

Oracle Database 12c R2: New Features for Administrators Part 2

Duration: 5 Days

What you will learn

Throughout the lessons of the Oracle Database 12c R2: New Features for Administrators Part 2 course constituted by five modules; the Securing Data module, the Making Data Available module, the Partitioning Data module, the Managing Information Lifecycle module and the Monitoring DB Operations and Managing Performance module, students receive a good knowledge of the Oracle Database 12c Release 2 new and enhanced features in different areas of database administration like Unified Auditing, Transparent Data Encryption (TDE) and other areas of security, Recovery Manager, online operations, Oracle Data Pump, SQL*Loader, new partitioning methods, Automatic Data Optimization, In-Memory Column Store, Full Database In-Memory Caching, and Automatic Big Table Caching.

Learn To:

Gain an understanding of the new and enhanced features of Oracle Database 12c Release 2 (12.2.0.1) amongst different areas such as security, availability, partitioning, performance, and Information Lifecycle Management (ILM).

Benefits To You

Benefit from getting a thorough understanding of the following lessons:

The lessons of the Securing Data module cover enhancements in auditing like role based conditional auditing, in privilege administration like new system administrative privilege for RAC, in Privilege Analysis and Data Redaction, in Transparent Sensitive Data Protection with new types of policies for FGA and TDE, and finally also in Transparent Data Encryption (TDE).

The lessons of the Making Data Available module cover enhanced features in RMAN like table recovery, transport data across platforms, enhancements related to online operations, and finally ongoing enhancements with Oracle Data Pump, SQL*Loader and external tables.

The lesson of the Partitioning Data module covers enhancements and new partitioning methods.

The lessons of the Managing Information Lifecycle module introduce Heat Map and Automatic Data Optimization with heat map statistics tracking and ADO policies. The lessons also cover Temporal functionalities such as temporal history and temporal validity. In-Database Archiving provides a new feature, the Row-archival.

The lessons of the Monitoring DB Operations and Managing Performance module explain the new features to improve the performance of the databases with SQL Performance Analyzer, DB Replay and SQL Plan Management, and to improve query execution with the Optimizer Statistics Advisor, JOIN processing. You will also learn about In-Memory Database option.

Audience

Database Administrators
End Users
System Administrator

Related Training

Required Prerequisites

Knowledge of Oracle Database 11g R2

Knowledge of Oracle Multitenant Container Database architecture

Suggested Prerequisites

Oracle Database 12c R2: New Features for Administrators Part 1 Ed 1

Oracle Enterprise Manager Cloud Control 13c: Install & Upgrade Ed 1

Oracle Enterprise Manager Cloud Control 13c: Install & Upgrade Ed 2

Course Objectives

Manage security by using Unified Auditing

Manage security by using privileges and profiles

Manage security by using Privilege Analysis

Manage security by using Data Redaction

Manage security by using Transparent Data Encryption

Manage security by using Transparent Sensitive Data Encryption

Describe the new RMAN enhancements

Manage data availability by using new features of Oracle Data Pump, SQL*Loader and external tables

Manage data availability by performing online operations

Manage data partitioning

Manage Information Lifecycle by using ADO

Manage Information Lifecycle by using In-Database Archiving and Temporal features

Describe database operations

Configure and use In-Memory Column Store

Use In-Memory Caching

Use Real Application Testing enhancements

Course Topics

Introduction

Global objectives of the course

Lessons grouped by modules

Schedule of the week

Auditing Using Unified Audit

- Quick review of 11g R2 audit trail implementation
- Overview of the Unified Audit Trail
- Creating and enabling audit policies for all users to whom the role is granted directly
- Capturing VPD (Virtual Private Database) generated predicates

Controlling Data Access Using Privileges and Profiles

- New 12.2 administrative privileges
- Password file enhancements
- Enhance the security of administrative users
- Enforce the associated profile's password limits
- Using mandatory INHERIT PRIVILEGES privilege to execute invoker's rights procedure
- Using mandatory INHERIT PRIVILEGES privilege to select from BEQUEATH current_user views
- Using new INHERIT (ANY) REMOTE PRIVILEGES privilege

Controlling Data Access Using Privilege Analysis

- Overview of database privilege analysis
- Granting the CAPTURE_ADMIN role to enable management of privilege captures
- Creating and starting/stopping privilege captures and runs
- Viewing privilege analysis result
- Querying DBA_PRIV_CAPTURES

Redacting Data

- Overview of Oracle Data Redaction
- Types of Data Redaction Policies
- New redaction format library in EM GUI
- Redaction policy expression
- Redacting with Nullify redaction function

Encrypting Data

- Encrypt / decrypt / rekey tablespaces online
- Configure automatic tablespace encryption

Controlling Data Access Using Transparent Sensitive Data Protection

- Configure and use TSDP with VPD
- Configure and use TSDP with Data Redaction
- Configure and use TSDP with Unified Auditing
- Configure and use TSDP with Fine-Grained Auditing (FGA)
- Configure and use TSDP with Transparent Data Encryption (TDE)

Making Data Available by Using RMAN Features

- RMAN enhancements
- Transport Data Across Platforms
- Table recovery
- Automate the manual recovery process by using Recover Database Until Available Redo
- REPAIR FAILURE command extended

Making Data Available by Using Oracle Data Pump, SQL*Loader and External Tables

- Oracle Data Pump enhancements
- SQL*Loader enhancements
- Querying against external tables and overriding external table clauses

Making Data Available by Performing Online Operations

Describe online redefinition supports
Move and compress table partitions ONLINE

Partitioning Data

Enable reference partitioning with interval partitioned parent tables
Incorporate the CASCADE option for TRUNCATE PARTITION and EXCHANGE [SUB]PARTITION operations
Convert partitioning Range to Interval and vice-versa
Convert subpartitioning Range to Interval and vice-versa
Simplify the maintenance of (sub) partitioned tables
Composite partitioning

Managing Information Lifecycle Using ADO

Data classification in 12c : tablespace, group, object, row levels
Configure heat map
Automatic movement and compression
Compression levels and types
Policy declaration
Customized automated action execution with user-defined function
Execution in scheduled maintenance windows and by MMON
Customized schedule with DBMS_ILM package

Managing Information Lifecycle Using In-Database Archiving and Temporal

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)
Set a Temporal Validity by using PERIOD FOR clause of CREATE / ALTER TABLE
New SQL temporal data type

Monitoring DB Operations and Performance

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

Configuring In-Memory Column Store

In-Memory Database option goals and benefits
Row format and columnar format
New SGA component
Deployment
Compression and priority in-memory segments attributes
Dictionary tables, added columns, IM statistics and IM Advisor
IM FastStart
Interaction with other products

Using In-Memory Column Store

Caching results of frequently evaluated expressions and virtual columns

Optimizing joined columns by creating join groups

Improving Performance Using In-Memory Caching

Setting up Full Database In-Memory Caching

Explaining the two buffer replacement algorithms of Automatic Big Table Caching

Configuring Automatic Big Table Caching with DB_BIG_TABLE_CACHE_PERCENT_TARGET initialization parameter

Using Automatic Big Table Caching

Improving SQL Performance

Statistics gathering performance improvements: Optimizer Statistics Advisor

Adaptive Execution Plan

Benefit from automatic dynamic sampling

Using Real Application Testing Enhancements

SQL Performance Analyzer enhancements

SQL Plan Management enhancements

Database Replay enhancements

Improving Performance Using Other Features

Manage session PGA limit

Multiple indexes on the same set of columns

Describe Advanced Row Compression and Advanced Index Compression HIGH level

Reduce Cursor Invalidations for DDLs

Define real-time materialized views with on query computation and ON STATEMENT refresh materialized views

Using multi-process multi-threaded Oracle architecture

Describe Database Smart Flash Cache enhancements

Use temporary undo for your temporary tables