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Oracle Database 12c/18c/19c: New Features for Administrators

Duration: 5 Days

Course Topics

Multitenant Container Database (CDB)

- Benefits of the multitenant architecture
- Differences between the root container and pluggable database containers
- Structure of the root
- Structure of Pluggable Database (PDB)
- CDB_xxx and DBA_xxx views
- Impacts in Security, Data Guard, Oracle GoldenGate, Oracle Streams, XStream, and Scheduler

Configuring and Creating CDB and PDBs

- Tools: DBCA and SQL*Plus
- Configuration and creation of CDB
- Exploring the Structure (CDB_xxx views and EM)
- Tools used: SQL Developer, DBCA and SQL*Plus
- Create a new PDB from PDB\$SEED
- Create a PDB from a non-CDB
- Clone a PDB into the same CDB or into another CDB using DB links
- Plug in an unplugged PDB

Managing CDB and PDBs

- Connect to CDB as administrator
- Connect to a PDB using a service name
- Start up a CDB
- Open / Close a PDB (SQL*Plus, srvctl, EM)
- Open / Close all PDBs

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- Shut down a CDB
- Triggers ON PLUGGABLE DATABASE
- Change PDB state

Managing Tablespaces, Common and Local Users, Privileges and Roles

- Create permanent tablespaces in the root and PDBs
- Manage common and local schemas and users in the root and PDBs
- Manage system and object privileges to common and local grantees granted "commonly" or "locally"
- Manage common and local roles granted "commonly" or "locally"

Managing Backup / Recovery / Flashback and Migration

- Backup a whole CDB
- Backup a PDB
- Recover CDB from redo log files, control files, undo datafiles loss
- Recover PDB from PDB datafiles loss
- Transporting Data Across Platforms
- Prerequisites and Limitations
- Transporting Data: Processing steps
- RMAN CONVERT command to perform cross-platform transport
- Database/Tablespace/Data File Conversion Using RMAN CONVERT
- Benefits of Using Full Transportable Export/Import
- Full Transportable Export/Import Support for Pluggable Databases
- Internals of Full Transportable Export/Import
- Full Transportable Export/Import Concepts
- Endian Conversion
- Example: Using Full Transportable to Move a Non-CDB into a CDB
- Upgrade/Migrate From 11.2.0.4.0 To 12.1.0.2.0 On OEL Linux 64 Bit (Source and Target are in Same OS i.e. OEL Linux 64 Bit)

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- Out-of-place/In Place Upgrade
- After Upgrade How to diagnose Components with NON VALID status
- Oracle Flashback Query
- Oracle Flashback Version Query
- Oracle Flashback Transaction Backout
- Oracle Flashback Table
- Oracle Flashback Drop
- Oracle Flashback Database
- Flashback Data Archive
- Flashback at CDB level
- Valid Time Support

General RMAN New Features

- Making Database Connections With RMAN
- Using the SYSBACKUP Privilege
- Using SQL, DESCRIBE Command, Duplication Operation with the NOOPEN option
- Backing up and Restoring at CDB/PDB Level
- Creating Multisection Backups

Oracle Data Pump, SQL*Loader, External Tables and Online Operations Enhancements

- Use FULL Transportable export and import
- Oracle Data Pump enhancements
- SQL*Loader Express Mode usage

Online Datafile Move and Automatic Data Optimization

- Data classification in 12c : tablespace, group, object, row levels

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- Configure heat map
- Automatic movement and compression
- Compression levels and types

In-Database Archiving

- Challenges of old data in tables and 11g solutions
- In-database archiving new solutions
- Use ROW ARCHIVAL clause to enable row lifecycle state for applications
- Set ROW ARCHIVAL VISIBILITY for session level visibility control
- Use predicate on ORA_ARCHIVE_STATE column
- Temporal Validity versus Temporal History (Transaction Time of FDA)
- New clause of CREATE / ALTER TABLE to set a Temporal Validity: PERIOD FOR New SQL temporal data type

Auditing Enhancements

- Review of 11g R2 audit trail implementation
- Overview of the Unified Audit Trail
- Enabling the Unified Audit Trail
- Creating a separate tablespace for the unified audit trail
- Granting the AUDIT_ADMIN role to a user for audit trail configuration and management
- Configuring the Unified Audit Trail to set a tolerance level for loss of audit records
- Creating audit policies

Oracle Data Redaction

- Overview of Oracle Data Redaction
- Types of Masking Policies

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- Administering the EXEMPT REDACTION POLICY system privilege to enable a user to view unmasked values
- Managing Masking Policies
- Best practices for defining policy expressions
- Understanding Masking of Statements Containing Sub queries
- Viewing Information About Masking Policies by Querying REDACTION_POLICIES and REDACTION_COLUMNS

Monitoring DB Operations

- Overview
- Use cases
- Current Tools
- Define a DB operation
- Monitoring: Bracketing an Operation
- Monitoring the Progress of Operations
- DB Operation Tuning
- DB Operation Active Report

SQL Tuning

- Adaptive Execution Plans
- SQL Plan Directives
- Statistics Gathering Performance Improvements
- Histogram Enhancements
- Enhancements to Extended Statistics
- Adaptive SQL Plan Management

Real-Time ADDM and Compare Period Advisor

- Emergency Monitoring

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- Real time ADDM
- Use cases
- Goals
- Define Workload dimensions
- Reported items
- Root Causes
- Requirements for a report

Index and Table Enhancements

- Multiple indexes on the same set of columns as long as some characteristic is different
- Create table with INVISIBLE columns
- Support for invisible columns
- Advanced Row Compression
- Describe online redefinition supports
- Explain LOCK timeout during FINISH_REDEF_TABLE
- Using DDL statements in an online manner

ADR and Network Enhancements

- ADR file types
- New File types
- New File locations
- New commands for ADRCI
- Improve performance by Compression
- Setup Compression

Partitioning Enhancements

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- Move a partition online
- ALTER TABLE ... SPLIT PARTITION, ALTER TABLE ... MERGE PARTITION , ALTER TABLE...ADD PARTITION Clauses: Overview
- Split Partition Operation Enhancement
- ALTER TABLE SPLIT SUBPARTITION
- Merge Partition Operation
- Add Partition Operation
- Drop Partition Operation
- ALTER TABLE DROP SUBPARTITION



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