Oracle 19c Database Tuning (TTOR21519)

Explore Database Tuning with Database Parameters, SQL Tuning Advisor, SQL Access Advisor, Adaptive SQL Plans and More

Course Snapshot

- **Course: Oracle 19c Database Tuning (TTOR21519)**
- **Duration**: 5 days
- **Audience & Skill-Level**: Introduction to Oracle 19C database tuning for intermediate skills participants / DBAs.
- **Format / Hands-on:** This course combines engaging instructor-led presentations and practical demonstrations with hands-on exercises, challenge labs, use case exploration and engaging group activities. Student machines are required.
- **Flexible Delivery Options**: This course can be delivered for your team or organization **online-live (virtual)**, **onsite in-person, self-paced** or across our immersive **blended learning experience platform (LXP).**
- **Public Schedule**: This course is currently available on our Public Open Enrollment Schedule.
- **Customizable**: We're flexible! This course agenda, topics, labs, hours and delivery modalities can be adjusted to target your specific training skills objectives, tools and learning goals. Please ask for details.

Overview

Dive into the world of database optimization with our hands-on **Oracle 19c Database Tuning** course. Aimed at entry-level learners, this course is designed to provide an in-depth understanding of data management and manipulation techniques. With an understanding of Oracle Database Tuning, you can contribute significantly to the efficiency of your organization's data infrastructure and the successful execution of data-driven strategies.

Our five-day course, led by an Oracle Certified instructor, combines interactive lectures, engaging discussions, and practical lab activities. Topics covered include Oracle Database Architecture, Query Optimizer, Oracle's Tuning Features, Container and Pluggable Databases, and Oracle's Real Application Testing (RAT) among others. About half of the course time is devoted to hands-on lab exercises, where you'll apply your newly learned skills in real-life scenarios. The labs provide you with the opportunity to perform tasks like optimizing queries, setting up and tuning databases, and using tools like the SQL Tuning Advisor and Automatic Workload Repository.

Upon completion of this course, you'll be equipped to optimize queries, manage databases efficiently, utilize Oracle's Heat Map, monitor a service, and use the Automatic Workload Repository (AWR). These critical skills enable you to maintain high-performing databases that are crucial to your organization's operations.

NOTE: This training is NOT Official Oracle University training. This is independent, adjustable content that aligns with current topics, skills and tools that participants need to excel in these areas. This course is for 19c.

Learning Objectives

This course combines engaging instructor-led presentations and useful demonstrations with valuable hands-on labs and engaging group activities. Throughout the course you'll learn how to:

- Develop a solid understanding of Oracle 19c Database Architecture: By the end of this course, you'll be comfortable with the components of Oracle's database system, from Instance Definitions to Datafile Definitions.
- Master the Query Optimizer: You'll gain a firm grasp of SQL Parsing, Optimizing Terms, and Query Plan Generation. You'll learn how to build efficient queries that provide the data you need without unnecessary strain on your systems.
- Get comfortable with Tuning Container and Pluggable Databases: You'll learn how to optimize and manage pluggable databases, enhancing the performance of your data operations.
- Explore Oracle Tuning Features: We'll get you familiar with Oracle's Heat Map and delve into the 19c Compression Levels and Types, boosting your database's efficiency.
- Learn to Evaluate Execution Plans: You'll become proficient in defining SQL execution plans and using the Automatic Workload Repository, allowing you to monitor and improve the performance of your queries.
- Gain hands-on experience with Oracle Tuning Tools: You'll practice with tools like the Enterprise Manager and Automatic Database Diagnostic Monitor, equipping you to handle real-world tuning tasks with confidence.

If your team requires different topics, additional skills or a custom approach, our team will collaborate with you to adjust the course to focus on your specific learning objectives and goals.

Audience & Pre-Requisites

This course is geared for professionals seeking a solid foundation in database management and optimization. The training is perfect for experiences database administrators / DBAs, data analysts, and software developers who are involved in data-intensive operations or wish to enhance their skills in database tuning.

This hands-on course is geared for experienced DBAs already working with Oracle. Incoming students should possess:
- Familiarity with basic database concepts such as tables, records, and relationships between data is crucial before diving into the specifics of Oracle Database Tuning.
- Practical knowledge of basic SQL commands like SELECT, INSERT, UPDATE, and DELETE. Knowing how to write simple SQL queries will provide a solid foundation for learning more advanced optimization techniques.
- A general understanding of how Oracle Database functions, including its structure and primary components.

Take Before: Attendees should have skills equivalent to or should have attended this course as a pre-requisite:
- TTOR20519   Oracle 19c Database Administration I (Oracle DBA I)

Enhanced Learning Services: Please also ask about our **Pre-Training Class OnRamp & Prep / Primer** offerings, **Skills Gap Assessment Services**, **Case Studies**, **Knowledge Check Quizzes**, **Skills Immersion Programs & Camps**, **Collaborative Mentoring Services** and **Extended Learning Support** & **Post Training** services.

Course Topics / Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We'll work with you to tune this course and level of coverage to target the skills you need most. Topics, agenda and labs are subject to change, and may adjust during live delivery based on audience interests, skill-level and participation.

1. **Overview Oracle Database Architecture**
- Instance Definition
- Define SGA
- Define Background Processes
- Datafile Definition

2. **Query Optimizer**
- SQL Parsing
- Optimizing Terms
- Optimizing Methods
- Query Plan Generation
- Query Plan Control

3. **Tuning Container Databases and Pluggable Databases**
- Pluggable tuning parameters
- Define Container tuning structure
- Using PDB$SEED
- Create a new PDB
- Plug and unplug a PDB

4. **Oracle Tuning features**
- Identifying and Using Oracle's Heat Map
- 19c Compression Levels and Types

5. **Evaluating Execution Plans**
- Defining SQL execution plans
- Automatic Workload Repository
- Reading execution plans

6. **Oracle Tuning Tools**
- Monitoring tools overview
- Enterprise Manager
- Dynamic Performance Views
- Automatic Workload Repository
- Automatic Database Diagnostic Monitor
- Sql Tuning Advisor
- SQL Access Advisor
- Sql Access Advisor
- DB operation Tuning
- DB operation Active Reporting

7. **Using Automatic Workload Repository**
- Defining AWR
- AWR Settings
- Creating AWR Baselines

8. **Metrics, Alerts, and Thresholds**
- Defining Metrics
- Setting Alerts
- Setting Corrective Actions
- User Defined Metrics
- Metric Dynamic Views

9. **Join Types**
- Nested Loops Join
- Sort Merge join
- Hash Join and Cartesian Join
- Equijoins and Nonequijoins
- Outer Joins
- Semijoins

10. **AWR Using Baselines**
- Creating AWR baselines
- Creating AWR Repeating baselines
- Moving Window Baseline

11. **Additional AWR performance tools**
- Automatic Maintenance Tasks
- Segment Advisor
- Statistics Gathering

- Automatic Tuning Optimizer
- Automatic Database Diagnostic Monitor
- Active Session History (ASH)

12. Optimizer Statistics
- Optimizer Statistics Overview
- Table and Index Statistics
- Statistic Preferences
- Statistics Gathering
- e) Locking Statistics, Export/Import Statistics
- Pending and published statistics
- Optimizer Hints
- Optimizer Paths
- Cost Base Optimization

13. Monitoring a Service
- Overview of what is an Oracle Service
- Creating an Oracle Service for Single instance and RAC
- Monitoring a Service
- Resource Management and a Service
- Enterprise Manager and a Service

14. Bind Variables and database parameters
- Bind variable definition
- Cursor_sharing parameter
- Adaptive Cursor Sharing

15. Oracle's Real Application Testing (RAT)
- Sql Performance Analyzer overview
- Sql Performance Analyzer Options
- Database Parameter changes
- Database version changes
- Creating SQL Tuning Sets
- Database Replay Overview
- Database Replay Configuration
- Database Replay Options

16. SQL Tuning Advisor
- SQL Tuning Advisor: Overview
- SQL Tuning Advisor Limited Mode
- Sql Tuning Advisor Comprehensive mode
- Sql Tuning Profiles

17. SQL Access Advisor
- SQL Access Advisor: Overview
- Sql Access Advisor options
- SQL Access Advisor and Sql Tuning Sets
- Sql Access Advisor and AWR
- Results and Implementation

18. Automatic Sql Tuning
- Automatic Sql Tuning Maintenance Task
- Automatic Tuning Optimization implementation(ATO)
- Automatic Tuning Optimization Results
- Enable/Disable Automatic Tuning Optimization

19. Sql Plan Management
- Sql plan Management and baseline overview
- Enable sql plan management
- Loading Sql Plan baselines into the SGA
- Adaptive plan management

20. Shared Pool Tuning
- Shared pool architecture
- Shared pool parameters
- Library Cache
- Dictionary cache
- Large pool considerations and contents

21. Tuning the database buffer cache
- Database buffer cache overview
- Database buffer cache parameters

- Oracle and Dirty reads and writes
- Automatic Shared Memory Management (ASMM)
- Buffer Cache goals and responsibility
- Buffer Cache pools

22. Tuning the PGA (Program Global Area)
- PGA Overview
- PGA Database Parameters
- Temporary Segments
- Temporary Tablespace
- Sizing the PGA

23. Automatic Memory Management (AMM)
- Oracle's Automatic Memory Management Overview
- Database Auto-tuned Parameters
- Database Non Auto-tuned Parameters
- Automatic Memory Management Hints and Sizing suggestions
- AMM versus ASMM

24. Tuning Segment Space Utilization (ASSM)
- Overview of Automatic Segment Space Management
- Defining the DB_BLOCK_SIZE
- Defining DB_nk_CACHE_SIZE parameter
- The DB_BLOCK_SIZE Parameter
- Overview of table compression, block chaining, and block migration

25. Automatic Storage Management
- Overview of ASM
- Definition of Grid Infrastructure
- ASM Instance
- ASM Diskgroups
- ASM Diskgroup parameters and templates
- ASMCMD

For More Information

For more information about our training services (instructor-led, self-paced or blended), collaborative coaching services, robust Learning Experience Platform (LXP), Career Experiences, public course schedule, partner programs, courseware licensing options or to see our complete list of course offerings, solutions and special offers, please visit us at www.triveratech.com, email Info@triveratech.com or call us toll free at 844-475-4559. Our pricing and services are always satisfaction guaranteed.