



MICROSOFT SQL SERVER PERFORMANCE TUNING

Course ID : SQL-ADM-Tuning



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Duration: 4 Days

(24 Hours) 09:00 AM – 04:00 PM



Price: 16,790 THB

* (excluding VAT 7%)

* Eligible for 200% tax deduction



Training Schedule

www.9experttraining.com

Category: Data

Is your SQL Server running slowly or experiencing performance degradation?
understand the underlying causes and how to resolve each issue?

This course focuses on the essential principles required to understand SQL Server operations, supplemented with practical examples of common performance issues. Participants will learn how to identify and resolve SQL Server performance problems in both administration and development environments.

The course also covers how to create of custom performance metrics for continuous monitoring, enabling participants to independently enhance system efficiency.

Objectives

1. Understand performance metrics across key system resources and develop custom benchmarks.
2. Gain a comprehensive understanding of SQL Server scheduling.
3. Master how to coordinate indexes and statistics to support query performance, and optimize both queries and indexes for maximum efficiency.
4. Utilize SQL Server's automatic tuning tools effectively.
5. Understand concurrency concepts, locking mechanisms, and detailed transaction management.

Target Audience

1. SQL Server consultants.
2. Individuals who need to diagnose and resolve SQL Server performance issues..

Prerequisites

1. Experience in SQL Server administration or development.
2. A basic understanding of operating system theory and storage media.
3. Familiarity with Write-ahead Logging (WAL).
4. Knowledge of tree and heap data structures.
5. An understanding of row-based and columnar database architectures.
6. Participants who lack foundational knowledge will receive preparatory instruction before exploring advanced topics.

System Requirements

1. CPU : A compatible 64-bit x86/AMD64 processor (released in 2011 or later), 1.3 GHz or faster.
2. RAM : At least 8 GB.
3. OS : Windows 10 or Windows 11.
4. SQL Server installed (any supported version).
5. SQL Server Management Studio (SSMS) installed.

TOPICS TRAINING



DAY 1 - Morning Session

9:00 AM – 12:00 PM

1. Microsoft SQL Server Architecture, Scheduling, and Waits

- Components of SQL Server and SQLOS.
- A comparison between Windows scheduling and SQL Server scheduling.
- Understanding wait types and queue mechanisms.



DAY 1 - Afternoon Session

1:00 PM – 4:00 PM

2. SQL Server I/O Performance

- Types of I/O operations.
- Common I/O usage patterns.
- Installation procedures and I/O testing methods.

3. Database Structure

- Detailed database architecture.
- Data file configuration and management.
- Advanced concepts related to the tempdb database.

DAY 2 - Morning Session 9:00 AM – 12:00 PM

4. SQL Server Memory Performance

- Windows memory management fundamentals.
- SQL Server memory management mechanisms.
- Utilization of In-Memory OLTP features.

DAY 2 - Afternoon Session 1:00 PM – 4:00 PM

5. Concurrency in Microsoft SQL Server

- Concurrency and transaction mechanisms.
- An in-depth understanding of SQL Server locking behavior.

6. Index and Statistics Deep Dive

- The importance of statistics and cardinality estimation..
- Rowstore index structures.
- Columnstore index structures.

DAY 3 - Morning Session 9:00 AM – 12:00 PM

7. Query Processing Deep Dive

- Query processing and optimization mechanisms.
- Query execution plans and compiled plan concepts.
- Techniques for analyzing query execution plan efficiency.
- Adaptive Query Processing (introduced in SQL Server 2017).
- Intelligent Query Processing (introduced in SQL Server 2019).

DAY 3 - Afternoon Session 1:00 PM – 4:00 PM

8. Plan Caching and Recompilation

- Plan cache mechanisms and behavior.
- Techniques for analyzing and mitigating plan cache regression.
- Key benefits of using Query Store.
- Automatic tuning features (available in SQL Server 2017 and 2019).

DAY 4 - Morning Session 9:00 AM – 12:00 PM

9. Event Monitoring with Extended Events

- Core concepts of Extended Events..
- Practical applications of Extended Events for monitoring and diagnostics.

DAY 4 - Afternoon Session 1:00 PM – 4:00 PM

10. Additional Monitoring and Benchmarking Tools

- Tools for system monitoring and diagnostics.
- Techniques for creating and evaluating custom performance metrics.



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