Windows Server 2019 Administration

Course WS-011T00-A 5 Days Instructor-led, Hands-on

Introduction

The focus of this five-day instructor-led course is on planning and implementing enterprise database infrastructure solutions by using SQL Server 2014 and other Microsoft technologies. It describes how to consolidate SQL Server workloads, work with both on-premises and Microsoft Azure cloud-based solutions, and how to plan and implement high availability and disaster recovery solutions.

This course is designed for customers who are interested in learning SQL Server 2012 or SQL Server 2014. It covers the new features in SQL Server 2014, but also the important capabilities across the SQL Server data platform

This course is intended for database professionals who need who plan, implement, and manage database solutions. Primary responsibilities include:

- Planning and implementing database infrastructure.
- Planning and implementing consolidation strategies.
- Implementing SQL Server in on-premises, cloud, and hybrid IT scenarios.
- Planning and implementing high availability solutions.
- Planning and implementing disaster recovery solutions.

At Course Completion

After completing this course, students will be able to:

- Assess an existing enterprise environment.
- Plan and implement Policy-Based Management.
- Describe the considerations for consolidating workloads with SQL Server 2014.
- Describe considerations for including SQL Server 2014 in a private cloud.
- Use Microsoft Azure storage with SQL Server 2014.
- Implement and configure databases in Microsoft Azure SQL Database.
- Implement and configure databases in Microsoft Azure virtual machines.
- Describe high availability technologies in SQL Server 2014 and implement log shipping.
- Describe Windows Server Failover Clustering and Implement an AlwaysOn Failover Cluster Instance.
- Implement an Always On Availability Group.
- Plan high availability and disaster recovery solutions.
- Plan and implement database replication.

Prerequisites

This course requires that you meet the following prerequisites:

- At least 2 years' experience of working with relational databases, including:
- Planning and implementing databases
- Managing databases
- Querying with Transact-SQL
- Some basic knowledge of high availability and disaster recovery
- Some basic knowledge of Microsoft Azure technologies and concepts around cloud computing

Course Materials

The student kit includes a workbook and other necessary materials for this class.

Course Outline

Module 1: Introduction to Enterprise Data Architecture

As organizations grow to enterprise scale, their IT infrastructure requirements become more complex and the network environment often includes an increasing number of servers, client computers, network segments, and other components. Because data is fundamental to most IT operations, careful thought must be given to the provisioning and management of databases across the enterprise.

Lessons

- Considerations for Enterprise Data
- Assessing an Existing Infrastructure

Lab : Accessing an Existing Enterprise Data Infrastructure

- Using the MAP Toolkit
- Reviewing MAP Toolkit Reports

After completing this module, students will be able to:

- Describe the considerations for enterprise data infrastructure.
- Use the MAP Toolkit to assess an existing enterprise data environment.

Module 2: Designing a Logical Database Schema

This module explains how to design a logical schema for a database based on application requirements. This includes planning the level of normalization, and schema and table design, and the use of views.

Lessons

- Relational Database Design Techniques

- Planning Schemas and Tables

Lab : Designing a Logical Database Schema

- Plan a Database Schema
- Create a View to Display Employee Payment Information

After completing this module, students will be able to:

- Describe the key techniques for designing a logical database schema
- Describe the considerations for table and schema design in a relational database.
- Describe how to use views to provide a denormalized view of database tables to enable users to work with data more easily.

Module 3: Designing a Physical Database Implementation

This modules explains how to design the physical implementation of a database for a given set of requirements. The design will include data files, log files, filegroups, and data partitioning, as well as whether or not to use data compression.

Lessons

- Planning Files and Filegroups
- Planning a Partitioning Data
- Planning Compression

Lab : Designing a Physical Database Implementation

- Planning Files and Filegroups
- Implement the Timesheet Archive Strategy

After completing this module, students will be able to:

- Describe the considerations for creating and placing SQL Server data and log files
- Describe how to use partitioning to improve manageability
- Describe the benefits of using compression to improve performance and storage efficiently

Module 4: Incorporating Data Files into Databases

This modules discusses how to consider options for including data files in a database design.

Lessons

- Considerations for working with data files in SQL Server 2012
- Implementing FileStream and FileTables
- Searching Data Files

Lab : Implementing a Solution for Storing Data Files

- Exercise 1: Creating a FileTable
- Exercise 2: Creating and using a Full-Text Index

After completing this module, students will be able to:

- Describe the considerations for designing databases that incorporate data files
- Describe the benefits and design considerations for using FileStream and FileTables to store data files.
- Describe the benefits of full text indexing and semantic search, and explain how to use these features to search data files in SQL Server.

Module 5: Tuning Database Performance

This module explains how to plan and manage indexes to optimize database performance.

Lessons

- Optimizing Query Performance with Indexes
- Working with Query Plans
- Performance Monitoring

Lab : Using Indexes and Plan Guides

- Planning Indexes
- Testing Indexing Strategies
- Working with Execution Plans

After completing this module, students will be able to:

- Describe how to plan indexes to optimize query performance.
- Describe how to use query plans to improve performance.
- Describe how to monitor performance.

Module 6: Designing Database Security

This module explains the key considerations for designing security for SQL Server instances and databases.

Lessons

- Introduction to Security Planning
- Planning Security
- Contained Databases
- Protecting Data with Encryption

Lab : Planning and Implementing Security

- Planning Server and Database Security
- Implementing a Data Access Strategy
- Implementing Transparent Data Encryption

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After completing this module, students will be able to:

- Describe the benefits of security planning.
- Describe the design considerations for planning security.
- Describe how to use contained databases.
- Describe the options for encrypting data.

Module 7: Policy Based Management

This module explains how to plan policy-based management to manage server instances, databases, and other SQL Server 2012 objects more efficiently.

Lessons

- Introduction to Policy-Based Management
- Planning and Implementing Policy-Based Management

Lab : Using Policy-Based Management

- Planning a Policy-Based Management Strategy
- Implementing Policy-Based Management
- Testing Policy Compliance

After completing this module, students will be able to:

- Describe the benefits of policy-based management.
- Plan and implement policy-based management.

Module 8: Monitoring Server Health

This module explains how to plan SQL Server health monitoring and to implement health monitoring by using SQL Server Utility.

Lessons

- Introduction to Server Health Monitoring
- SQL Server Utility

Lab : Monitoring Server Health

- Create a Utility Control Point
- Configure Health Policies

After completing this module, students will be able to:

- Describe the benefits of health monitoring and considerations for planning health monitoring.
- Use SQL Server Utility to monitor server health.

Module 9: Designing a Database Backup Solution

This module explains how to identify and implement the appropriate backup strategy for a given scenario.

Lessons

- SQL Server Backup and Restore
- Planning a Recovery Strategy

Lab : Planning and Implementing a Backup Strategy

- Planning a Backup and Restore Strategy
- Implementing a Backup Strategy
- Performing a Piecemeal Restore

After completing this module, students will be able to:

- Plan a Backup and Restore Strategy.
- Describe the key features of a disaster recovery plan.

Module 10: Automating Multi-Server Maintenance

This module explains how to better plan and manage multi-server maintenance and automation.

Lessons

- Overview of Maintenance Automation
- Managing Multiple Servers

Lab : Automating Multi-Server Maintenance

- Planning and Implementing a Multi-Server Environment
- Planning and Implementing Multi-Server Jobs

After completing this module, students will be able to:

- Describe the benefits and components of multi-server maintenance.
- Manage multiple servers by using master and target servers.

Module 11: Module 11: Managing SQL Server with PowerShell

This module provides an overview of PowerShell and describes the benefits of using PowerShell to manage SQL Server 2012

.Lessons

- Using PowerShell to Manage SQL Server
- Creating PowerShell Scripts

Lab : Managing SQL Server with Windows PowerShell

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- Using PowerShell to Manage SQL Server
- Creating PowerShell Scripts

After completing this module, students will be able to:

- Describe the benefits of using PowerShell to maintain SQL Server and explain the fundamental concepts that underlie PowerShell.
- Explain how to create PowerShell scripts.

Module 12: Replicating Data

This module explains how to design an optimal replication strategy from a given set of business and technical requirements.

Lessons

- SQL Server Replication
- Planning Replication

Lab : Planning and Implementing SQL Server Replication

- Planning a Replication
- Implementing Replication

After completing this module, students will be able to:

- Describe the benefits of replication and the options for planning replication in SQL Server 2012.
- Identify the appropriate replication solution for a given scenario.

Module 13: Planning High Availability

This module explains how to plan and implement a high availability solution.

Lessons

- High Availability in SQL Server 2012
- AlwaysOn Availability Groups

Lab : Implementing High Availability

- Creating an AlwaysOn Availability Group
- Using an AlwaysOn Availability Group
- Testing Failover for an AlwaysOn Availability Group

After completing this module, students will be able to:

- Choose a high availability strategy for a given scenario
- Describe how to implement and test AlwaysOn Availability Groups