

# 20745B: Implementing a Software-Defined DataCenter Using System Center Virtual Machine Manager

## Course Outline

### Module 1: Introduction to server virtualization

This module explains the different virtualization solutions. It also describes the concepts of software-defined datacenter and Microsoft Azure.

#### Lessons

- Overview of Microsoft Virtualization
- Introducing the software-defined datacenter
- Extending virtualization to the cloud

#### Lab : Evaluating virtualization options

- Selecting the appropriate virtualization method
- Creating Azure virtual machines

After completing this module, students will be able to:

- Describe the various virtualization technologies and the scenarios in which you would apply them.  
Describe the working of software-defined datacenters and compare them to traditional datacenters
- List the main benefits of Microsoft Azure and the process of managing Azure.

### Module 2: Overview of Hyper-V virtualization

This module explains how to install and manage Hyper-V in Windows Server 2016.

#### Lessons

- Installing and configuring the Hyper-V role
- Creating and managing virtual hard disks and virtual machines
- Creating and using Hyper-V virtual switches
- Implementing failover clustering with Hyper-V

#### Lab : Creating and managing virtual hard disks and virtual machines

- Installing and configuring the Hyper-V server role
- Configuring virtual machines and virtual hard disks

#### Lab : Implementing failover clustering with Hyper-V

- Creating a Hyper-V failover cluster
- Managing a Hyper-V failover cluster

After completing this module, students will be able to:

- Install and configure the Hyper-V role.
- Create and manage virtual hard disks and virtual machines.
- Create and use Hyper-V virtual switches.
- Implement failover clustering with Hyper-V.

### **Module 3: Installing and configuring Virtual Machine Manager**

This module explains how to install and configure Virtual Machine Manager for managing a virtualization environment.

#### **Lessons**

- Overview of Virtual Machine Manager
- Installing Virtual Machine Manager
- Adding hosts and managing host groups

#### **Lab : Installing and configuring Virtual Machine Manager**

- Installing and configuring Virtual Machine Manager
- Managing hosts and host groups
- Managing an Azure subscription by using Virtual Machine Manager

After completing this module, students will be able to:

- Describe the key features of Virtual Machine Manager.
- Explain how to install Virtual Machine Manager.

Add virtualization hosts to Virtual Machine Manager, and manage virtualization hosts and host group

### **Module 4: Managing storage fabric and fabric updates**

This module explains how to manage storage fabric and fabric updates in Virtual Machine Manager.

#### **Lessons**

- Overview of server virtualization storage technologies
- Managing storage fabric
- Managing fabric updates

#### **Lab : Managing storage fabric and fabric updates**

- Implementing a storage infrastructure
- Creating a file server cluster and a storage QoS policy
- Managing fabric updates

After completing this module, students will be able to:

- Describe the storage technologies that Virtual Machine Manager utilizes.
- Deploy and manage storage fabric in Virtual Machine Manager.
- Manage updates of the Virtual Machine Manager.

### **Module 5: Configuring and managing the Virtual Machine Manager library and library objects**

This module describes how to configure and manage the Virtual Machine Manager library and library objects. It also describes the differences between profiles and templates and how they are used.

## **Lessons**

- Overview of the Virtual Machine Manager library
- Preparing Windows for deployment in Virtual Machine Manager
- Working with profiles
- Working with VM templates

## **Lab : Configuring and managing the Virtual Machine Manager library and library objects**

- Configuring and managing a Virtual Machine Manager library
- Creating a Windows image for the Virtual Machine Manager library
- Creating and managing profiles and templates

After completing this module, students will be able to:

- Describe the Virtual Machine Manager library and library resources.
- Prepare Windows for deployment in Virtual Machine Manager.
- Explain working with profiles.
- Describe working with VM templates.

## **Module 6: Managing the networking fabric**

This module explains how to manage networking fabric in Virtual Machine Manager.

## **Lessons**

- Networking concepts in Virtual Machine Manager
- Managing Software Defined Networking
- Understanding network function virtualization

## **Lab : Creating and configuring the networking fabric**

- Associating virtual network adapters of Hyper-V hosts with the management logical network
- Deploying Network Controller

## **Lab : Configuring and testing Hyper-V Network Virtualization**

- Configuring Hyper-V Network Virtualization
- Provisioning and testing tenant VM networks

After completing this module, students will be able to:

- Explain the primary networking concepts in Virtual Machine Manager.
- Implement Software Defined Networking by using Virtual Machine Manager .
- Describe the core network function virtualization (NFV) components available in Network Controller.

## **Module 7: Creating and managing virtual machines by using Virtual Machine Manager**

This module explains how to create and manage virtual machines by using Virtual Machine Manager.

## **Lessons**

- VM management tasks
- Creating, cloning, and converting VMs

## **Lab : Creating and managing VMs by using System Center VM Manager**

- Creating a VM and modifying its properties
- Creating and managing checkpoints

- Cloning and migrating a VM

After completing this module, students will be able to:

- Describe the various management tasks that you can perform on virtual machines.
- Create, clone, and convert VMs.

## **Module 8: Managing clouds in Microsoft System Center Virtual Machine Manager**

This module explains how to create and manage clouds by using Virtual Machine Manager.

### **Lessons**

- Introduction to clouds
- Creating and managing a cloud
- Creating user roles in Virtual Machine Manager

### **Lab : Managing clouds in Virtual Machine Manager**

- Creating a private cloud
- Creating user roles

After completing this module, students will be able to:

- Explain the concept of a cloud and how you can use Virtual Machine Manager to create a cloud.
- Create and manage cloud services.
- Create user roles in Virtual Machine Manager.

## **Module 9: Managing services in Virtual Machine Manager**

This module explains how to create and manage services in Virtual Machine Manager.

### **Lessons**

- Overview of services in Virtual Machine Manager
- Creating and managing services in Virtual Machine Manager

### **Lab : Managing services in Virtual Machine Manager**

- Creating a service template
- Deploying a service and updating service template
- Scaling out a service and updating the service

After completing this module, students will be able to:

- Describe the services in Virtual Machine Manager.
- Create and manage services in Virtual Machine Manager.

## **Module 10: Monitoring a virtualization infrastructure by using System Center Operations Manager**

This module explains how to use Operations Manager for monitoring virtualization infrastructure.

### **Lessons**

- Operations Manager architecture and security
- Using Operations Manager for monitoring and reporting
- Integrating Operations Manager with Virtual Machine Manager and Data Protection Manager

### **Lab : Monitoring a virtualization infrastructure by using Operations Manager**

- Implementing Operations Manager agents
- Integrating Operations Manager with Virtual Machine Manager

After completing this module, students will be able to:

- Describe the Operations Manager architecture and explain how to secure access to Operations Manager data.
- Use Operations Manager for monitoring and reporting.
- Integrate Operations Manager with Virtual Machine Manager and Data Protection Manager.

### **Module 11: Implementing and managing Hyper-V Replica and Azure Site Recovery**

This module explains how to implement and manage Hyper-V Replica and Azure Site Recovery.

#### **Lessons**

- Implementing and managing Hyper-V Replica
- Implementing and managing Azure Site Recovery

### **Lab : Implementing and managing Hyper-V Replica and Azure Site Recovery**

- Configuring and managing Hyper-V Replica
- Configuring and managing Azure Site Recovery

After completing this module, students will be able to:

- Implement and manage Hyper-V Replica.
- Implement and manage Azure Site Recovery.

### **Module 12: Protecting a virtualization infrastructure by using Data Protection Manager**

This module explains how to use Data Protection Manager for protecting virtualization infrastructure.

#### **Lessons**

- Overview of backup and restore options for VMs
- Configuring and managing Data Protection Manager for virtualization infrastructure protection

### **Lab : Protecting virtualization infrastructure by using Data Protection Manager**

- Configuring a DPM server and installing DPM protection agents
- Creating and configuring protection groups
- Recovering VMs and other data
- Providing online protection with DPM

After completing this module, students will be able to:

- Describe the backup and restore options for VMs.
- Configure and manage Data Protection Manager for protecting a virtualization infrastructure.