

6231 – Maintaining a Microsoft SQL Server 2008 Database

Vendor Course Code: 6231

Course Length: 5 days

Overview: This five-day 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.

Skills Gained: After completing this 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

Key Topics:

Module 1: Introduction to SQL Server 2008 R2 and its Toolset

This module introduces you to the entire SQL Server platform and its major tools. This module also covers editions, versions, basics of network listeners, and concepts of services and service accounts.

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 Adventure Works 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

Module 2: Preparing Systems for SQL Server 2008 R2

This module covers planning for an installation related to SQL Server I/O requirements, 32 bit vs 64 bit, memory configuration options and I/O subsystem pre-installation checks using SQLIOSim and SQLIO.

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

Module 3: Installing and Configuring SQL Server 2008 R2

This module details 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

Module 4: Working with Databases

This module describes the system databases, the physical structure of databases and the most common configuration options related to them.

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

Module 5: Understanding SQL Server 2008 R2 Recovery Models

This module describes the concept of the transaction log and SQL Server recovery models. It introduces the different backup strategies available with SQL Server 2008 R2.

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

Module 6: Backup of SQL Server 2008 R2 Databases

This module describes SQL Server 2008 R2 Backup and the backup types.

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

Module 7: Restoring SQL Server 2008 R2 Databases

This module describes the restoration of 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

Module 8: Importing and Exporting Data

This module covers the use of the import/export wizards and explains how they relate to SSIS. Also introduces BCP.

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 optimise the bulk insert process

Module 9: Authenticating and Authorising Users

This module covers SQL Server 2008 R2 security models, logins and users.

Lessons

Authenticating Connections to SQL Server
Authorising Logins to Access Databases
Authorisation Across Servers

Lab : Authenticating and Authorising 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 authorised to access databases
Explain the requirements for authorisation across servers

Module 10: Assigning Server and Database Roles

This module covers fixed server roles, fixed database roles and user-defined 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

Module 11: Authorising Users to Access Resources

This module covers permissions and the assignment of permissions.

Lessons
Authorising User Access to Objects
Authorising Users to Execute Code
Configuring Permissions at the Schema Level

Lab : Authorising Users to Access Resources
Assign Schema-level Permissions
Assign Object-level Permissions
Test Permissions
Authorise user access to objects
Authorise users to execute code
Configure permissions at the schema level

Module 12: Auditing SQL Server Environments

This module covers SQL Server Audit.

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 audit. Create server audit specifications. Create database audit specifications. Test audit functionality
Describe the options for auditing data access in SQL Server
Implement SQL Server Audit
Manage SQL Server Audit

Module 13: Automating SQL Server 2008 R2 Management

This module covers SQL Server Agent, jobs and job history.

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

Module 14: Configuring Security for SQL Server Agent

This module covers SQL Server agent security, proxy accounts and credentials.

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

Module 15: Monitoring SQL Server 2008 R2 with Alerts and Notifications

This module covers the configuration of database mail, 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

Module 16: Performing Ongoing Database Maintenance

This module covers database maintenance plans.

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

Module 17: Tracing Access to SQL Server 2008 R2

This module covers SQL Profiler and SQL Trace stored procedures.

Lessons

- 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
- Analyse 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

Module 18: Monitoring SQL Server 2008 R2

This module introduces DMVs and the configuration of data collection.

Lessons

- Monitoring Activity
- Capturing and Managing Performance Data
- Analysing 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
- Analyse collected performance data

Module 19: Managing Multiple Servers

This module covers Central Management Servers and Multi-Server queries, Virtualisation of SQL Server and Data-Tier Applications.

Lessons

- Working with Multiple Servers
- Virtualising 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 virtualising SQL Server
- Deploy and upgrade Data-Tier Applications

Module 20: Troubleshooting Common SQL Server 2008 R2 Administrative Issues

This module covers common issues that require troubleshooting and gives guidance on where to start looking for solutions.

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

Target Audience:

The primary audience for this course is individuals who administer and maintain SQL Server databases. This course can also be helpful for 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.
- Completed Course 2778: Writing Queries Using Microsoft SQL Server 2008 Transact-SQL