Oracle Database 12c: New Features for Administrators

Duration: 5 Days

What you will learn

This Oracle Database 12c: New Features for Administrators training teaches you about the new and enhanced features of Oracle Database 12c. Expert instructors will teach you how these features increase security, manageability and performance.

Explore the Following New Features:

Online Data-file Move
Heat Map
Automatic Data Optimization
Temporal history
Temporal validity
Row-archival
Unified Auditing
Administrative privileges
Privilege Analysis
Data Redaction
Adaptive Execution Plans
SQL Plan Directives
Real-Time ADDM
Compare Period ADDM
Data Pump
Partitioning
SQL

Benefits to You

Ensure fast, reliable, secure and easy to manage performance. Optimize database workloads, lower IT costs and deliver a higher quality of service by enabling consolidation onto database clouds.

Multitenant Architecture

After a brief review of the Oracle Enterprise Manager Cloud Control 12c and Enterprise Manager Database Express, you’ll learn the new concept of multitenant architecture, its benefits and usage. This includes tasks like creating, managing, monitoring, backing up and recovering multitenant container database and pluggable databases.

Hands-on Practices and Demonstrations

Hands-on practices and available demonstrations help you learn how to use these new or enhanced features of Oracle Database 12c. You’ll explore using Oracle Enterprise Manager Cloud Control and other tools like Oracle Enterprise
Manager Database Express SQL Developer to manage, monitor and administer your data center.

**Audience**
Administrator
Database Administrators
System Administrator

**Related Training**

*Required Prerequisites*
Good knowledge of Oracle Database 11g

*Suggested Prerequisites*
Good knowledge of Oracle Database 11g
Oracle Enterprise Manager Cloud Control 12c: Install & Upgrade
Using Oracle Enterprise Manager Cloud Control 12c Ed 2 NEW

**Course Objectives**
Create, manage and monitor multitenant container database and pluggable databases
Manage datafile online operations, data lifecycle management with heat map and automatic data optimization, archive data using Row-archival or Temporal Validity and Temporal Histor
Set up the unified audit trail
Understand and use the new privileges, such as SYSBACKUP, SYSDG, SYSKM and manage privilege analysis
Create and manage Data Redaction masking policies
Use the Recovery Manager enhancements
Manage the database performance with monitoring DB operations, Real-Time ADDM and Compare Period ADDM
Compare two databases using Schema Change Plans to propagate changes from one environment to another
Use Data Comparisons to compare data across environments
Tune the SQL performance using Adaptive Execution Plans, SQL Plan Directives and statistics enhancements
Manage resources in a multitenant container database and pluggable databases with enhanced Resource Manager
Explore new Oracle Data Pump features and SQL*Loader Express Mode
Use online operations during partition movement and compression, and other DDL operations
Use partial global partitioned indexes
Course Topics

**Enterprise Manager and Other Tools**
Enterprise Manager (EM) Cloud Control home page
Enterprise Manager Express home page versus Enterprise Manager Database Control
SQL Developer with new functionalities
OUI, DBCA

**Basics of 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
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
Flashback at CDB level
Online Datafile Move and Automatic Data Optimization
Data classification in 12c: tablespace, group, object, row levels
Configure heat map
Automatic movement and compression
Compression levels and types
Policy declaration: simple declarative SQL extension
Customized automated action execution with user-defined function
Execution in scheduled maintenance windows and by MMON
Customized schedule with DBMS_ILM package

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

Privileges Enhancements
Implementing Separation of Duty for Database Administration Tasks
Using Database Privilege Analysis
Overview of Database Privilege Analysis
Granting the CAPTURE_ADMIN role to enable management of privilege captures
Creating and starting/stopping privilege captures
Viewing privilege profile data
Querying DBA_PRIV_CAPTURES
Using mandatory INHERIT PRIVILEGES privilege to execute invoker's rights procedure

Oracle Data Redaction
Overview of Oracle Data Redaction
Types of Masking Policies
Administrating 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 Subqueries
Viewing Information About Masking Policies by Querying REDACTION_POLICIES and REDACTION_COLUMNS

General RMAN New Features and FDA Enhancements
Making Database Connections With RMAN
Using the SYSBACKUP Privilege
Using SQL, DESCRIBE Command, Duplication Operation with the NOOPEN option
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

Schema and Data Changes
Explain the Schema Change Plan flow
Change requests
Schema synchronization
Explain the Data Comparison flow
DBMS_COMPARISON package
Guidelines and steps
Comparison job and results

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

Resource Manager and Other Performance Enhancements
Manage resources between PDBs
Manage resources within a PDB
Manage resources with CDB and PDBs plans
Manage runaway queries
Automated maintenance tasks
Describe the Multi-process Multi-threaded Oracle architecture
Learn how to use this architecture in Oracle 12c Database
Demonstrate the changes to shutdown procedures
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

Oracle Data Pump, SQL*Loader, External Tables and Online Operations Enhancements
Use FULL Transportable export and import
Oracle Data Pump enhancements
SQL*Loader enhancements
SQL*Loader and External table common enhancements
SQL*Loader Express Mode usage

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

SQL Enhancements
Enumerate Increase in the length limits for VARCHAR2, NVARCHAR2, and RAW data types in Oracle SQL to 32767 (32K)
Enumerate miscellaneous enhancements
Using SQL Row limiting clause in a query