Installation, Storage, and Compute with Windows Server 2016

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 Server Core

- Preparing for upgrades and migrations

- Migrating server roles and workloads

- Windows Server activation models

Lab : Installing and configuring Server Core

- Installing Server Core

- Completing post-installation tasks on Windows Server 2016 Core

- Performing remote management

After completing this module, students will be able to:

- Describe the new features of Windows Server 2016.

- Prepare for and install 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 appropriate 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 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:

- Define levels of availability.

- Plan 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 Windows 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 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