

Administering Microsoft SQL Server Databases

Learn via: **Classroom / Virtual Classroom / Online**

Duration: **5 Day**

<https://bilginc.com/en/training/administering-microsoft-sql-server-databases-1053-training/>

Overview

This five-day instructor-led course provides delegates with the knowledge and skills to maintain a Microsoft SQL Server 2014 database. The course focuses on teaching individuals how to use SQL Server 2014 product features and tools related to maintaining a database.

Target 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 audience for this course is 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.

If you do not have experience with Transact-SQL, please consider M20461, Querying Microsoft SQL Server

What You Will Learn

At the end of this course you will be able to:

- Plan and install SQL Server.
- Describe system databases, the physical structure of databases, and the most common configuration options related to them.
- Explain the concept of the transaction log and the SQL Server recovery models and implement different backup strategies that are available with SQL Server.
- Back up SQL Server databases.
- Restore SQL Server databases.
- Import and export data by using wizards, the bulk copy utility, and data-tier applications.
- Work with SQL Server security models, logins, users, and contained databases.
- Work with server roles and database roles.
- Use permissions to secure resources.
- Use SQL Server audit and Transparent Data Encryption.
- Work with SQL Server Agent to configure and execute jobs.
- Implement SQL Server Agent security, proxy accounts, and credentials.
- Configure database mail, alerts, and notifications.
- Create database maintenance plans.
- Use SQL Server Profiler, SQL Trace, and Distributed Relay.
- Use Distributed Management Views and configure data collection.

Outline

Module 1: Introduction to SQL Server 2014 Database Administration

This module introduces the Microsoft SQL Server 2014 platform. It describes the components, editions, and versions of SQL Server 2014, and the tasks that a database administrator commonly performs for a SQL Server instance.

Lessons

- Database Administration Overview
- Introduction to the SQL Server Platform
- Database Management Tools and Techniques

Lab : Using SQL Server Administrative Tools

- Using SQL Server Management Studio
- Using the sqlcmd Utility
- Using Windows PowerShell with SQL Server

Module 2: Installing and Configuring SQL Server 2014

This module explains how to assess resource requirements for SQL Server 2014 and how to install it.

Lessons

- Planning SQL Server Installation
- Installing SQL Server 2014
- Post-Installation Configuration

Lab : Installing SQL Server 2014

- Preparing to Install SQL Server
- Installing SQL Server
- Performing Post-Installation Configuration

Module 3: Working with Databases and Storage

This module describes how data is stored in databases, how to create databases, how to manage database files, and how to move them. Other tasks related to storage, include managing the tempdb database and using fast storage devices to extend the SQL Server buffer pool cache, are also discussed.

Lessons

- Introduction to Data Storage with SQL Server
- Managing Storage for System Databases
- Managing Storage for User Databases
- Moving Database Files
- Configuring the Buffer Pool Extension

Lab : Managing Database Storage

- Configuring tempdb Storage
- Creating Databases
- Attaching a Database

Module 4: Planning and Implementing a Backup Strategy

In this module, you will consider how to create a backup strategy that is aligned with organizational needs, and learn how to perform the backup operations required by that strategy.

Lessons

- Understanding SQL Server Recovery Models
- Planning a Backup Strategy
- Backing up Databases and Transaction Logs
- Using Backup Options
- Ensuring Backup Reliability

Lab : Backing Up SQL Server Databases

- Backing Up Database
- Performing Database, Differential, and Transaction Log Backups
- Performing a Partial Backup

Module 5: Restoring SQL Server 2014 Databases

In this module, you will see how to restore user and system databases and how to implement point-in-time recovery.

Lessons

- Understanding the Restore Process
- Restoring Databases
- Advanced Restore Scenarios
- Working with Point-in-Time Recovery

Lab : Restoring SQL Server Databases

- Restoring a Database Backup
- Restoring Database, Differential, and Transaction Log Backups
- Performing a Piecemeal Restore

Module 6: Importing and Exporting Data

In this module, you will briefly explore tools and techniques so that you can import and export data to and from SQL Server.

Lessons

- Introduction to Transferring Data
- Importing and Exporting Table Data
- Copying or Moving a Database

Lab : Importing and Exporting Data

- Using the SQL Server Import and Export Wizard
- Using the bcp Utility
- Using the BULK INSERT Statement
- Using the OPENROWSET Function

Module 7: Monitoring SQL Server 2014

This module explains how to use three of the most commonly used tools: Activity Monitor, dynamic management views and functions (DMVs and DMFs), and Performance Monitor.

Lessons

- Introduction to Monitoring SQL Server
- Dynamic Management Views and Functions
- Performance Monitor

Lab : Monitoring SQL Server 2014

- Collecting Baseline Metrics
- Monitoring a Workload

Module 8: Tracing SQL Server Activity

This module describes how to use SQL Server Profiler and SQL Trace stored procedures to capture information about SQL Server, and how to use that information to troubleshoot and optimize SQL Server workloads.

Lessons

- Tracing SQL Server Workload Activity
- Using Traces

Lab : Tracing SQL Server Workload Activity

- Capturing a Trace in SQL Server Profiler

- Generating Database Tuning Recommendations
- Using SQL Trace

Module 9: Managing SQL Server Security

In this module, you will be learn about the core concepts on which the SQL Server security architecture is based, and how to manage security at the server and database levels.

Lessons

- Introduction to SQL Server Security
- Managing Server-Level Security
- Managing Database-Level Principals
- Managing Database Permissions

Lab : Managing SQL Server Security

- Managing Server-Level Security
- Managing Database-Level Security
- Testing Database Access

Module 10: Auditing Data Access and Encrypting Data

This module describes the available options for auditing in SQL Server, how to use and manage the SQL Server audit feature, and how to implement encryption.

Lessons

- Auditing Data Access in SQL Server
- Implementing SQL Server Audit
- Encrypting Databases

Lab : Auditing Data Access and Encrypting Data

- Implementing Auditing
- Implementing Transparent Database Encryption

Module 11: Performing Ongoing Database Maintenance

This module describes common database maintenance tasks that a DBA must perform, and demonstrates how to automate these tasks using maintenance plans.

Lessons

- Ensuring Database Integrity
- Maintaining Indexes
- Automating Routine Database Maintenance

Lab : Performing Ongoing Database Maintenance

- Managing Database Integrity
- Managing Index Fragmentation
- Implementing a Maintenance Plan

Module 12: Automating SQL Server 2014 Management

This module describes how to use SQL Server Agent to automate jobs, how to configure security contexts for jobs, and how to implement multi-server jobs.

Lessons

- Automating SQL Server Management
- Implementing SQL Server Agent Jobs
- Managing SQL Server Agent Jobs
- Managing Job Step Security Contexts

- Managing Jobs on Multiple Servers

Lab : Automating SQL Server Management

- Creating a Job
- Scheduling a Job
- Configuring Job Step Security Contexts

Module 13: Monitoring SQL Server 2014 by Using Alerts and Notifications

This module covers the configuration of database mail, alerts, and notifications.

Lessons

- Monitoring SQL Server Errors
- Configuring Database Mail
- Configuring Operators, Alerts, and Notifications

Lab : Monitoring SQL Server by Using Alerts and Notifications

- Configuring Database Mail
- Implementing Operators and Notifications
- Implementing Alerts

Appendix A: Troubleshooting Common Administrative Issues

Appendix B: Installation Considerations