

WorkshopPLUS – SQL Server: Performance Tuning and Optimization

WorkshopPLUS

Duration: 4 Day [Remote / Onsite]
Difficulty Level: 300 - Advanced

Description

Understand key principles related to SQL Server performance, including memory management, indexing, and query optimization. Explore the engine's memory manager, task scheduler, table structures, index structures, locking, and programming efficiency.

Objectives

- Identify the components of SQL Server Operating System and Internals.
- Review Performance Tuning and Optimization.
- Understand the Query Compilation and Optimization Process.
- Study the Query Execution Process.
- Examine Recompilation Threshold Internals.

Outcomes

- Gain knowledge of reliable methods to analyze performance bottlenecks, design effective index strategies, avoid blocking and deadlocks, and develop efficient queries and stored procedures.

Methodology

Learn by example

Participate in group discussions and learn from presentations and demonstrations.

Requirements

Participants

Participation of key roles is necessary for the overall success and delivery of this engagement.

- Database Administrators
- SQL Server Architects

Skill Requirements

- Strong SQL performance troubleshooting knowledge

Delivery Requirements

- Computer with Windows 10 or later, audio equipment, internet access. Modern browser and at least 1-Mbps bandwidth per participant
- Microsoft/Windows Live ID to connect to the virtual environment
- Microsoft Teams for remote deliveries

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Delivery Outline

The scope of this engagement will be agreed based on your specific needs. Final agenda will be determined in the scoping call.

Delivery Details

SQL Server Architecture, Scheduling and Waits

- Introduction to SQL Operating System
- SQL Server Task Scheduling, Waits, and Queues

SQL Server I/O and Database Structure

- SQL Server Disk I/O Performance
- SQL Server Page, Data File, Log File and TempDB File Structure
- Troubleshooting TempDB Performance

SQL Server Memory

- Windows and SQL Server Memory Management
- Troubleshooting SQL Server memory

SQL Server Concurrency and Transactions

- SQL Server Concurrency and Transactions, Isolation Levels, and Locking
- ***Advanced:*** *Delayed Transaction Durability and Troubleshooting Concurrency Performance*

SQL Server Index Structure

- Index Internals, strategy, monitoring and fragmentation
- ***Advanced:*** *Partitioned Tables and Indexes and Columnstore Indexes and In-Memory OLTP*

SQL Server Statistics Structure

- SQL Server Statistics Internals and maintenance

SQL Server Query Execution and Plans

- SQL Server Query Plan Analysis, Execution and Optimization
- ***Advanced:*** *SQL Server Intelligent Query Processing*

SQL Server Plan Caching and Query Store

- SQL Server Plan Cache and Query Store
- ***Advanced:*** *Troubleshooting SQL Server Performance with Query Store*

SQL Server Query Tuning

- Search, argument and able as part of Sargable expressions
- Query Hints and Troubleshooting

SQL Server Performance Tools

- SQL Server Lightweight Query Profiler and Extended Events
- ***Advanced:*** *SQL Server Resource Governor*

Note: Advanced lessons can be replaced with other lessons.

For more information: Contact your Microsoft Representative for more details.

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