

Oracle Database 12c: New Features for Administrators

Duration: 5 Days

What you will learn

In the Oracle Database 12c: New Features for Administrators course, you'll learn 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 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

Explain new SQL enhancements such as extended data type column and SQL row limiting clause

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

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 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

- Backing up and Restoring Very Large Files
- Creating Multisection Backups
- Transporting Data Across Platforms
- Prerequisites and Limitations
- Transporting Data: Processing steps

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 Claus

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 (32

Enumerate miscellaneous enhancements

Using SQL Row limiting clause in a query