

SQL Server: Features and Administration



WorkshopPLUS

Overview

Target Audience:

This service offering gives an introduction to a large breadth of Microsoft SQL Server 2016 administration topics. It is SQL Server version agnostic course and most of the fundamentals can be applied across all supported versions of SQL Server. It is targeted at IT staff who have designed, deployed, administered or managed an enterprise SQL Server infrastructure for at least one full year.

This course assumes a basic level of knowledge with SQL Server.

SQL Server: Features and Administration is a three-day course that presents the key principles of fulfilling the role of an enterprise Database Administrator. This course will cover how to manage and monitor a SQL Server environment to meet Service Level Agreements (SLAs). The course also highlights new features with SQL Server and how they can be used in your environment. Labs and demonstrations reinforce the lessons and provide hands-on experience working with SQL Server 2016, Windows Server 2012 R2, Windows Clustering, and SQL Server/SQL Database in Microsoft Azure. Specifically, this workshop will cover three core responsibilities of high availability and disaster recovery, performance, and security.

Key Features and Benefits

This workshop focuses on managing SQL Server in the enterprise and building appropriate SLAs that detail goals to help ensure that IT projects meet business goals and needs by using the tools within SQL Server. This course is designed to provide participants with in-depth expertise, tools, and hands-on experience to manage and monitor SQL Server instances across the enterprise.

Technical Highlights

In this course, students will learn the following:

- Different strategies for meeting HA/DR SLAs with SQL Server 2016.
- Understand the benefits of SQL Server 2016 Failover Clustering and SQL Server 2016 availability groups.
- Sizing guidelines to meet performance goals.
- Benchmarking and Baseline strategies.
- Monitoring performance with extended events and performance monitor.
- Maintenance and configuration best practices.
- SQL Server 2016 performance enhancements.
- SQL Service Account best practices.
- SQL Server encryption features including **Always Encrypted**.

Syllabus

Hosted Lab

Requirements:

Participants will need a computer running at least Windows 7, with 50 gigabytes (GB) free drive space, a USB port, a 10 megabits per second (Mbps) or faster network adapter, at least an evaluation copy of Office 2010 Professional or later, and a PDF reader. Participants also need a Microsoft Account to connect to the virtual environment. The classroom must be networked, with access to the Internet and at least total Internet bandwidth of 2 Mbps. TCP port 443 must be open. We highly recommend a wired network in the classroom.

This workshop runs for **three** full days. Students should anticipate consistent start and end times for each day. Early departure on any day is not recommended.

Module 1: Service Management

This module provides an overview of SLAs and how they can provide a foundation for successful SQL Server deployment.

- Lesson: Understanding Service Level Agreements

Module 2: SQL Server High Availability and Disaster Recovery

This module provides an overview of high availability and disaster recovery strategies. We cover when and how to use technologies such as SQL Server Failover Clustering, AlwaysOn Availability Groups, and other options to achieve availability SLAs.

- Lesson: Defining High Availability and Disaster Recovery
- Lesson: Server Architectures: Standalone and Failover Cluster Instances
- Lesson: Server Architectures: Availability Groups
- Lesson: Backup and Restore Strategies

Module 3: SQL Server Performance

In this module, we cover how to set and meet SLAs defined for SQL Server Performance. We cover sizing guidelines, monitoring best practices, configuration guidelines, and performance enhancements in SQL Server 2016.

- Lesson: What are Performance-Based SLAs?
- Lesson: Architecture Sizing Considerations
- Lesson: Monitoring and Tools
- Lesson: Using DMVs and SQL Server Waits to Monitor Performance
- Lesson: Using SQL Nexus
- Lesson: Common SQL Server Settings
- Lesson: Common Database Settings
- Lesson: Common Windows Server Settings
- Lesson: Database Maintenance Fundamentals
- Lesson: Resource Governor
- Lesson: In-Memory and Columnstore Technologies
- Lesson: Query Store
- Lesson: Temporal Tables
- Lesson: Other SQL Server 2016 Enhancements

Module 4: SQL Server Security

This module covers topics related to features within SQL Server that are required to create a more secure environment and meet compliance rules. Specifically, this module covers SQL Server Service Account security and Encryption.

- Lesson: SQL Server Service Accounts Best Practices
- Lesson: Backup Encryption
- Lesson: Column Level Encryption
- Lesson: SSL Encryption
- Lesson: Transparent Data Encryption
- Lesson: Overview of Always Encrypted
- Lesson: How To Use Always Encrypted
- Lesson: Dynamic Data Masking
- Lesson: Row Level Security