

Enterprise Oracle & SQL Server Performance Engineering Course

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Overview

Enterprise Oracle & SQL Server Performance Engineering Bootcamp is a two-week advanced course for senior database administrators and database engineers who need a production-tested Database Tuning Playbook. Enterprise relational workloads often suffer from severe query latency, wait-state contention, memory starvation, and input-output degradation under intense compliance auditing and encryption. This course resolves these issues through comparative diagnostic modeling, memory optimization, execution plan stabilization, and cross-platform workload tracing across both database engines. Agile Leaders Training Center delivers this dual-engine performance engineering course.

Who Should Attend

- Senior database administrators responsible for database instance stability and operational throughput
- Database performance engineers evaluating relational query efficiency and memory architecture
- Infrastructure and data platform leads managing high-throughput production storage and compute capacity
- Data security engineers coordinating database encryption overhead, audit logging, and access latency
- Data architects designing mission-critical relational data structures and index topologies

The course assumes participants already manage enterprise database instances, execute diagnostic commands, and analyze basic execution plans, leaving aside entry-level schema design and basic database installation.

Departments and Industries

The course supports data-intensive environments in financial services, telecommunications, energy, and retail distribution where database speed and security requirements intersect.

- Database administration and core data platform operations
- Enterprise systems engineering and infrastructure architecture
- Information security and regulatory audit compliance
- Core transaction processing and customer billing systems
- Application engineering and production database support

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Learning Objectives

By the end of this course, participants will be able to:

- Diagnose complex system wait events and memory contention across both database engines
- Analyze relational execution plans, cost structures, and cardinalities to remediate query bottlenecks
- Evaluate storage input-output bottlenecks, indexing strategies, and locking contention under concurrency
- Prioritize query optimization methods for encrypted data workloads and mandatory auditing policies
- Build baseline management strategies to prevent execution plan regressions across platform upgrades
- Assemble an enterprise Database Tuning Playbook to standardize cross-platform triage procedures

Course Agenda

Day 1: Relational Diagnostic Architecture and Wait States

- Oracle Time Model Analysis and Active Session History Sampling
- SQL Server Dynamic Management Views Architecture for Wait Statistics
- Direct Mapping Matrix of Oracle Wait Events to SQL Server Waits
- Host Operating System Resource Metrics and Database Process Accounting
- Diagnostic Data Capture Strategy and Baseline Establishment Guide

Day 2: Memory Pool Sizing and Buffer Cache Engineering

- Oracle System Global Area Sizing and Buffer Cache Hit Ratios
- SQL Server Buffer Pool Memory Grants and Page Life Expectancy Metrics
- Latch and Spinlock Contention Analysis in High-Concurrency Workloads
- PGA and Workspace Memory Allocation for Complex Query Sorting
- Memory Pressure Diagnostics Using Extended Events and V$ Views

Day 3: Storage Subsystems, Storage Latency, and Tempdb Tuning

- Input-Output Latency Baselines Using Automatic Workload Repository Metrics
- SQL Server Virtual File Statistics and Storage Latency Diagnosis
- Oracle Temporary Tablespace Management and Allocation Strategies
- SQL Server Tempdb Allocation Contention and PFS Page Tracking
- Storage Partitioning Alignment and Direct-Path Input-Output Validation

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Day 4: Query Execution Plans and Optimizer Mechanics

- Cost-Based Optimizer Internal Mechanics and Statistics Collection Methods
- SQL Server Query Store Analysis for Forcing Execution Plans
- Oracle SQL Plan Management and SQL Plan Baseline Stabilization
- Cardinality Estimation Errors and Parameter Sniffing Identification
- Compilation Overhead and Execution Plan Cache Pollution Elimination

Day 5: Advanced Index Engineering and Data Access Paths

- B-Tree Index Depth and Clustered Index Key Selection Principles
- Oracle Bitmap and Function-Based Index Suitability Analysis
- SQL Server Nonclustered Indexes with Included Columns Strategy
- Index Fragmentation Metrics, Page Splits, and Rebuilding Thresholds
- Unused Index Identification and Redundant Index Pruning Protocol

Day 6: Concurrency, Locking, Blocking, and Deadlock Resolution

- Oracle Multi-Version Concurrency Control and Enqueue Contention
- SQL Server Transaction Isolation Levels and Snapshot Isolation Tuning
- Row-Level and Table-Level Lock Escalation Diagnostics
- Deadlock Graph Extraction and Root-Cause Elimination Methods
- Application Connection Pooling and Session Queuing Controls

Day 7: Performance Tuning with Security and Audit Overheads

- Transparent Data Encryption Input-Output Overhead Measurement
- Audit Logging Performance Impacts and Buffer Flush Optimization
- Row-Level Security Filter Predicate Tuning and Index Alignment
- Privileged Account Session Auditing and Resource Consumption Limits
- Regulatory Event Log Retention Storage Sizing and Archival Tuning

Day 8: SQL Statement Optimization and Parallel Processing

- Oracle SQL Trace, TKPROF Formatting, and Execution Step Costs
- SQL Server Extended Events Profiling for Expensive Query Detection
- Subquery Unnesting, View Merging, and Join Order Restructuring
- Oracle Parallel Query Degree Setting and Resource Consumer Groups
- SQL Server Max Degree of Parallelism and Cost Threshold Calibration

Day 9: Cross-Engine Triage and Performance Emergency Management

- Production Severity-One Crisis Triage Flowchart for Database Stalls
- Oracle Automatic Database Diagnostic Monitor Action Plan Review
- SQL Server Emergency Sp_WhoIsActive Workload Analysis
- System Memory Dump Analysis and Runaway Process Termination
- Post-Incident Performance Postmortem and Root-Cause Template

Day 10: Playbook Integration and Performance Labs

- Exercise: Diagnosing Concurrency Deadlocks from Session Traces
- Exercise: Remediating Parameter Sniffing Using Query Store Baselines
- Exercise: Tuning Index Topologies on Heavily Encrypted Tables
- Exercise: Storage Latency Bottleneck Isolation Under Audit Load
- Capstone Exercise: Enterprise Database Tuning Playbook Formulation

Practical Exercises

Practical sessions allow participants to apply diagnostic techniques to enterprise performance scenarios.

- Suggested Activity: Isolate severe locking stalls across concurrent transactions using dynamic views
- Suggested Activity: Stabilize regressed execution plans across simulated database engine parameter updates
- Suggested Activity: Balance disk throughput requirements while sustaining intensive regulatory audit logging
- Suggested Activity: Complete an operational Database Tuning Playbook standardizing cross-platform triage

FAQs

Who should attend this enterprise database performance engineering bootcamp?

Enterprise Oracle & SQL Server Performance Engineering Bootcamp suits senior database administrators and data platform engineers managing mission-critical transactional platforms. The course assumes working familiarity with relational administration, execution plan reading, and command-line diagnostics, omitting introductory SQL syntax and basic database installation.

How does this course differ from introductory database administration courses?

Enterprise Oracle & SQL Server Performance Engineering Bootcamp focuses entirely on deep architectural bottleneck diagnostics, optimizer mechanics, and concurrent workload tuning across two enterprise engines, rather than basic database installation, user provisioning, or routine backup scheduling.

How does the course address performance degradation caused by compliance auditing?

Enterprise Oracle & SQL Server Performance Engineering Bootcamp examines how to tune buffer flushes, input-output subsystems, and memory allocations so mandatory audit trails and encryption mechanisms remain active without stalling critical production transactions.

What practical documentation do participants develop during the course?

Enterprise Oracle & SQL Server Performance Engineering Bootcamp guides participants through formulating a modular Database Tuning Playbook. This artifact establishes concrete triage steps, baseline comparisons, and remediation scripts for resolving emergency production slowdowns.

Conclusion

Participants return with a production-ready Database Tuning Playbook that defines repeatable diagnostics and remediation procedures across enterprise relational workloads. This operational asset prevents plan regressions, reduces emergency incident resolution time, and stabilizes data access latencies. Organizations secure reliable transaction throughput while sustaining rigorous data protection and audit compliance policies.

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