

# **Installation, Storage, and Compute with Microsoft Windows Server 2016 (MS-20740)**

**Modality: Virtual Classroom**

**Duration: 5 Days**

**SATV Value: 5**

***The exam associated with this course will retire on 31st January 2021. However, the course is still valid as training material for learning purposes.***

## **About the course**

This IT Ops training course is perfect for you if you wish to have the expertise to operate Windows Server Technology, or power the contemporary applications, web services, and optimized networks. Windows Service, in the simplest of the terms equip the course takers with the right knowledge to administer and install the operating system Windows Server 2016.

By opting for this Microsoft Server 2016 training, hands-on labs, assessments, and discussions, students will be able to develop the best migration and installation strategies. In addition to that, they will also be able to set up the physical and logical components for a Windows Server environment.

This particular course is made for IT Professionals who previously have some experience using Windows Server. It trains these professionals to be able to better manage compute and storage using Windows Server 2016. It is also perfect for the individuals who wish to learn the requirements, scenarios, compute options and storage that applies to the Windows Server 2016.

The training will also get you ready for the certification exam Microsoft 70-740: Installation, Storage, and Compute with Windows Server 2016.

The average salary for a Microsoft Windows Server Administrator is **\$82,000** per year.

## **Course Objectives**

Students will be able to do the following after completing this course:

- Describe dynamic and basic disks, partitions table formats, virtual hard disks, file systems, drive hardware and various other storage options. Students will also be able to manage volumes and disks.
- Plan, form, and oversee the failover cluster.
- Deploy, manage, and configure Windows as well as Hyper-V containers.
- Configure NLB (Network Load Balancing) cluster, and plan for the implementation of an NLB.

- Manage and implement Data Deduplication and Storage Spaces.
- Manage, oversee, and ensure proper maintenance of virtual machine installations.
- Configure and install Microsoft Hyper-V.
- Install and prepare Nano Server, plan migration strategies and server upgrades, and conduct Server Core Installation.
- Describe technologies for disaster recovery and high availability within Windows Server 2016.
- For Hyper-V machines, execute failover clustering.
- Create and supervise deployment images.
- Determine different solutions for enterprise storage and select the best one for a particular situation.

## Audience

This IT Ops training course is designed for IT professionals who work with or have some experience with Windows Server. This course is also perfect for anyone looking to learn about Windows Server 2016 compute and storage technologies within a single 5-day course. It will help these professionals hone their skills and knowledge regarding compute and storage for Windows Server 2016.

Candidates that this course is best suited for will be:

- Administrators of Windows Server who are newbies at it and technologies related to it. The 5-day course is also best for those who ought to learn further about the compute and storage features while working with Windows Server 2016.
- Professionals who have a background in IT and who wish to acquire further in-depth knowledge of Windows Server, particularly about compute and storage technologies regarding Windows Server 2016.

## Prerequisites

Prior to attending this course, applicants must have:

- Experience configuring and supporting Windows client operating systems like the Windows 10 or 8.
- Awareness of AD DS basic concepts.
- Understanding of the fundamentals of networking.

- Awareness of the best security practices.
- Generic understanding of server hardware.
- Having grasp on Windows Server Operating System like being an administrator for the Windows Server systems will be a plus.

## **Suggested prerequisites courses**

- Fundamentals of a Windows Server Infrastructure - MOC On Demand (MS-10967)
- Active Directory Services with Windows Server (MS-10969)

## **Course Outline:**

### **Module 1: Installing, upgrading, and migrating servers and workloads**

This module describes the new features of Windows Server 2016, and explains how to prepare for and install Nano Server and Server Core. This module also describes how to plan a server upgrade and migration strategy, and explains how to perform a migration of server roles and workloads within and across domains. Finally, this module explains how to choose an activation model based on your environment characteristics.

### **Lessons**

- Introducing Windows Server 2016
- Preparing and installing Nano Server and Server Core
- Preparing for upgrades and migrations
- Migrating server roles and workloads
- Windows Server activation models

### **Lab : Installing and configuring Nano Server**

- Installing Nano Server
- Completing post-installation tasks on Nano Server
- Performing remote management

After completing this module, students will be able to:

- Describe the new features of Windows Server 2016.
- Prepare for and install Nano Server and Server Core.
- Plan a server upgrade and migration strategy.
- Perform a migration of server roles and workloads within a domain and across domains.
- Choose an activation model.

## Module 2: Configuring local storage

This module explains how to manage disks and volumes in Windows Server 2016.

### Lessons

- Managing disks in Windows Server
- Managing volumes in Windows Server

### Lab : Configuring local storage

- Creating and managing volumes
- Resizing volumes
- Managing virtual hard disks

After completing this module, students will be able to:

- Manage disks in Windows Server.
- Manage volumes in Windows Server.

## Module 3: Implementing enterprise storage solutions

This module discusses direct-attached storage (DAS), network-attached storage (NAS), and storage area networks (SANs). It also explains the purpose of Microsoft Internet Storage Name Service (iSNS) Server, data center bridging (DCB), and Multipath I/O (MPIO). Additionally, this module compares Fibre Channel, Internet Small Computer System Interface (iSCSI), and Fibre Channel over Ethernet (FCoE), and describes how to configure sharing in Windows Server 2016.

### Lessons

- Overview of DAS, NAS, and SANs
- Comparing Fibre Channel, iSCSI, and Fibre Channel over Ethernet
- Understanding iSNS, DCB, and MPIO
- Configuring sharing in Windows Server 2016

### Lab : Planning and configuring storage technologies and components

- Planning storage requirements
- Configuring iSCSI storage
- Configuring and managing the share infrastructure

After completing this module, students will be able to:

- Describe DAS, NAS, and SANs.
- Compare Fibre Channel iSCSI, and FCoE.
- Explain the use of iSNS, DCB, and MPIO.
- Configure sharing in Windows Server.

## Module 4: Implementing Storage Spaces and Data Deduplication

This module explains how to implement and manage Storage Spaces. This module also explains how to implement Data Deduplication.

### Lessons

- Implementing Storage Spaces
- Managing Storage Spaces
- Implementing Data Deduplication

### Lab : Implementing Storage Spaces

- Creating a Storage Space

### Lab : Implementing Data Deduplication

- Installing Data Deduplication
- Configuring Data Deduplication

After completing this module, students will be able to:

- Describe and implement the Storage Spaces feature in the context of enterprise storage needs.
- Manage and maintain Storage Spaces.
- Describe and implement Data Deduplication.

## Module 5: Installing and configuring Hyper-V and virtual machines

This module provides an overview of Hyper-V and virtualization. It explains how to install Hyper-V, and how to configure storage and networking on Hyper-V host servers. Additionally, it explains how to configure and manage Hyper-V virtual machines.

### Lessons

- Overview of Hyper-V
- Installing Hyper-V
- Configuring storage on Hyper-V host servers
- Configuring networking on Hyper-V host servers
- Configuring Hyper-V virtual machines
- Managing virtual machines

### Lab : Installing and configuring Hyper-V

- Verify installation of the Hyper-V server role
- Configuring Hyper-V networks
- Creating and configuring a virtual machines
- Enable nested virtualization for a virtual machine

After completing this module, students will be able to:

- Describe Hyper-V and virtualization.
- Install Hyper-V.
- Configure storage on Hyper-V host servers.
- Configure networking on Hyper-V host servers.
- Configure Hyper-V virtual machines.
- Manage Hyper-V virtual machines.

## **Module 6: Deploying and managing Windows and Hyper-V containers**

This module provides an overview of containers in Windows Server 2016. Additionally, this module explains how to deploy Windows Server and Hyper-V containers. It also explains how to install, configure, and manage containers by using Docker.

### **Lessons**

- Overview of containers in Windows Server 2016
- Deploying Windows Server and Hyper-V containers
- Installing, configuring, and managing containers by using Docker

### **Lab : Installing and configuring containers**

- Installing and configuring Windows Server containers by using Windows PowerShell
- Installing and configuring Windows Server containers by using Docker

After completing this module, students will be able to:

- Describe containers in Windows Server 2016.
- Explain how to deploy containers.
- Explain how to install, configure, and manage containers using Docker.

## **Module 7: Overview of high availability and disaster recovery**

This module provides an overview of high availability and high availability with failover clustering in Windows Server 2016. It further explains how to plan high availability and disaster recovery solutions with Hyper-V virtual machines. Additionally, this module explains how to back up and restore the Windows Server 2016 operating system and data by using Windows Server Backup.

### **Lessons**

- Defining levels of availability
- Planning high availability and disaster recovery solutions with Hyper-V virtual machines
- Backing up and restoring by using Windows Server Backup
- High availability with failover clustering in Windows Server 2016

### **Lab : Planning and implementing a high availability and disaster recovery solution**

- Determining the appropriate high availability and disaster recovery solution
- Implementing storage migration
- Configuring Hyper-V replicas

After completing this module, students will be able to:

- Describe levels of availability.
- Plan for high availability and disaster recovery solutions with Hyper-V virtual machines.
- Back up and restore data by using Windows Server Backup.
- Describe high availability with failover clustering in Window Server 2016.

## **Module 8: Implementing failover clustering**

This module explains how to plan for failover clustering. It also explains how to create, manage, and troubleshoot a failover cluster.

### **Lessons**

- Planning a failover cluster
- Creating and configuring a new failover cluster
- Maintaining a failover cluster
- Troubleshooting a failover cluster
- Implementing site high availability with stretch clustering

### **Lab : Implementing a failover clustering**

- Creating a failover cluster
- Verifying quorum settings and adding a node

### **Lab : Managing a failover cluster**

- Evicting a node and verifying quorum settings
- Changing the quorum from Disk Witness to File Share Witness, and defining node voting
- Verifying high availability

After completing this module, students will be able to:

- Plan for a failover-clustering implementation.
- Create and configure a failover cluster.
- Maintain a failover cluster.
- Troubleshoot a failover cluster.
- Implement high availability and stretch clustering for a site.

## **Module 9: Implementing failover clustering with Windows Server 2016 Hyper-V**

This module describes how Hyper-V integrates with failover clustering. It also explains how to implement Hyper-V virtual machines (VMs) in failover clusters.

## Lessons

- Overview of the integration of Hyper-V Server 2016 with failover clustering
- Implementing Hyper-V VMs on failover clusters
- Key features for VMs in a clustered environment

### Lab : Implementing failover clustering with Windows Server 2016 Hyper-V

- Configure iSCSI storage
- Configuring a failover cluster for Hyper-V
- Configuring a highly available VM

After completing this module, students will be able to:

- Describe how Hyper-V integrates with failover clustering.
- Implement Hyper-V VMs on failover clusters.
- Describe the key features for VMs in a clustered environment.

## Module 10: Implementing Network Load Balancing

This module provides an overview of NLB clusters. It also explains how to plan and configure an NLB cluster implementation.

### Lessons

- Overview of NLB
- Configuring an NLB cluster
- Planning an NLB implementation

### Lab : Implementing NLB

- Implementing a Network Load Balancing (NLB) cluster
- Configuring and managing the NLB cluster
- Validating high availability for the NLB cluster

After completing this module, students will be able to:

- Describe NLB.
- Configure an NLB cluster.
- Explain how to plan an NLB implementation.

## Module 11: Creating and managing deployment images

This module provides an overview of the Windows Server 2016 image deployment process. It also explains how to create and manage deployment images by using the Microsoft Deployment Toolkit (MDT). Additionally, it describes different workloads in the virtual machine environment.

### Lessons



- Introduction to deployment images
- Creating and managing deployment images by using MDT
- Virtual machine environments for different workloads

### **Lab : Using MDT to deploy Windows Server 2016**

- Configuring MDT
- Creating and deploying an image

After completing this module, students will be able to:

- Describe the Windows Server 2016 image deployment process.
- Create and manage deployment images by using MDT.
- Describe the different workloads in the virtual machine environment.

## **Module 12: Managing, monitoring, and maintaining virtual machine installations**

This module provides an overview on Windows Server Update Services (WSUS) and the requirements to implement WSUS. It explains how to manage the update process with WSUS. Additionally, this module provides an overview of Windows PowerShell Desired State Configuration (DSC) and Windows Server 2016 monitoring tools. Finally, this module describes how to use Performance Monitor, and how to manage event logs.

### **Lessons**

- WSUS overview and deployment options
- Update management process with WSUS
- Overview of Windows PowerShell DSC
- Overview of Windows Server 2016 monitoring tools
- Using Performance Monitor
- Monitoring event logs

### **Lab : Implementing WSUS and deploying updates**

- Implementing WSUS
- Configuring update settings
- Approving and deploying an update by using WSUS

### **Lab : Monitoring and troubleshooting Windows Server 2016**

- Establishing a performance baseline
- Identifying the source of a performance problem
- Viewing and configuring centralized event logs

After completing this module, students will be able to:

- Describe the purpose of WSUS and the requirements to implement WSUS.
- Manage the update process with WSUS.

- Describe the purpose and benefits of Windows PowerShell DSC.
- Describe the monitoring tools available in Windows Server 2016.
- Use Performance Monitor.
- Manage event logs.