

Oracle Multitenant Administration

Duration: 4 Days **Course Code: OMA** **Delivery Method: Company Event**

Overview:

Oracle Multitenant Administration Course Overview

Prior to 19c, Oracle only allowed a single user-defined pluggable database (without having to license the full multitenant option). Oracle have announced that from 19c onward there can be 3 user-defined PDBs, without having the multitenant option. The non-CDB architecture has been deprecated from 12.1.0.2. From Oracle 21c the non-CDB architecture will be de-supported. An upgrade to 20c will also include a migration to the multitenant architecture. Now is the time for DBAs to move to Oracle 19c multitenant. When the move to the next long term Oracle 23c support release is made, the basic multitenant features will be understood by the DBAs and can be taken advantage of immediately.

This Oracle Multitenant Administration course is designed to give experienced Oracle Database Administrators practical experience in using the container and pluggable database features that have been introduced from Oracle Database 12c. Delegates will learn how to create, manage, administer, tune, backup, restore and recover container and pluggable databases. Delegates will also learn how to implement security and auditing features in a multitenant environment. They will gain an appreciation of how the Multitenant Architecture features may be implemented at their own sites.

Similarly, the course is targeted to closely follow the official Oracle Database curriculum for certification.

Exercises and examples are used throughout the course to give practical hands-on experience with the techniques covered.

Notes: The focus of this course is on the usage of container and pluggable databases. The Oracle Database 12cR2, 18c and 19c New Features for Administrators course covers the general new features that have been introduced in Oracle Database 12cR2, 18c and 19c.

Versions supported 19c, 18c, 12c.

Company Events

These events can be delivered exclusively for your company at our locations or yours, specifically for your delegates and your needs. The Company Events can be tailored or standard course deliveries.

Target Audience:

Who will the Course Benefit

This Oracle Multitenant Administration course is designed for Oracle professionals who need to gain an in-depth understanding of Oracle's Multitenant Architecture features and functionality and then implement these at their own site.

Objectives:

Course Objectives

- The course aims to provide the delegate with practical experience of implementing and managing Container and Pluggable Databases.

Prerequisites:

■ Delegates who wish to attend this Oracle Multitenant Administration course should have administration experience of Oracle Database. This knowledge can be gained by attendance on the pre-requisite Oracle Database 19c Administration course. Knowledge of using PL/SQL packages is strongly recommended.

This course is run on a Linux operating system, therefore a good working knowledge of UNIX/Linux is required. This knowledge can be gained by attendance on the pre-requisite Linux Introduction course.

Where Oracle 19c courses are listed in the Pre-requisite Courses section equivalent Oracle 18c or Oracle 12c courses would also suffice.

Follow-on-Courses:

Further Learning

- Oracle Database 12cR2, 18c and 19c New Features for Administrators
 - Oracle Database 19c DBA Performance Tuning & Management
 - Oracle Database 19c Backup and Recovery with RMAN
 - Oracle Database 19c Install & Upgrade
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Content:

Oracle Multitenant Administration Training Course Course Contents - DAY 1

Course Introduction

- Administration and Course Materials
- Course Structure and Agenda
- Delegate and Trainer Introductions

Session 1: ORACLE DATABASE MULTITENANT ARCHITECTURE

- Overview of the Oracle Database architecture
- Change of MTA licencing at 19c
- An overview of a container Database (CDB)
- The benefits of Multitenant Architecture
- The Root container and pluggable database containers
- The structure of the root Container
- The structure of a pluggable Database (PDB)
- CDB_xxx and DBA_xxx Views
- Multitenant Administrators Guide
- System requirements and operating system prerequisites
- Install the Oracle Database 19c software with the OUI
- The Oracle Inventory
- Workshop Exercises

Session 2: CREATE A CDB AND PDBs WITH THE DBCA

- Create a Container and Pluggable databases with the DBCA
- Create a database using DBCA Silent Mode
- Create a database using a response file with DBCA Silent Mode
- Create a demonstration database using the Pre-Install RPM
- Create a database using a response File with DBCA Silent Mode
- Create a duplicate database with DBCA Silent Mode
- Delete a Database with the DBCA Silent Mode
- Post database creation tasks
- Workshop Exercises

Session 3: MANAGE A CDB AND PDBs

- Connect to a CDB as an administrator
- Connect to a CDB using a service name
- Connect to a pluggable database
- Display the current container
- Switch between containers
- Startup and shutdown a CDB
- Open and close a PDB
- Open and close all PDBs
- Automatic startup of pluggable databases
- Preserve or discard the PDB open mode

Session 5: MANAGE COMMON AND LOCAL USERS, ROLES AND PRIVILEGES

- Overview of common and local user management
- Create and manage common users
- Create and manage local users
- Create common roles
- Create local roles
- Grant roles and privileges to common and local users
- Use profiles with common and local users
- Use the PDB CONTAINERS clause with common and local users
- Use the CONTAINER_DATA attribute of a common user
- Audit users in a CDB and PDBs
- Block common users from accessing local data with Oracle Database Vault
- Workshop Exercises Oracle Multitenant Administration Training Course Course Contents - DAY 2

Session 6: CREATE AND CLONE PLUGGABLE DATABASES

- Create a new PDB from PDB\$SEED
- Create a New PDB from an existing PDB using Hot Cloning
- Parallel PDB creation
- Create a PDB with a default tablespace
- Create a metadata only PDB
- Clone a PDB subset
- Upgrade a non-container database to a 19c PDB using DBMS_PDB
- Use Data Pump to move PDB within or between CDBs
- Unplug a PDB using an XML metadata file
- Unplug a PDB using a PDB archive file
- Check that a PDB is compatible with a CDB
- Plug in a PDB
- Drop a PDB
- Clone a PDB into the same CDB
- Clone a PDB into the same CDB using database links
- Clone a remote PDB
- Clone a remote non-CDB
- Clone a remote PDB using DBCA Silent mode
- Use local UNDO mode with a PDB
- Automatically refresh a read only PDB
- Refreshable PDB Switchover
- Relocate a PDB to a new container
- Relocate a PDB from a remote CDB to a local CDB
- Remote proxy PDBs
- Workshop Exercises

Session 7: BACKUP AND RECOVER AT CDB AND PDB LEVEL

Session 11: PDB PERFORMANCE MANAGEMENT

- Monitor memory usage for PDBs
- PDB Memory Parameters
- Control memory usage for PDBs
- Manage PGA limit for PDBs with the SESSION_PGA_LIMIT parameter
- Limit session PGA with a resource plan
- Limit Share Resource between PDBs
- Share Based Instance Caging
- Limit I/O rates for PDBs
- Automated Maintenance Tasks
- Dynamic CPU Scaling for PDBs
- PDB Profile Directives
- Resource Manager PDB Performance Profiles
- Use PDB Resource Plans
- Automatic Workload Repository Data at CDB and PDB Level
- Enable PDB snapshots
- Analyse AWR data in a PDB
- Disable AWR for a PDB with a Lockdown profile
- Automatic ADDM analysis for PDBs
- Oracle Multitenant Administration Training Course Course Contents - DAY 4

Session 12: PREPARATION FOR UPGRADE TO 19c MULTITENANT

- Overview of the upgrade to 19c process
- Methods used to perform upgrade
- Methods of data migration
- Direct upgrade supported releases
- The Database Upgrade Assistant (dbua)
- Upgrade process overview
- Create an upgrade test plan
- Carry out performance testing
- Run the Pre-Upgrade Information tool
- Backup the database
- Install the Oracle Database software
- Create the new Oracle home

Session 13: UPGRADE TO ORACLE DATABASE 19c MULTITENANT

- Prepare to upgrade a database to 19c
- Execute preupgrade.jar
- Upgrade a database with the Database Upgrade Assistant (DBUA)
- Run the DBUA in Silent mode
- Upgrade a database manually
- Manually restart a failed upgrade
- Post upgrade tasks
- Deprecated database features and parameters
- Carry out post upgrade tasks
- Upgrade a PDB

Session 14: MIGRATE DATA TO AND FROM A PDB WITH DATA PUMP

- after a CDB restart
- Change the state of a PDB
- Workshop Exercises

Session 4: CDB AND PDB ADMINISTRATION

- Administer a CDB and PDBs using SQL Developer
- Multitenant data storage overview
- Create and manage tablespaces in the CDB and PDBs
- Online rename and relocation of an active datafile
- Configure instance parameters in a CDB and a PDB
- The PDB LOGGING and NOLOGGING clauses
- Manage Undo tablespaces in a PDB
- Upgrade a PDB from shared undo mode to local undo mode
- Query temporary undo information
- Set the default tablespaces in a PDB
- Query container data objects (CONTAINER_DATA)
- Enable Unified Auditing for a Container and Pluggable Databases
- Workshop Exercises

- The SYSBACKUP privilege
- Container and pluggable database backups
- The RMAN VALIDATE command
- Backup a container database
- Backup the Root container
- Backup a Pluggable database
- Tablespace and datafile backups
- The enhanced REPAIR FAILURE command
- Container and pluggable database recovery
- Container database complete recovery
- Root container complete recovery
- Pluggable database complete recovery
- Tablespace and datafile complete recovery
- Point in time recovery
- Container database point in time recovery
- Pluggable database point in time recovery
- Table point in time recovery
- Recover a CDB from the loss of redo logs or control files
- Clone an active PDB into another CDB using DUPLICATE
- Create usable backups of non-CDB databases and relocated PDBs
- Recover from a preplugin backup
- Workshop Exercises

Session 8: RECOVERY AND FLASHBACK AT PDB LEVEL

- Local and Shared UNDO mode
- Enable and disable flashback database
- Create a restore point at CDB and PDB level
- Create a clean restore point
- Flashback a container database
- Flashback a pluggable database
- Flashback a PDB in local and shared undo mode
- Flashback a PDB without influencing a CDB
- Restrictions on point in time recovery of a pluggable database
- Workshop Exercises Oracle Multitenant Administration Training Course Course Contents - DAY 3

Session 9: APPLICATIONS AND APPLICATION CONTAINERS

- The Structure of an Application Container
- Application Root and Application Container PDBs
- Create an Application Container
- Open an Application Container
- Drop an Application Container
- Manage Applications
- Install and uninstall an Application
- Upgrade an Application
- Drop an Application Container
- Manage an Application seed

- Migrate data to and from a PDB with Data Pump
- Transport a database
- Import data using a Data Pump network link

- Application common objects
- Application Container views
- Create common and local users in an application
- Grant common and local privileges in an application
- Create and grant common and local roles in application containers
- Use common and local objects and profiles in an application

Session 10: PDB SECURITY

- Lockdown Policy Overview
- Implement Lockdown Policies
- Create and assign a lockdown profile to a PDB
- Create and assign a lockdown profile to an Application root Container
- Lockdown profile inheritance
- Create and use static and dynamic lockdown profiles
- Isolate PDB Keystores

Further Information:

For More information, or to book your course, please call us on 0800/84.009

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