Oracle Database 12c R1: New Features for Administrators Ed 2

Duration: 5 Days

What you will learn

In the Oracle Database 12c: New Features for Administrators Ed 2 course, you'll learn about the new and enhanced features and options of Oracle Database 12c. Expert instructors will teach you how these features and options increase security, manageability and performance. In this course, you will be introduced to Oracle Database Cloud Service.

Learn To:

Manage the Oracle multitenant container databases and pluggable databases.

Configure Heat Map and use Automatic Data Optimization.

Benefit from Online Datafile Move.

Understand the new Temporal capabilities as well as In-Database Archiving with Row-archival.

Enforce security with the Unified Auditing, the new administrative privileges, Privilege Analysis, and Data Redaction.

Increase SQL performance with the Database In-Memory option, and Full Database In-Memory Caching and the Automatic Big Table Caching features.

Benefit from optimizer enhancements such as Adaptive Execution Plans and SQL Plan Directives, Real-Time ADDM and Compare Period ADDM.

Use enhanced features of Resource Manager in multitenant container databases and pluggable databases.

Understand how and when to use enhancements in Data Pump, partitioning, and SQL.

Gain an understanding of the Oracle Database Cloud Service.

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.

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. You will also learn about performance new features of the first patchset of Oracle Database 12c: Full Database In-Memory Caching, the In-Memory Column Store which is one of the most important features of the 12.1 first patchset, and Automatic Big Table Caching.

Audience

Administrator

Database Administrators

System Administrator

Required Prerequisites

Good knowledge of Oracle Database 11g

Suggested Prerequisites
Oracle Database 12c: Install and Upgrade Workshop

Using Oracle Enterprise Manager Cloud Control 12c Ed 2

Course Objectives
Explore new Oracle Data Pump features and SQL*Loader Express Mode

Create, manage and monitor multitenant container databases and pluggable databases and their resources consumption with Resource Manager

Manage datafile online operations, heat map and automatic data optimization, archive data using Row-archival or Temporal Validity and Temporal History

Manage security by using the new unified auditing, the new privileges, such as SYSBACKUP, the privilege analysis, and by creating and managing Data Redaction policies

Use the Recovery Manager enhancements

Manage the database performance with monitoring DB operations, Real-Time ADDM and Compare Period ADDM

Understand the new in-memory capabilities of the Database In-Memory, Full Database In-Memory Caching, and Automatic Big Table Caching

Tune the SQL performance using Adaptive Execution Plans, SQL Plan Directives and statistics enhancements

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

Gain an understanding of the Oracle Database Cloud Service

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 and EM Database Express
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
Preserve or discard the PDBs open mode when the CDB restarts
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
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
Explain the two methods of migration

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
Explaining the purpose of the default ORA$DEPENDENCY profile

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

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

ADR and Network Enhancements
ADR file types
New File types
New File locations
New command for ADRCI
Improve performance by Compression
Setup Compression

In-Memory Column Store
In-Memory Database option goals and benefits
Row format and columnar format
New SGA component:
IMCU synchronization
Deployment and behaviors
Compression ratio
New dictionary tables and added columns
New statistics: IM %

In-Memory Caching
Setting up Full Database In-Memory Caching
Using Full Database In-Memory Caching
Explaining the two buffer replacement algorithms of Automatic Big Table Caching
Configuring Automatic Big Table Caching with PARALLEL_DEGREE_POLICY and DB_BIG_TABLE_CACHE_PERCEN
Using Automatic Big Table Caching

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

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
Control the in-memory database repopulation resource consumption
Automated maintenance tasks
Current Architecture: Unix multiprocess / one thread, NT/Windows one process / multithread
New Architecture: Multiprocess / MultiThread

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
Describe online redefinition supports
Explain LOCK timeout during FINISH_REDEF_TABLE
Describe the Advanced Row Compression
Using the following DDL statements in an online manner

Oracle Database Cloud Service: Overview
Database as a Service Architecture & Features and Tooling
Software Editions: Included Database Options and Management Packs
Automated Database Provisioning
Managing the Compute Node Associated With a Database Deployment
Backing Up and Recovering Databases on Database as a Service
Performing Recovery by Using the Service Console
Patching Database as a Service
Using the Oracle Database Cloud Service Console to Manage Patches