10g: Administration Workshop II

Course Hours: 40 hours

Description:

In this class, students will learn how to configure an Oracle database for multilingual applications. Various methods of recovering the database will be practiced such as using RMAN, SQL, and Flashback technology. Tools to monitor database performance and steps to improve performance are also covered in this course. Students will also learn how to use various database technologies, such as Resource Manager, the Scheduler, and Automatic Storage Management (ASM). This course is designed to prepare you for the corresponding Oracle Certified Professional exam. **PREREQUISITES:** Oracle 10g: Intro to SQL and Oracle 10g Workshop I. Book provided in class.

Objectives:

- Use RMAN to create and manage backup sets and image copies
- Recover the database to a previous point in time
- Use Oracle Secure Backup to backup and recover a database
- Use Oracle's Flashback technology to recover your database
- Detect block corruptions and take appropriate measures to correct them
- Use the various Database advisors and views to monitor and improve database performance
- Control database resource usage with the Resource Manager
- Simplify management tasks by using the Scheduler
- Review database log files for diagnostic purposes
- Customize language-dependent behavior for the database and individual sessions
- Administer a VLDB
- Implement a secure database
- Transport data across platforms

Content:

1. Configuring Recovery Manager

Recovery Manager Features and Components

Using a Flash Recovery Area with RMAN

Configuring RMAN

Control File Autobackups

Retention Policies and Channel Allocation

Using Recovery Manager to connect to a target database in default NOCATALOG mode

Displaying the current RMAN configuration settings

Altering the backup retention policy for a database



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2. **Using Recovery Manager**

- RMAN Command Overview
- Parallelization of Backup Sets
- Compressed Backups
- Image Copy
- Whole Database and Incremental Backups
- LIST and REPORT commands
- Enable ARCHIVELOG mode for the database
- Use Recovery Manager

3. **Oracle Secure Backup**

- Installation and Configuration
- Implement the Oracle suggested strategy
- RMAN and Oracle Secure Backup
- Database and File-system files backup/restore to tape
- Using obtool and web interface to configure Oracle Secure Backup devices (CLI/GUI)
- Configuring EM for Oracle Secure Backup and test backup to tape (EM)
- Using RMAN to backup your database to tape (CLI)
- Using the OB Web tool to backup file system files

4. **Recovering from Non-critical Losses**

- Recovery of Non-Critical Files
- Creating New Temporary Tablespace
- Recreating Redo Log Files, Index Tablespaces, and Indexes
- Read-Only Tablespace Recovery
- Authentication Methods for Database Administrators
- Loss of Password Authentication File
- Creating a new temporary tablespace
- Altering the default temporary tablespace for a database

5. **Incomplete Recovery**

- Recovery Steps
- Server and User Managed Recovery commands
- Recovering a Control File Autobackup
- Creating a New Control File
- Incomplete Recovery Overview
- Incomplete Recovery Best Practices
- Simplified Recovery Through RESETLOGS
- Point-in-time recovery using RMAN



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6. **Flashback**

- Flashback Database Architecture
- Configuring and Monitoring Flashback Database
- Backing Up the Flash Recovery Area
- Using V\$FLASH_RECOVERY_AREA_USAGE
- Flashback Database Considerations
- Using the Flashback Database RMAN interface
- Using Flashback Database EM Interface
- Managing and monitoring Flashback Database operations

7. **Dealing with Database Corruption**

- Block Corruption Symptoms: ORA-1578
- DBVERIFY Utility and the ANALYZE command
- Initialization parameter DB_BLOCK_CHECKING
- Segment Metadata Dump and Verification
- Using Flashback for Logical Corruption and using DBMS_REPAIR
- Block Media Recovery
- RMAN BMR Interface
- Dumping and Verifying Segment Metadata

8. **Monitoring and Managing Memory**

- Oracle Memory Structures
- Automatic Shared Memory Management
- SGA Tuning Principles
- Database Control and Automatic Shared Memory Management
- Behavior of Auto-Tuned and Manual SGA Parameters
- Resizing SGA_TARGET
- PGA Management Resources
- Using the Memory Advisor

9. **Automatic Performance Management**

- Identifying Tunable Components
- Oracle Wait Events and System Statistics
- Troubleshooting and Tuning Views
- Direct Attach to SGA for Statistic Collection
- Workload Repository
- Advisory Framework
- ADDM Scenarios and Usage Tips
- Using the SQL Tuning and SQL Access Advisor



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10. **Monitoring and Managing Storage I**

- Database Storage Structures
- Space Management Overview
- Oracle-Managed Files (OMF)
- Row Chaining and Migrating
- Proactive Tablespace Monitoring
- Managing Resumable Space Allocation
- SYSAUX Tablespace
- Monitoring table and index space usage

11. **Monitoring and Managing Storage II**

- Automatic Undo Management
- Redo Log Files
- Table Types
- Partitioned Tables
- Index-Organized Tables (IOT)
- Managing index space with SQL
- Configure optimal redo log file size
- View “Automatic Tuning of Undo Retention”

12. **Automatic Storage Management**

- ASM General Architecture and Functionalities
- Dynamic Performance View Additions
- Managing an ASM Instance
- ASM Disk Groups
- Using asmcmd Command Line
- Migrating Your Database to ASM Storage
- Creating an ASM instance in a separate Oracle Home
- Migrating a tablespace to use ASM storage

13. **VLDB Support**

- Creating Bigfile Tablespaces
- Packages and data dictionary changes to support VLDB
- Creating and maintaining temporary tablespace groups (TTG)
- Partitioning and Partitioned Indexes
- Skipping unusable indexes
- Creating and using hash-partitioned global indexes
- DML Error Logging
- Interpreting Bigfile ROWIDs



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14. **Managing Resources**

- Database Resource Manager Concepts and Configuration
- Creating a New Resource Plan
- Active Session Pool Mechanism
- Maximum Estimated Execution Time
- Creating a Complex Plan
- Administering and Monitoring Resource Manager
- Resource Plan Directives
- Creating Resource Consumer Groups

15. **Automating Tasks with the Scheduler**

- Scheduler Concepts
- Creating a Job Class and a Window
- Managing Jobs, Programs, Chains, Events, Schedules, priority
- Viewing and Purging Job Logs
- Creating a program and a schedule
- Creating a job that uses a program and a schedule
- Altering the program and schedule for the job and observing the behavior change of the job
- Monitoring job runs

16. **Database Security**

- Virtual Private Database: Overview
- Creating a Column-Level Policy
- Writing a Policy Function
- Policy Types
- Column level VPD with column masking
- Transparent Data Encryption
- Setting the listener password
- Implement VPD

17. **Data Movement**

- External Tables Concepts
- Creating a Directory object and External Table
- Data Pump
- Transport Database
- RMAN CONVERT DATABASE Command
- Transport Tablespace
- Create a Directory Object
- Create a Temporary Table



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18. Using Globalization Support

- Globalization Support Features
- Encoding Schemes
- Database Character Sets and National Character Sets
- Specifying Language-Dependent Behavior
- Locale Variants
- Using Linguistic Comparison and Sorting
- Data Conversion Between Client and Server Character Sets
- Determining the Default NLS Settings

19. Workshop

- Workshop Methodology, requirements, and setup
- Scenario 1: Database performance
- Scenario 2: Finding and Tuning Inefficient SQL
- Scenario 3: SGA Management - REDO
- Scenario 4: Running out of Undo Space
- Scenario 5: Missing datafile
- Scenario 6: Managing space in a tablespace - REDO
- Scenario 7: Missing TEMP data file

Prerequisites:

- Oracle 10g: Intro to SQL and Oracle 10g Workshop I.

Method of Instruction:

- Lecture, demonstration and hands on use.

Evaluation:

- Exam: No
- Class participation: Yes
- Demonstration of skills: Yes