

# Oracle Database 12c R2: New Features for Administrators Part 1 Ed 1

Learn via: **Classroom/AFA**

Duration: **5 Day**

## **Overview**

**The Oracle Database 12c R2: New Features for 12c R1 Administrators course is designed for existing 12c Release 1 DBAs. In addition to covering the New Features of R2, this course also introduces students to the Oracle Database Cloud Service.**

Learn To:

- Create and manage application containers and applications in multitenant container databases.
- Manage resources in a multitenant container database and pluggable databases with Resource Manager performance profiles and new memory directives.
- Perform pluggable database flashback.
- Upgrade the multitenant container databases and pluggable databases.
- Manage security by using enhancements in unified auditing, system privileges, Privilege Analysis, Data Redaction, Transparent Sensitive Data Protection and Transparent Data Encryption.
- Manage data availability by using Recovery Manager, Oracle Data Pump features and SQL\*Loader enhancements, and by performing enhanced online operations.
- Increase the SQL performance by using the In-Memory Column-Store enhancements at deployment and SQL performance.
- Tune the SQL performance by using the Optimizer Statistics Advisor and SQL join processing.
- Monitor your databases by using DB operations enhancements.
- Benefit from enhancements in partitioning methods.
- Benefit from ADR automatic space file management.
- Use the Trace File Analyzer collector to diagnose issues.
- Use the new SQL\*Plus history commands and SQL enhancements such as long identifiers.
- Use the new SQLcl utility to benefit from commands and features missing from SQL\*Plus itself.
- Describe the Oracle Public Cloud services related to databases management.

Benefits To You

In the lessons, you learn the new and enhanced features of Oracle Database 12c Release 2 (12.2.0.1) amongst different areas such as Multitenant, security, availability, performance, diagnosability, manageability, partitioning and SQL.

You also learn how to easily deploy databases with Oracle Database Cloud Services, check automated backups and monitor your Cloud deployment with new Cloud tools.

## **Prerequisites**

Required Prerequisites:

- Knowledge of Oracle Database 12c and particularly 12.1.0.2
- Oracle Database 12c R1: New Features for Administrators Ed 2

Suggested Prerequisites:

- Oracle Database 12c: Install and Upgrade Workshop
- Using Oracle Enterprise Manager Cloud Control 12c Ed 2

## **What You Will Learn**

- Perform recovery and flashback operation on pluggable databases
- Monitor multitenant container database and pluggable databases by using ADDM / AWR enhancements at PDB level
- Manage resources in a multitenant container database and pluggable databases with Resource Manager performance profiles
- Tune the SQL performance by using the Optimizer Statistics Advisor and SQL join processing
- Benefit from enhancements in partitioning methods
- Use the ADR automatic file space management
- Use the SQLcl new utility as the new SQL command line interface
- Create pluggable databases with new methods and local UNDO mode
- Create and manage application containers and applications in multitenant container databases

- Manage security in application containers
- Manage data optimization in pluggable databases with heat map statistics and ADO policy eviction
- Upgrade pluggable databases and multitenant container databases
- Manage security by using enhancements in unified auditing, system privileges, Privilege Analysis, Data Redaction, Transparent Sensitive Data Protection & Data Encryption
- Manage data availability by using Recovery Manager, Oracle Data Pump features and SQL\*Loader enhancements and by performing online operations
- Monitor your databases by using DB operations
- Increase the SQL performance by using In-Memory Column-Store enhancements for deployment and SQL performance

## **Training Outline**

### Introduction

- Global objectives of the course
- Lessons grouped by area
- Schedule of the week

### Application Containers and Applications

- Application root and application PDBs
- Create and manage an application container
- Install application in an application container
- Patch application
- Upgrade application
- Impacts in Data Guard, Oracle GoldenGate, Oracle Streams, XStream, ADO and Heat Map

### Security in PDBs

- Create users commonly, locally in application containers
- Grant privileges commonly, locally in application containers
- Difference between common and local roles in application containers
- Grant roles commonly, locally in application containers
- Difference between common and local objects in application containers
- Difference between common and local profiles in application containers
- Manage PDB lockdown profiles
- Create unified auditing policies operations in application containers

### PDBs Creation Using New Methods

- Create a PDB from CDB seed enhancements
- Unplug into a PDB archive file and plug using the archive file
- Create a local UNDO tablespace at PDB level
- Hot cloning
- Near-zero downtime PDB relocation
- Create a remote proxy PDB

### PDBs Recovery and Flashback

- Shut down a PDB when an essential PDB datafile is missing
- Flashback at PDB level
- Flashback a PDB to a clean PDB restore point

### Performance in PDBs

- View CDB / PDB ADDM analysis
- Manage SGA and PGA at the PDB level
- Share resources between PDBs

### Upgrade and Other Operations in PDBs

- Upgrade a 12.1.0.2 CDB to 12.2
- Upgrade a 12.1.0.2 PDB to 12.2 by using unplug / plug / upgrade
- Use cross-platform non-CDB or PDB backupsets to import into a CDB

### Privileges and User Profiles

- New 12.2 SYSRAC administrative privilege
- Password file enhancements
- Grant administrative privileges to external users
- Migrate the password file from pre-12 or 12.1 to 12.2
- New system privilege INHERIT ANY REMOTE PRIVILEGES and object privilege INHERIT REMOTE PRIVILEGES

- Enhance the security of administrative users
- Pre-configure a maximum number of days in the user profile for which a user can remain inactive

#### Unified Auditing

- Create and enable audit policies for all users to whom the role is granted directly
- Capture VPD (Virtual Private Database) generated predicates

#### Data Redaction

- New redaction format library in EM GUI
- Redaction policy expression
- New redaction functions

#### Data Encryption

- Encrypt / decrypt / rekey tablespaces online
- Specific tablespaces: SYSAUX, SYSTEM, UNDO and temporary
- Complete the operations with ALTER TABLESPACE ENCRYPTION FINISH ENCRYPT|REKEY|DECRYPT

#### Transparent Sensitive Data Protection

- Use TSDP with Unified Auditing
- Use TSDP with Fine-Grained Auditing (FGA)
- Use TSDP with Transparent Data Encryption (TDE)

#### Availability Enhancements

- Non auto-login support for duplicate: Use encrypted backups whose decryption keys are in a non auto-login wallet
- Update and drop the catalog without entering the UPGRADE CATALOG and DROP CATALOG commands twice: UPGRADE / DROP CATALOG NOPROMPT
- Automate the two step manual process into one recovery operation after missing logs found during RECOVER DATABASE: Recover Database Until Available Redo
- REPAIR FAILURE command
- Transport Data Across Platforms
- Steps to recover a table
- Describe online redefinition supports

#### Oracle Data Pump, SQL\*Loader and External Tables

- Oracle Data Pump enhancements
- SQL\*Loader enhancements
- External table enhancements

#### In-Memory Column Store

- Dynamic parameter in 12.2 : INMEMORY\_SIZE
- Caches results of frequently evaluated expressions and virtual columns for subsequent reuse
- Optimizing joined columns by creating join groups
- Interaction with other products, features

#### SQL Tuning

- SQL Performance Analyzer enhancements
- SQL Plan Management enhancements
- Statistics Gathering Performance Improvements: Optimizer Statistics Advisor
- SQL Performance Analyzer (SPA) enhancements to make it resilient to certain workloads which can cause divergence
- New ways of SQL processing
- Continuous Adaptive Query Plans

#### Resource Manager and Other Performance Enhancements

- Manage session PGA limit
- Reduce Cursor Invalidations for DDLs
- Describe the Advanced Index Compression (HIGH)
- Define real-time materialized views with on query computation
- Use ON STATEMENT refresh when a DML operation takes place on materialized views without the need to commit the transaction
- Describe HCC data compression with ADO row-level policy

#### Partitioning

- Explain auto-list partitioning
- Composite partitioning
- Explain multicolumn list partitioning
- Read-only partition
- Defer subpartition segment creation

- Filter data during partition maintenance operations

#### Manageability

- Start / stop a DBOP by specifying the Session ID and Serial

#### Diagnosability

- Set a retention target to ADR for an automatic delete of ADR files
- Use the retention advisor
- Install TFA Collector by default for RDBMS (with RDBMS root scripts)
- Start TFA Collector
- Allow Data Pump tracing to be changed without stopping and then restarting the job
- MV refresh statistics

#### Oracle Database Cloud Services

- Describe the Oracle Database Cloud Services console
- Create a database deployment under 12.2
- Database deployment backup and recovery automatic procedures
- Differences between database deployments and on-premises databases
- Migrate on-premises database to Oracle Database Public Cloud Services

#### SQL Enhancements

- Describe the new SQLcl utility
- Use new 128 bytes length for database objects
- Recall SQL\*Plus commands in the same session from memory
- Use the new VALIDATE\_CONVERSION function