

Administering Microsoft SQL Server Databases

Filière : **DevOps & Infrastructure** Sous-filière : **Unix / Linux / Windows**

RÉFÉRENCE

SQL S2014A

DURÉE

4 JOURS (28H)

PRIX UNITAIRE HT

2 390 €

Description

Cette formation vous permettra de tout savoir sur l'administration de SQL Server 2016, avec la possibilité d'ajouter « sur demande » les nouveautés de SQL Server 2016 (en fonction de la version choisie).

Objectifs pédagogiques

- Plan and install SQL Server.
- Describes the system databases, the physical structure of databases and the most common configuration options related to them.
- Explain the concept of the transaction log and SQL Server recovery models and implement different backup strategies available with SQL Server.
- Create SQL Server Backups.
- Restore SQL Server databases.
- Use the import/export wizards and explain how they relate to SSIS.
- Work with SQL Server security models, logins and users.
- Work with fixed server roles, user-defined server roles, fixed database roles and user-defined database roles.
- Work with permissions and the assignment of permissions.
- Work with SQL Server Audit.
- Work with SQL Server Agent, jobs and job history.
- Implement SQL Server agent security, proxy accounts and credentials.
- Configure database mail, alerts and notifications.
- Create database maintenance plans.
- Work with SQL Profiler and SQL Trace stored procedures.
- Introduce DMVs and the configuration of data collection.
- Work with Central Management Servers and Multi-Server queries, Virtualization of SQL Server and Data-Tier Applications.
- Troubleshoot SQL Server databases.

OXiane Institut

Public cible

- Database Administrators

Pré-requis

(10774A: Writing T-SQL Queries for Microsoft SQL Server 2012)

Programme de la formation

Module 1: Introduction to SQL Server 2016 and its Toolset

- Description
 - This module introduces the entire SQL Server platform and its major tools
 - It covers editions, versions, basics of network listeners, and concepts of services and service accounts
- Lessons
 - Introduction to the SQL Server Platform
 - Working with SQL Server Tools
 - Configuring SQL Server Services
- Lab : Introduction to SQL Server and its Toolset
 - Verifying SQL Server Component Installation
 - Altering Service Accounts for New Instance
 - Enabling Named Pipes Protocol for Both Instances
 - Creating an Alias for AdvDev
 - Ensuring SQL Browser is Disabled and Configure a Fixed TCP/IP Port (Only if time permits)
- After completing this module, students will be able to:
 - Describe the SQL Server Platform
 - Work with SQL Server Tools
 - Configure SQL Server Services

Module 2: Preparing Systems for SQL Server 2012

- Description
 - 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

OXiane Institut



- Overview of SQL Server Architecture
- Planning Server Resource Requirements
- Pre-installation Testing for SQL Server
- Lab : Preparing Systems for SQL Server
 - Adjust memory configuration
 - Pre-installation Stress Testing
 - Check Specific I/O Operations
- After completing this module, students will be able to:
 - 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 2012

- Description
 - This module details installing and configuring SQL Server
- Lessons
 - Preparing to Install SQL Server
 - Installing SQL Server
 - Upgrading and Automating Installation
- Lab : Installing and Configuring SQL Server
 - Review installation requirements
 - Install the SQL Server instance
 - Perform Post-installation Setup and Checks
 - Configure Server Memory
- After completing this module, students will be able to:
 - Prepare to install SQL Server
 - Install SQL Server
 - Upgrade and automate the installation of SQL Server

Module 4: Working with Databases

- Description
 - This module describes how data is stored in databases, how to create databases, and how to move databases either within a server or between servers



- 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
- After completing this module, students will be able to:
 - 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 2016 Recovery Models

- Description
 - This module describes the concept of the transaction log and SQL Server recovery models
 - It introduces the different backup strategies available with SQL Server
- Lessons
 - Backup Strategies
 - Understanding SQL Server Transaction Logging
 - Planning a SQL Server Backup Strategy
- Lab : Understanding SQL Server Recovery Models
 - Plan a backup strategy
 - Configure Recovery Models
 - Review recovery models and strategy
- After completing this module, students will be able to:
 - 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 2016 Databases

- Description



- This module describes SQL Server Backup and the backup types

- Lessons

- Backing up Databases and Transaction Logs
- Managing Database Backups
- Working with Backup Options

- Lab : Backup of SQL Server Databases

- Investigate backup compression
- Transaction log backup
- Differential backup
- Copy-only backup
- Partial backup

- After completing this module, students will be able to:

- Back up databases and transaction logs
- Manage database backups
- Work with more advanced backup options

Module 7: Restoring SQL Server 2016 Databases

- Description

- 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 2012 Databases

- Determine a restore strategy
- Restore the database
- Using STANDBY mode

- After completing this module, students will be able to:

- Understand the restore process
- Restore databases
- Work with Point-in-time Recovery
- Restore system databases and individual files

Module 8: Importing and Exporting Data

- Description
 - 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
 - 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
- After completing this module, students will be able to:
 - Transfer data to and from SQL Server
 - Import and export table data
 - Insert data in bulk and optimize the bulk insert process

Module 9: Authenticating and Authorizing Users

- Description
 - This module covers SQL Server security models, logins and 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
- After completing this module, students will be able to:
 - Describe how SQL Server authenticates connections
 - Describe how logins are authorized to access databases



- Explain the requirements for authorization across servers

Module 10: Assigning Server and Database Roles

- Description
 - This module covers fixed server roles, user-defined 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
- After completing this module, students will be able to:
 - Work with server roles
 - Work with fixed database roles
 - Create user-defined database roles

Module 11: Authorizing Users to Access Resources

- Description
 - This module covers permissions and the assignment of permissions
- 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
- After completing this module, students will be able to:
 - Authorize user access to objects

- Authorize users to execute code
- Configure permissions at the schema level

Module 12: Auditing SQL Server Environments

- Description
 - This module covers SQL Server Audit
- Lessons
 - Options for Auditing Data Access in SQL
 - 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
- After completing this module, students will be able to:
 - Describe the options for auditing data access in SQL Server
 - Implement SQL Server Audit
 - Manage SQL Server Audit

Module 13: Automating SQL Server 2016 Management

- Description
 - 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 Management
 - Create a Data Extraction Job
 - Schedule the Data Extraction Job
 - Troubleshoot a Failing Job
- After completing this module, students will be able to:
 - Automate SQL Server Management



- Work with SQL Server Agent
- Manage SQL Server Agent jobs

Module 14: Configuring Security for SQL Server Agent

- Description
 - 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
- After completing this module, students will be able to:
 - Explain SQL Server Agent security
 - Configure credentials
 - Configure Proxy accounts

Module 15: Monitoring SQL Server 2016 with Alerts and Notifications

- Description
 - 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
- After completing this module, students will be able to:
 - Configure database mail
 - Monitor SQL Server errors

- Configure operators, alerts and notifications

Module 16: Performing Ongoing Database Maintenance

- Description
 - This module covers database maintenance plans
- Lessons
 - Ensuring Database Integrity
 - Maintaining Indexes
 - Automating Routine Database Maintenance
- Lab : Performing Ongoing Database Maintenance
 - Check database integrity using DBCC CHECKDB
 - Correct index fragmentation
 - Create a database maintenance plan
 - Investigate table lock performance
- After completing this module, students will be able to:
 - Ensure database integrity
 - Maintain indexes
 - Automate routine database maintenance

Module 17: Tracing Access to SQL Server 2016

- Description
 - 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 2016
 - Capture a trace using SQL Server Profiler
 - Analyze a trace using Database Engine Tuning Advisor
 - Configure SQL Trace
- After completing this module, students will be able to:
 - Capture activity using SQL Server Profiler and Extended Events Profiler
 - Improve performance with the Database Engine Tuning Advisor



- Work with tracing options

Module 18: Monitoring SQL Server 2016

- Description
 - This module introduces DMVs and the configuration of data collection
- Lessons
 - Monitoring Activity
 - Capturing and Managing Performance Data
 - Analyzing Collected Performance Data
- Lab : Monitoring SQL Server 2016
 - Investigating DMVs
 - Configure Management Data Warehouse
 - Configure Instances for Data Collection
 - Work with Data Collector Reports
- After completing this module, students will be able to:
 - Monitor current activity
 - Capture and manage performance data
 - Analyze collected performance data

Module 19: Managing Multiple Servers

- Description
 - This module covers Central Management Servers and Multi-Server queries, Virtualization of SQL Server and Data-Tier Applications
- 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
- After completing this module, students will be able to:

- Work with multiple servers
- Describe options for virtualizing SQL Server
- Deploy and upgrade Data-Tier Applications

Module 20: Troubleshooting Common SQL Server 2016 Administrative Issues

- Description
 - 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
- After completing this module, students will be able to:
 - Explain SQL Server troubleshooting methodology
 - Resolve service-related issues
 - Resolve concurrency issues
 - Resolve login and connectivity issues

Qualité

Cette formation est accessible aux personnes en situation de handicap, nous contacter en cas de besoin d'informations complémentaires.



Programme mis à jour le **7 novembre 2023**