



Maintaining a Microsoft SQL Server 2008 Database

MOC-6231

Course Description:

This five-day Maintaining a Microsoft SQL Server 2008 R2 Database instructor-led course provides students with the knowledge and skills to maintain a Microsoft SQL Server 2008 R2 database. The course focuses on teaching individuals how to use SQL Server 2008 R2 product features and tools related to maintaining a database.

Course Objectives:

Upon completion of the Maintaining a Microsoft SQL Server 2008 R2 Database course, students will be able to:

- Explain SQL Server 2008 R2 architecture, resources requirements and perform pre-checks of I/O subsystems
- Plan, install and configure SQL Server 2008 R2
- Backup and restore databases
- Import and export wizards and explain how they relate to SSIS
- Use BCP and BULK INSERT to import data
- Manage security
- Assign, configure fixed database roles and create and assign user defined database roles
- Configure and assign permissions
- Implement SQL Server 2008 R2 Audits
- Manage SQL Server 2008 R2 Agent and Jobs
- Configure database mails, alerts and notifications
- Maintain databases
- Configure SQL Profiler Traces and Use the Database Tuning Advisor
- Monitor data by using Dynamic Management Views
- Execute multi-server queries and configure a central management server
- Deploy a data-tier-application
- Troubleshoot common issues

Audience:

- Individuals who administer and maintain SQL Server databases
- Individuals who develop applications that deliver content from SQL Server databases

Course Duration:

5 Days

Course Topics:

I. Introduction to SQL Server 2008 R2 and its Toolset

- Lessons
 - Introduction to SQL Server Platform
 - Working with SQL Server Tools
 - Configuring SQL Server Services
- Lab : Introduction to SQL Server 2008 R2 and its Toolset
- Verify SQL Server Component Installation
- Alter Service Accounts for New Instance
- Enable Named Pipes Protocol for Both Instances
- Create Aliases for AdventureWorks and Proseware
- Ensure SQL Browser is Disabled and Configure a Fixed TCP/IP Port
- Describe the SQL Server Platform
- Work with SQL Server Tools
- Configure SQL Server Services

II. Preparing Systems for SQL Server 2008 R2

- Lessons
 - Overview of SQL Server 2008 R2 Architecture
 - Planning Server Resource Requirements
 - Pre-installation Testing for SQL Server 2008 R2
- Lab : Preparing Systems for SQL Server 2008 R2
 - Adjust memory configuration
 - Perform Pre-installation Stress Testing
 - Check Specific I/O Operations
 - Describe the SQL Server architecture
 - Plan for server resource requirements
 - Conduct pre-installation stress testing for SQL Server

III. Installing and Configuring SQL Server 2008 R2

- Lessons
 - Preparing to Install SQL Server 2008 R2

- Installing SQL Server 2008 R2
 - Upgrading and Automating Installation
- Lab : Installing and Configuring SQL Server 2008 R2
 - Review installation requirements
 - Install the SQL Server instance
 - Perform Post-installation Setup and Checks
 - Configure Server Memory
 - Prepare to install SQL Server
 - Install SQL Server
 - Upgrade and automate the installation of SQL Server

IV. Working with Databases

- Lessons
 - Overview of SQL Server Databases
 - Working with Files and Filegroups
 - Moving Database Files
- Lab : Working with Databases
 - Adjust tempdb configuration
 - Create the RateTracking database
 - Attach the OldProspects database
 - Add multiple files to tempdb
 - Describe the role and structure of SQL Server databases
 - Work with files and filegroups
 - Move database files within servers and between servers

V. Understanding SQL Server 2008 R2 Recovery Models

- Lessons
- Backup Strategies
- Understanding SQL Server Transaction Logging
- Planning a SQL Server Backup Strategy
- Lab : Understanding SQL Server 2008 R2 Recovery Models
- Plan a backup strategy
- Configure recovery models
- Review recovery models and strategy
- Describe the critical concepts surrounding backup strategies
- Explain the transaction logging capabilities within the SQL Server database engine
- Plan a SQL Server backup strategy

VI. Backup of SQL Server 2008 R2 Databases

- Lessons
 - Backing up Databases and Transaction Logs
 - Managing Database Backups
 - Working with Backup Options
- Lab : Backup of SQL Server 2008 R2 Databases
 - Investigate backup compression
 - Transaction log backup
 - Differential backup
 - Copy only backup
 - Partial backup
 - Back up databases and transaction logs
 - Manage database backups
 - Work with more advanced backup options

VII. Restoring SQL Server 2008 R2 Databases

- Lessons
 - Understanding the Restore Process
 - Restoring Databases
 - Working with Point-in-time Recovery
 - Restoring System Databases and Individual Files
- Lab : Restoring SQL Server 2008 R2 Databases
 - Determine a restore strategy
 - Restore the database
 - Using STANDBY mode
 - Understand the restore process
 - Restore databases
 - Work with Point-in-time Recovery
 - Restore system databases and individual files

VIII. Importing and Exporting Data

- Lessons
 - Transferring Data To/From SQL Server 2008 R2
 - Importing & Exporting Table Data
 - Inserting Data in Bulk
- Lab : Importing and Exporting Data
 - Import the Excel spreadsheet
 - Import the CSV file
 - Create and test an extraction package
 - Compare loading performance
 - Transfer data to and from SQL Server
 - Import and export table data
 - Insert data in bulk and optimize the bulk insert process

IX. Authenticating and Authorizing Users

- Lessons
 - Authenticating Connections to SQL Server
 - Authorizing Logins to Access Databases
 - Authorization Across Servers
- Lab : Authenticating and Authorizing Users
 - Create Logins
 - Correct an Application Login Issue
 - Create Database Users
 - Correct Access to Restored Database
 - Describe how SQL Server authenticates connections
 - Describe how logins are authorized to access databases
 - Explain the requirements for authorization across servers

X. Assigning Server and Database Roles

- Lessons
 - Working with Server Roles
 - Working with Fixed Database Roles
 - Creating User-defined Database Roles
- Lab : Assigning Server and Database Roles
 - Assign Server Roles
 - Assign Fixed Database Roles
 - Create and Assign User-defined Database Roles
 - Check Role Assignments
 - Work with server roles
 - Work with fixed database roles
 - Create user-defined database roles

XI. Authorizing Users to Access Resources

- Lessons
 - Authorizing User Access to Objects
 - Authorizing Users to Execute Code
 - Configuring Permissions at the Schema Level
- Lab : Authorizing Users to Access Resources
 - Assign Schema-level Permissions
 - Assign Object-level Permissions
 - Test Permissions
 - Authorize user access to objects
 - Authorize users to execute code
 - Configure permissions at the schema level

XII. Auditing SQL Server Environments

- Lessons
 - Options for Auditing Data Access in SQL Server
 - Implementing SQL Server Audit
 - Managing SQL Server Audit
- Lab : Auditing SQL Server Environments
 - Determine audit configuration and create auditCreate server audit pecificationsCreate database audit specificationsTest audit functionality
 - Describe the options for auditing data access in SQL Server
 - Implement SQL Server Audit
 - Manage SQL Server Audit

XIII. Automating SQL Server 2008 R2 Management

- Lessons
 - Automating SQL Server Management
 - Working with SQL Server Agent
 - Managing SQL Server Agent Jobs
- Lab : Automating SQL Server 2008 R2 Management
 - Create a Data Extraction Job
 - Schedule the Data Extraction Job
 - Troubleshoot a Failing Job
 - Automate SQL Server Management
 - Work with SQL Server Agent
 - Manage SQL Server Agent jobs

XIV. Configuring Security for SQL Server Agent

- Lessons
 - Understanding SQL Server Agent Security
 - Configuring Credentials
 - Configuring Proxy Accounts
- Lab : Configuring Security for SQL Server Agent
 - Troubleshoot job execution failure
 - Resolve the security issue
 - Perform further troubleshooting
 - Explain SQL Server Agent security
 - Configure credentials
 - Configure Proxy accounts

XV. Monitoring SQL Server 2008 R2 with Alerts and Notifications

- Lessons
 - Configuration of Database Mail
 - Monitoring SQL Server Errors
 - Configuring Operators, Alerts and Notifications
- Lab : Monitoring SQL Agent Jobs with Alerts and Notifications
 - Configure Database Mail
 - Implement Notifications
 - Implement Alerts
 - Configure database mail
 - Monitor SQL Server errors
 - Configure operators, alerts and notifications

XVI. Performing Ongoing Database Maintenance

- Lessons
 - Ensuring Database Integrity
 - Maintaining Indexes
 - Automating Routine Database Maintenance
- Lab : Ongoing Database Maintenance
 - Check database integrity using DBCC CHECKDB
 - Correct index fragmentation
 - Create a database maintenance plan
 - Investigate table lock performance
 - Ensure database integrity
 - Maintain indexes
 - Automate routine database maintenance

XVII. Tracing Access to SQL Server 2008 R2

- Capturing Activity using SQL Server Profiler
- Improving Performance with the Database Engine Tuning Advisor
- Working with Tracing Options
- Lab : Tracing Access to SQL Server 2008 R2
 - Capture a trace using SQL Server Profiler
 - Analyze a trace using Database Engine Tuning Advisor
 - Configure SQL Trace
 - Capture activity using SQL Server Profiler
 - Improve performance with the Database Engine Tuning Advisor
 - Work with tracing options

XVIII. Monitoring SQL Server 2008 R2

- Lessons
- Monitoring Activity
- Capturing and Managing Performance Data
- Analyzing Collected Performance Data
- Lab : Monitoring SQL Server 2008 R2
 - Investigating DMVs
 - Configure Management Data Warehouse
 - Configure Instances for Data Collection
 - Work with Data Collector Reports
 - Monitor current activity
 - Capture and manage performance data
 - Analyze collected performance data

XIX. Managing Multiple Servers

- Lessons
 - Working with Multiple Servers
 - Virtualizing SQL Server
 - Deploying and Upgrading Data-Tier Applications
- Lab : Managing Multiple Servers
 - Configure CMS and execute multi-server queries
 - Deploy a data-tier application
 - Register and extract a data-tier application
 - Upgrade a data-tier application
 - Work with multiple servers
 - Describe options for virtualizing SQL Server
 - Deploy and upgrade Data-Tier Applications

XX. Troubleshooting Common SQL Server 2008 R2 Administrative Issues

- Lessons
 - SQL Server Troubleshooting Methodology
 - Resolving Service-related Issues
 - Resolving Concurrency Issues
 - Resolving Login and Connectivity Issues
- Lab : Troubleshooting Common Issues
 - Troubleshoot and resolve SQL Server administrative issues
 - Explain SQL Server troubleshooting methodology
 - Resolve service-related issues
 - Resolve concurrency issues
 - Resolve login and connectivity issues

