Exploring SQL Server 2016, Part 2 of 5: Performance Enhancements

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Meet the expert: Using Microsoft SQL Server started for Thomas with a Laboratory Information System in version 6.5. The Analysis Service (also called SSAS) option in version 7 got him excited about Data Warehousing, but before he used a production version of SSAS, he became a Database Administrator for versions 6.5 through 2005 while working at a paper mill and home health agency. After writing reports as an application developer for 10 years, he rediscovered Online Analytical Processing (OLAP) implemented into Data Warehouses. Since 2009, he has become a speaker in the SQL Server community and a voice for Microsoft Business Intelligence (MSBI) for enterprises. His transition from Sr. DBA to a Business Intelligence Architect has been a great career path. Thomas has certifications MCP, MCDBA and MCITP in Database Administration and Business Intelligence.

Prerequisites: This course assumes that student has some familiarity SQL Server.

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Course description: Enhancements in performance are an important reason to upgrade to SQL Server 2016. Learn about changes in manageability features and execution, as well as query plans with live query statistics before taking a look at Powershell and integration with automation, and discovering 3 new groups of commandlets. Continue your exploration with a focus on in-memory table improvements, columns store index changes, and the new temporal tables, then learn about some additional improvements including enhancements of optimizer, cloud first development, and testing in the cloud.

Course outline:

T-SQL Enhancements
- Introduction
- T-SQL Enhancements
- Helpful T-SQL Enhancements
- Demo: T-SQL DBA Enhancements
- Demo: T-SQL Developer Enhancements
- Use With Caution
- System Metadata
- Demo: System Functions
- Temporal Tables
- Demo: Temporal Tables
- R Language
- Demo: R Language
- Summary

Manageability Enhancements
- Introduction
- Manageability Enhancements
- What is Query Store
- Configuration
- Demo: The Query Store
- Demo: Running Queries for the Store
- Query Store Dashboards
- Top 25 Resource Consumers
- Demo: Regressed and Tracked Dashboards
- Demo: Resource Consumption Dashboards
- Summary

More Manageability Enhancements
- Introduction
- Live Query Statistics
- Demo: Live Query Statistics
- Dynamic Management Objects (DMOs)
- Demo: DMOs
- PowerShell Additions
- Demo: PowerShell Additions
- PowerShell Additions (Continued)
- TempDB
- Summary

In Memory Tables And Stored Procedures
- Introduction
- Overview
- OLTP Workload Patterns
- Migration Considerations
- Demo: In Memory Technology
- Tables
- Restrictions
- More Restrictions Removed
- Demo: On-Disk vs In-Memory Tables
- Natively Compiled SP
- Demo: Natively Compiled SP
- Wizard
- Demo: Using the Wizard
- Performance
- Summary

Column Store Indexes
- Introduction
- Overview
- Introduction
- History
- Demo: Column Store Index Features
- Demo: Statistics IO and Batch Mode Processing
- Storage and Retrieval
- Clustered Column Store Index (CCI)
- Demo: Clustered Column Store
- Non-Clustered Column Store Index (NCCI)
- Performance and Maintenance
- Demo: Clustered vs Non-Clustered Metadata
- Summary

Other New Features
- Introduction
- Overview
- Backups
- JSON Support
- Demo: JSON Functions
- Statistics
- Resource Governor
- Optimizer
- Summary