

# **Implementing Microsoft SQL Server 2012 on NetApp Storage Systems (MSSQL)**

**Modality: Multi-Location Classroom**

**Duration: 3 Days**

**SATV Value:**

**CLC:**

**NATU: 36 Units**

**SUBSCRIPTION: No**

## **About this course:**

Learn to implement Microsoft® SQL Server 2012 on clustered Data ONTAP storage. This solution-based course focuses on Windows Server Failover Clustering, Microsoft SQL Server AlwaysOn Availability Groups, SnapDrive for Windows, and SnapManager for SQL Server. In this course, you will learn how to size and prepare clustered Data ONTAP storage virtual machines (also known as Vservers), install and configure SnapDrive for Windows, install and initialize SnapManager for SQL Server, move SQL databases to NetApp storage, backup and restore SQL databases, create Availability Groups, and troubleshoot common misconfigurations. By the end of this course, you will be able to confidently implement SQL Server 2012 on clustered Data ONTAP storage.

The average salary for a NetApp storage administrator is **\$122,000** per year.

## **Course Objectives:**

By the end of this course, you should be able to:

- Describe the features of Windows Server 2012, Microsoft SQL Server 2012, and the clustered Data ONTAP operating system
- Create and manage clustered Data ONTAP storage virtual machines (SVMs), create and manage logical interfaces (LIFs), data LIFs, and FlexVol volumes
- Enable, configure, and manage a Windows Server 2012 failover cluster
- Install and configure SnapDrive for Windows 2012, establish iSCSI sessions, and create LUNs
- Install and configure SnapManager for SQL Server, migrate, back up, restore, and clone SQL Server databases
- Implement the SQL Server AlwaysOn Availability Groups feature on clustered Data ONTAP

## **Audience:**

- This training is for those who design and deploy NetApp storage systems in a Microsoft SQL Server environment.

## **Prerequisites:**

- Familiar with NetApp storage systems
- Knowledge of SQL Server backup and restore concepts

## **Course Outline:**

### **Module 1: Features of Microsoft SQL Server 2012 on Clustered Data ONTAP**

- Describe features of Windows Server 2012
- Describe features of SQL Server 2012
- Describe the features and purposes of implementing SQL Server 2012 on clustered Data ONTAP storage
- Describe the "things-to-do" list and management tools to use for implementing SQL Server on the clustered
- Data ONTAP operating system

### **Module 2: Sizing and Preparing Clustered Data ONTAP Storage**

- Size storage requirements based on the fundamentals of SQL Server database infrastructure
- List the sizing and layout guidelines for SQL Server databases, transaction logs, and SnapInfo directories
- Create NetApp storage virtual machines (SVMs) for primary and secondary storage
- Create volumes for the SQL Server databases, transaction logs, and SnapInfo directories

### **Module 3: Implementing Windows Server Failover Clustering**

- Create a failover cluster
- Manage failover cluster resources

### **Module 4: Implementing SnapDrive for Windows and SnapManager for SQL Server**

- Describe NetApp SnapDrive software as a component of the SnapManager for SQL Server (SMSQL) solution
- Install SnapDrive for Windows
- Install SnapManager for SQL Server
- Configure Transport Protocol Settings
- Configure iSCSI sessions
- Use SnapDrive on a Windows host to create and connect to LUNs on the storage system

### **Module 5: Implementing Availability Groups with SnapManager for SQL Server**

- Enable the AlwaysOn Availability Groups feature
- Use SnapManager for SQL Server (SMSQL) to move databases
- Use SMSQL to back up databases
- Use the New Availability Groups Wizard to create availability groups and join secondary replica SQL Server
- instances

### **Module 6: Cloning SQL Server Databases with SnapManager for SQL Server**

- Describe database cloning
- Clone backup sets
- Clone a production database
- Clone a database on a SnapMirror destination volume
- Delete a cloned database

## Lab Exercises

Lab 1-1 Explore Windows Server 2012 and OnCommand System Manager

Lab 1-2 Exploring Windows Server Failover Clustering services

Lab 1-3 Explore SQL Server 2012, AdventureWorks, and the AlwaysOn Availability Groups feature

Lab 1-4 Explore PowerShell and PowerShell scripts

Lab 2-1 Determine the space requirements of the SQL1 System and user databases

Lab 2-2 Calculate space requirements and volume layout

Lab 2-3 Create a data Vserver for cluster1

Lab 2-4 Repeat task 3 to create a data Vserver for cluster2

Lab 2-5 Create FlexVol volumes for primary and secondary database storage

Lab 2-6 Create FlexVol volumes for secondary storage

Lab 2-7 Create a CIFS share

Lab 3-1 Use Server Manager to install Windows Server Failover Clustering

Lab 3-2 Use a PowerShell script to install Windows Server Failover Clustering

Lab 3-3 Use Failover Cluster Manager to create a Failover Cluster

Lab 3-4 Use Failover Cluster Manager to add nodes to a Failover Cluster

Lab 4-1 Create a SnapDrive service account

Lab 4-2 (optional) Verify that Windows Server 2012 System prerequisites were met

Lab 4-3 Install SnapDrive for Windows on the SQL Server host

Lab 4-4 Install SMSQL

Lab 4-5 Set up connectivity between SnapDrive and storage virtual machines

Lab 4-6 Establish iSCSI sessions with iSCSI Software Initiator

Lab 4-7 Establish iSCSI sessions with the SnapDrive iSCSI management tool

Lab 4-8 Use SnapDrive for Windows to create disks on SQL1

Lab 4-9 Use SnapDrive for Windows to create disks on SQL2

Lab 4-10 Use SnapDrive for Windows to create disks on SQL3

Lab 5-1 Enable the AlwaysOne Availability Groups feature

Lab 5-2 Move SQL Server database files to NetApp storage

Lab 5-3 Back up the AdventureWorks database with SMSQL (including troubleshooting)

Lab 5-4 Restore the database (including troubleshooting)

Lab 5-5 Create an AlwaysOn availability group

Lab 6-1 Clone a database from a backup set

Lab 6-2 Clone active production databases