

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

**Duration:** 5 Days

### What you will learn

Throughout the lessons of the Oracle Database 12c R2: New Features for Administrators Part 1 course constituted by three modules; the Using SQL New Features and Tools, the Understanding DB Architectures, and the Diagnosing Database Problems, students receive a good knowledge of the Oracle Database 12c Release 2 new and enhanced features in different areas of database administration, mainly in on-premises Multitenant databases.

Learn To:

Use the new SQLcl utility and gain information on SQL\*Plus and SQL enhancements.

Understand the new and enhanced features of Oracle Database 12c Release 2 (12.2.0.1) amongst different areas such as the new Multitenant architecture and the Sharded database architecture.

Diagnose database issues, handling Automatic Diagnostic Repository (ADR) file management and using the Trace File Analyzer (TFA) tool.

### Benefits To You

You will benefit from learning the following lessons:

Using the SQL New Features and Tools module covers the usage of the new SQLcl utility and the new features in SQL\*Plus and SQL.

Most of the Understanding DB Architectures module lessons cover the new Multitenant architecture. The concept of regular and application containers of a Multitenant container database includes new administrative tasks such as creating, managing, securing, backing up, recovering and upgrading regular and application containers, as well as migrating an 11g database to a 12c multitenant container database. The lessons also cover enhanced features of Resource Manager to help you manage the resources within a Multitenant container database. You will discover other enhancements supported in a Multitenant container database like heat map and Automatic Data Optimization (ADO) support, Database Vault and encryption. The second part of the module gives an overview of database sharding. It describes the challenges and benefits of a sharded database, the sharded database architecture and how to configure a sharded database.

The lesson of the Diagnosing Database Problems module covers enhancements in ADR space management and explain what can be completed with the Trace File Analyzer (TFA) tool in terms of database diagnosis.

### Audience

Database Administrators  
End Users  
System Administrator

## Related Training

### *Required Prerequisites*

Knowledge of Oracle Database 11g R2

### *Suggested Prerequisites*

Oracle Database 12c R2: Install and Upgrade Workshop NEW

Oracle Database 12c: Install and Upgrade Workshop

Using Oracle Enterprise Manager Cloud Control 13c Ed 1

Using Oracle Enterprise Manager Cloud Control 13c Ed 2

## Course Objectives

Create and manage pluggable databases

Describe the challenges and benefits of a sharded database

Handle the ADR automatic file space

Diagnose database issues by using the Trace File Analyzer collector

Use the new SQL\*Plus history commands and SQL enhancements such as long identifiers

Use the SQLcl new utility as the new SQL command line interface

Create and manage a multitenant container database

## Course Topics

### **Introduction**

Global objectives of the course

Lessons grouped by modules

Using SQL new features and tools

Understanding DB architectures

Diagnosing database problems

Schedule of the week

### **Using SQL New Features and SQLcl**

Use new 128 bytes identifier length for database objects

Increase length limits of data types

Use SQL row-limiting clause

Describe the support for invisible and hidden columns  
Use the new VALIDATE\_CONVERSION function  
Recall SQL\*Plus commands in the same session from history  
Describe the new SQLcl utility

## **Understanding CDB Basics**

Challenges  
New Multitenant Architecture: Benefits  
Non-CDB Architecture vs Oracle Multitenant Container Database  
Configurations  
A pristine installation  
SYSTEM objects in the USER container  
Provisioning a pluggable database  
CDB root and pluggable database containers

## **Creating CDB and Regular PDBs**

Create a CDB using new clauses  
What's new in CDB after CDB creation  
Data dictionary views  
What to do in CDB after CDB creation  
ADR  
Provisioning new PDBs: overview  
Tools

## **Creating Application PDBs and Installing Applications**

Regular PDBs vs application PDBs  
PDBs and applications  
Application containers  
Types of containers  
Create and manage an application container  
Install applications  
Patch and upgrade applications  
Application common objects

## **Creating PDBs**

Configure and use local UNDO mode  
Cloning regular and application containers PDBs  
Plugging unplugged regular and application PDBs into CDB  
Cross-Platform transportable PDB  
Plugging or cloning a non-CDB into a CDB  
Perform hot cloning and relocation  
Converting regular PDBs to application root or PDBs  
Plugging unplugged PDBs with encrypted data

## **Managing CDB and PDBs**

Managing CDB and PDBs  
Switching Connection  
Creating and renaming Services  
Starting Up a CDB Instance  
Mounting a CDB  
Opening CDBs and PDBs  
Changing the different modes and settings of PDBs

Evaluating the impact of parameter value changes

## **Managing Storage**

Creating Permanent Tablespaces in a CDB  
Objects in Tablespaces  
Tablespaces Created During PDB Creation  
Defining Default Permanent Tablespaces  
Temporary Tablespaces  
UNDO Tablespaces

## **Managing Security**

Creating common users, roles and profiles in CDB and PDBs  
Granting privileges commonly in CDB and PDBs  
Common objects in Application PDBs and operations on Data-Linked objects  
Enabling Common Users to Access Data in PDBs  
Managing PDB lockdown profiles  
Auditing users in CDB and PDBs  
Protecting data with Database Vault policies in CDB and PDBs  
Encrypting data in PDBs

## **Backing up, Recovering and Flashing Back**

New syntax and clauses in RMAN  
CDB and PDB backups  
Using RMAN backup to plug an unplugged PDB  
Instance failure and instance recovery  
PDB tempfile, essential and non-SYSTEM tablespaces recovery  
PDB point-in-time recovery  
Duplicating PDBs  
CDB and PDB flashback

## **Managing Performance**

Tuning a CDB  
Sizing the CDB  
Managing SGA and PGA for PDBs  
Monitoring PDB memory usage  
AWR and ADDM behaviour at CDB and PDB levels  
PDB-Level snapshot views  
AWR report  
Controlling the Degree of Parallelism of Queries

## **Managing Resources Allocation**

Allocating resources in the CDB and PDBs  
Managing resources between PDBs  
CDB Resource plan basics: Limits + cpu\_count init parm per PDB  
Controlling PDB IO rate limit  
Managing resources within a PDB  
Creating and setting PDB performance profiles

## **Moving and Migrating Data**

Using Oracle Data Pump with PDBs  
Exporting non-CDB data and importing non-CDB data into PDB  
Exporting and importing between PDBs

- Exporting from PDB and importing into a non-CDB
- Full Transportable export/import
- Transporting a database over the network
- Using SQL\*Loader with PDBs

### **Performing Miscellaneous Operations**

- Using catcon.pl utility to install/remove options from CDB/PDB
- Using Xstreams with a CDB and PDB
- Creating a standby of a CDB
- Scheduling operations in a PDB
- Jobs coordinator and resources
- Mining statements of a PDB using LogMiner

### **Understanding Database Sharding**

- What Is Database Sharding?
- Benefits of Sharding
- Advantages of Oracle Sharding over NoSQL
- Application Considerations for Sharding
- Components of Database Sharding
- Complete Deployment of a System-Managed SDB
- Creating Sharded Tables
- Sharded Table Family

### **Diagnosing Database Problems**

- Automatic Diagnostic Repository
- New ADRCI Command
- ADR Retention
- Network Performance
- Trace File Analyzer (TFA) Collector process and repository
- TFA Collector utility
- Tracing Data Pump
- MVs refreshed statistics history