

## Oracle Database 12c R2: New Features for 12c R1 Administrators Ed 1

**Duration:** 5 Days

### What you will learn

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.

## **Audience**

Database Administrators  
Support Engineer  
System Administrator  
Technical Consultant

## **Related Training**

### *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

## **Course Objectives**

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

## Course Topics

### 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: UPGR  
Automate the two step manual process into one recovery operation after missing logs found during RECOVER DATABASE  
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