Oracle Database 18c: Managing Multitenant Architecture Ed 1

During this four days course you gain a conceptual understanding of the multitenant architecture and learn how to manage an Oracle multitenant container database(CDB) and its different types of pluggable databases (PDB) in an effective and efficient manner.

Learn To

This course covers all aspects of the multitenant architecture, providing detailed information on the components of a CDB and its regular and application PDBs. You learn why and how to create and manage a CDB and its regular and application PDBs, with storage structures appropriate for the business applications. You practice cold and hot cloning, plugging unplugged PDBs in CDBs using various methods.

In addition, you learn how to ensure the security within the containers of the CDB. You create common and local users, grant common and local privileges and roles, and administer database security to meet your business requirements by using encryption, Database Vault and auditing.

This course includes CDB and PDBs backup, duplicate, recovery and flashback procedures.

You learn how to monitor the performance and manage resources within a CDB and its PDBs, and within each PDB.

It introduces the data movement capabilities between non-CDBs and PDBs, and between PDBs.

Finally, it is also covers the procedures of upgrading an Oracle Database 12.2 CDB to an Oracle Database 18c CDB or an Oracle Database 12.2 PDB to an Oracle Database 18c PDB.

Prerequisites

Suggested Prerequisite

- Basic knowledge of Linux operating system
- Working knowledge of SQL and use of PL/SQL packages

Required Prerequisite

- Oracle Database 18c: Administration Workshop
- Oracle Database 18c: Administration Workshop

Audience

- Database Administrators
- Database Designers
- Support Engineer
- Technical Administrator
- Data Warehouse Administrator

Course Objectives

- Manage PDB snapshots
- Encrypt data in PDBs and isolate PDB keystore
- Monitor performance in CDBs and PDBs
- Audit users in CDB and PDBs
- Protect data with Database Vault policies in CDB and PDBs
- Manage a CDB fleet
- Manage resource allocation between PDBs and within a PDB
- Use Data Pump operations from a non-CDB or CDB into a PDB
- Upgrade 12c CDBs or PDBs to 18c
- Configure and create a CDB
- Create, clone, unplug, plug, relocate, proxy, switch over and drop PDBs
- Startup and shutdown CDBs and PDBs
- Manage tablespaces in CDB and PDBs
- Manage common and local users, roles, privileges, profiles, objects in CDBs and PDBs
- Manage PDB lockdown profiles
- Backup, duplicate, recover and flashback CDB and PDBs

Course Topics

CDB Basics

- Differentiate the CDB root from a pluggable database
- Describe the multitenant architecture
- List impacts in various areas
- Describe the CDB root and pluggable database containers
- Understand the terminology of commonality

CDB and Regular PDBs

- Create a new PDB from the CDB seed
- Explore the structure of PDBs
- Explore the instance
- Provision new PDBs
- Explore the Automatic Diagnostic Repository (ADR)
- Configure and create a CDB

Application PDBs and Application Installation

- Define application PDBs
- Use a dynamic container map
- Describe application containers in CDBs
- Create application PDBs
- Describe the commonality concept in application contexts
- Explain the purpose of application root and application seed
- Install, upgrade and patch an application
- Explain application installation on top of application containers

PDB Creation

- Convert regular PDBs to application PDBs
- Clone a regular PDB
- Unplug and plug a non-CDB

- Unplug and plug a regular PDB
- Perform hot cloning and relocation
- Configure and use the local UNDO mode
- Unplug and plug an application container
- Clone an application PDB

CDB and PDB Management

- Start up and shut down a CDB
- Configure host name and port number per PDB
- Change the different modes and settings of PDBs
- Start PDB service
- Open and close PDBs
- Avoid service name conflicts
- Establish connections to CDB and PDB
- Evaluate the impact of parameter value changes

Storage

- Manage temporary tablespaces in CDB and PDBs
- Manage permanent tablespaces in CDB and PDBs
- Manage the UNDO tablespaces in CDB root and PDB

Security

- Enable common users to access data in PDBs
- Encrypt data in PDBs
- Manage PDB lockdown profiles
- Manage common and local objects in application containers
- Manage common and local users, roles, privileges and profiles in PDBs
- Protect data with Database Vault policies in CDB and PDBs
- Audit users in CDB and PDBs
- Manage other types of policies in application containers

Backup and Duplicate

- Validate CDBs and PDBs
- Duplicate PDBs
- Backup CDB and PDBs
- Duplicate a CDB as encrypted
- Use RMAN backups to plug unplugged PDBs
- Duplicate an active PDB into an existing CDB

Recovery and Flashback

- Reuse preplugin backups after conversion of a non-CDB to a PDB
- Perform CDB flashback
- Perform PDB flashback
- Recover a PDB from essential file damage
- Use clean restore points to complete PDB flashback
- Recover a PDB from non-essential file damage
- Reuse preplugin backups after plugging/relocating a PDB into another CDB

- Manage PDB snapshots

Performance Monitoring

- Control PDB IO rate limits
- Run ADDM tasks for CDB and PDB recommendations
- Manage AWR snapshots at the CDB and PDB levels
- Monitor performance in a CDB and PDBs
- Manage application shared object statistics
- Monitor operations in a CDB and PDBs
- Control query DOP involving the containers() construct
- Manage SGA and PGA limits at the PDB level

Resources Allocation

- Avoid excessive session PGA
- Enable parallel statement queuing at PDB level
- Manage PDB performance profiles
- Manage resource allocation between PDBs and within a PDB

Data Movement

- Export from a PDB and import into a PDB
- Export from a non-CDB and import into a PDB
- Export from a PDB and import into a non-CDB
- Use SQL*Loader to load data into a PDB

Upgrade methods

- Plug in a remote PDB through XTTS into a target CDB
- Upgrade 12.2 CDB to 18c
- Upgrade 12.2 PDBs to PDBs in 18c

Miscellaneous

- Mine PDB statements using LogMiner
- Describe XStreams usage with PDB and CDB
- Describe Data Guard with CDB and PDB
- Schedule operations in a PDB using Oracle Scheduler
- Describe the limits of data replication