



20764C - Version: 1

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# Administering a SQL Database Infrastructure



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 5 days Course

## Description:

This five-day instructor-led course provides students who administer and maintain SQL Server databases with the knowledge and skills to administer a SQL server database infrastructure. Additionally, it will be of use to individuals who develop applications that deliver content from SQL Server databases.

## Intended audience:

The primary audience for this course is individuals who administer and maintain SQL Server databases. These individuals perform database administration and maintenance as their primary area of responsibility, or work in environments where databases play a key role in their primary job.

The secondary audiences for this course are individuals who develop applications that deliver content from SQL Server databases.

## Prerequisites:

Basic knowledge of the Microsoft Windows operating system and its core functionality.

Working knowledge of Transact-SQL.

Working knowledge of relational databases.

Some experience with database design.

## Objectives:

Authenticate and authorize users

Assign server and database roles

Authorize users to access resources

Protect data with encryption and auditing  
Describe recovery models and backup strategies  
Backup SQL Server databases  
Restore SQL Server databases  
Automate database management  
Configure security for the SQL Server agent  
Manage alerts and notifications  
Managing SQL Server using PowerShell  
Trace access to SQL Server  
Monitor a SQL Server infrastructure  
Troubleshoot a SQL Server infrastructure  
Import and export data

## Topics:

### Module 1: SQL Server Security

- Authenticating Connections to SQL Server
- Authorizing Logins to Connect to databases
- Authorization Across Servers
- Partially Contained Databases
- Lab : Authenticating Users

### Module 2: Assigning Server and Database Roles

- Working with server roles
- Working with Fixed Database Roles
- Assigning User-Defined Database Roles
- Lab : Assigning server and database roles

### Module 3: Authorizing Users to Access Resources

- Authorizing User Access to Objects
- Authorizing Users to Execute Code
- Configuring Permissions at the Schema Level



- Lab : Authorizing users to access resources

## Module 4: Protecting Data with Encryption and Auditing

- Options for auditing data access in SQL Server
- Implementing SQL Server Audit
- Managing SQL Server Audit
- Protecting Data with Encryption
- Lab : Using Auditing and Encryption

## Module 5: Recovery Models and Backup Strategies

- Understanding Backup Strategies
- SQL Server Transaction Logs
- Planning Backup Strategies
- Lab : Understanding SQL Server recovery models

## Module 6: Backing Up SQL Server Databases

- Backing Up Databases and Transaction Logs
- Managing Database Backups
- Advanced Database Options
- Lab : Backing Up Databases

## Module 7: Restoring SQL Server 2016 Databases

- Understanding the Restore Process
- Restoring Databases
- Advanced Restore Scenarios
- Point-in-Time Recovery
- Lab : Restoring SQL Server Databases

## Module 8: Automating SQL Server Management

- Automating SQL Server management

- Working with SQL Server Agent
- Managing SQL Server Agent Jobs
- Multi-server Management
- Lab : Automating SQL Server Management

## Module 9: Configuring Security for SQL Server Agent

- Understanding SQL Server Agent Security
- Configuring Credentials
- Configuring Proxy Accounts
- Lab : Configuring Security for SQL Server Agent

## Module 10: Monitoring SQL Server with Alerts and Notifications

- Monitoring SQL Server Errors
- Configuring Database Mail
- Operators, Alerts, and Notifications
- Alerts in Azure SQL Database
- Lab : Monitoring SQL Server with Alerts and Notifications

## Module 11: Introduction to Managing SQL Server by using PowerShell

- Getting Started with Windows PowerShell
- Configure SQL Server using PowerShell
- Administer and Maintain SQL Server with PowerShell
- Managing Azure SQL Databases using PowerShell
- Lab : Using PowerShell to Manage SQL Server

## Module 12: Tracing Access to SQL Server with Extended events

- Extended Events Core Concepts
- Working with Extended Events
- Lab : Extended Events

## Module 13: Monitoring SQL Server

- Monitoring activity
- Capturing and Managing Performance Data
- Analyzing Collected Performance Data
- SQL Server Utility
- Lab : Monitoring SQL Server

## Module 14: Troubleshooting SQL Server

- A Trouble Shooting Methodology for SQL Server
- Resolving Service Related Issues
- Resolving Connectivity and Log-in issues
- Lab : Troubleshooting Common Issues

## Module 15: Importing and Exporting Data

- Transferring Data to and from SQL Server
- Importing and Exporting Table Data
- Using bcp and BULK INSERT to Import Data
- Deploying and Upgrading Data-Tier Application
- Lab : Importing and Exporting Data