Course 10971B:

Storage and High Availability with Windows Server

Course Outline

Module 1: Fundamental Storage Technologies and Components

This module introduces various storage hardware and communications technologies. It discusses changes in storage options and new technologies, including virtualization. Also covered in this module are enterprise storage hardware solutions such as storage area network (SAN) and network-attached storage (NAS), direct-attached storage (DAS), redundant array of independent disks (RAID), bus technologies, storage controllers, communications protocols, and data security.

Lessons

Disk and File Systems Changes in Windows Server 2012

Server Storage Topology

Bus Technologies and Protocols

Configuring Sharing in Windows Server

Securing Volumes and Drives

Lab : Planning and Configuring Storage Technologies and Components

After completing this module, students will be able to:

Describe changes in storage technologies.

Understand the advantages and disadvantages of using direct-attached storage (DAS), network-attached storage (NAS), storage area networks (SANs), and redundant array of independent disks (RAID).

Understand and configure bus technologies and protocols.

Describe Server Message Block (SMB) and network file system (NFS) storage protocols.

Explain how to implement data security by using Encrypting File System (EFS), a Trusted Platform Module (TPM), and BitLocker Drive Encryption.

Module 2: Implementing Storage Spaces and Data Deduplication

This module discusses how to manage, maintain, and recover Storage Spaces, how to configure storage pools and virtual hard disks, and how to implement Data Deduplication, a feature used to find and remove duplicate data while maintaining the integrity of the data.

Lessons

Implementing Storage Spaces

Maintaining Storage Spaces

Implementing Data Deduplication

Lab : Implementing Storage Spaces

Lab : Implementing 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 3: High Availability in Windows Server

In this module, students will learn about high availability and disaster recovery with Hyper-V virtual machines, and how to implement high availability in virtual environments by using failover clustering in Windows Server 2012.

Lessons

Understanding High Availability

High Availability and Disaster Recovery Solutions with Hyper-V Virtual Machines

High Availability with Clustering in Windows Server 2012

Lab : Planning and Configuring High Availability and Disaster Recovery Solutions

After completing this module, students will be able to:

Understand and describe high availability.

Describe high availability and disaster recovery solutions with Hyper-V in Windows Server 2012.

Describe high availability with clustering in Windows Server 2012.

Module 4: Implementing Failover Clustering

In this module, students will learn how to plan failover clustering implementation and how to create and configure new failover clusters.

Lessons

Planning a Failover Cluster

Creating a New Failover Cluster

Lab : Creating and Administering a Cluster

After completing this module, students will be able to:

Plan a failover cluster.

Create, configure, and manage a failover cluster.

Module 5: Managing Server Roles and Clustering Resources

This module describes how to configure roles and services for high availability on a failover cluster. Students will learn about configuring, managing, maintaining, and troubleshooting failover clusters, in addition to implementing site high availability with multisite failover clustering.

Lessons

Configuring Highly Available Applications and Services on a Failover Cluster

Managing and Maintaining a Failover Cluster

Troubleshooting a Failover Cluster

Implementing Site High Availability with Multisite Failover Clusters

Lab : Implementing Server Roles and Clustering Resources

Lab : Managing Server Roles and Clustering Resources

After completing this module, students will be able to:

Configure high availability applications and services on failover clusters.

Manage and maintain failover clusters.

Troubleshoot failover clusters.

Implement multisite failover clusters.

Module 6: Implementing Failover Clustering with Hyper-V

In this module, students will learn how to implement failover clustering in a Hyper-V scenario to achieve high availability for a virtual environment.

Lessons

Overview of Integrating Hyper-V with Failover Clustering

Implementing Hyper-V with Failover Clustering

Virtual Machine Storage Options

Managing and Maintaining Hyper-V Virtual Machines on Failover Clusters

Lab : Implementing Failover Clustering by Using Hyper-V

After completing this module, students will be able to:

Describe how the Windows Server 2012 Hyper-V role integrates with the Windows Server 2012 Failover Clustering feature.

Implement Hyper-V virtual machines on failover clusters.

Describe various virtual machine storage options.

Manage and maintain Hyper-V virtual machines on failover clusters.

Module 7: Storage Infrastructure Management with Virtual Machine Manager

This module provides an overview of System Center 2012 R2 Virtual Machine Manager, which is one of the Microsoft virtualization technologies, and explains how students can use it to manage both virtualization and traditional storage infrastructures.

Lessons

Overview of Virtual Machine Manager

Managing Storage Infrastructure with Virtual Machine Manager

Provisioning Failover Clustering in Virtual Machine Manager

Lab : Managing Storage Infrastructure

After completing this module, students will be able to:

Navigate within Virtual Machine Manager.

Manage storage infrastructure with Virtual Machine Manager.

Provision a Scale-Out File Server cluster by using Virtual Machine Manager.

Module 8: Cloud-Based Storage and High Availability

This module discusses cloud-based storage and high availability solutions including Azure, StorSimple, and disaster recovery with Azure Site Recovery.

Lessons

Azure Storage Solutions and Infrastructure

Cloud Integrated Storage with StorSimple

Disaster Recovery with Azure Site Recovery

Lab : Managing Cloud-Based Storage and High Availability

After completing this module, students will be able to:

Describe Microsoft Azure Storage solutions and infrastructure.

Describe cloud-integrated storage with Azure StorSimple.

Describe disaster recovery with Azure Site Recovery.

Module 9: Implementing Network Load Balancing Clusters

This module introduces students to Network Load Balancing (NLB) and how this technology works. This module also covers the situations for which NLB is appropriate, how to configure and manage NLB clusters, how to perform maintenance tasks on NLB clusters, and how load balancing works in both Virtual Machine Manager and Microsoft Azure.

Lessons

Overview of NLB

Configuring an NLB Cluster

Planning an NLB Implementation

Lab : Implementing Network Load Balancing Clusters

After completing this module, students will be able to:

Describe NLB.

Configure an NLB cluster.

Plan an NLB implementation.