



# Implementing a Software-Defined DataCenter

Course 20745A      5 Days      Instructor-led, Hands on

## Course Information

This five-day course explains how to implement and manage virtualization infrastructure in a software-defined datacenter by using System Center 2016 Virtual Machine Manager. The course also describes how to monitor the infrastructure by using System Center Operations Manager and protect it by using Data Protection Manager.

This course is intended for IT professionals and administrators who are responsible for designing, implementing, and managing virtualization infrastructure in a software-defined datacenter by using System Center 2016 Virtual Machine Manager. The main focus of this course is on managing Hyper-V virtualization infrastructure in Windows Server 2016, although the course also covers other virtualization platforms that can be managed by using Virtual Machine Manager 2016.

## At Course Completion

Upon successful completion of this course, students will be able to:

- Explain the different virtualization options.
- Install and manage Hyper-V on Windows Server 2016.
- Install and configure System Center 2016 Virtual Machine Manager.
- Manage storage fabric and fabric updates.
- Configure and manage the Virtual Machine Manager library and library objects.
- Manage the networking fabric.
- Create and manage virtual machines by using Virtual Machine Manager.
- Manage clouds in Virtual Machine Manager.
- Manage services in Virtual Machine Manager.
- Monitor a virtualization infrastructure by using System Center Operations Manager.
- Implement and manage Hyper-V Replica and Azure Site Recovery.
- Protect virtualization infrastructure by using Data Protection Manager.

## Prerequisites

This course requires that you meet the following prerequisites:

- An understanding of TCP/IP and networking concepts
- An understanding of different storage technologies and concepts
- Familiarity with different types of virtualizations

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- Familiarity with Windows Server and Windows Server administration
- An understanding of Windows PowerShell
- Students should have the ability to work in a team/virtual team and possess good documentation and communication skills.

Students who attend this training can meet the prerequisites by attending the following courses, or obtaining equivalent knowledge and skills:

- 20740 - Storage & Compute with Windows Server 2016
- 20741 - Networking with Windows Server 2016

## 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
- Introduction to 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 virtualization options available in Microsoft.
- Describe the concept of a software-defined datacenter.
- Describe how to extend a datacenter to the cloud.

### 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
- Creating a Nano Server virtual machine

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- 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.

### **Module 3: Installing and configuring System Center 2016 Virtual Machine Manager**

This module explains how to install and configure System Center 2016 VMM for managing a virtualization environment.

Lessons

- Overview of System Center 2016 VMM
- Installing System Center 2016 VMM
- Adding hosts and managing host groups

Lab: Installing and configuring System Center 2016

- Installing and configuring System Center 2016
- Managing hosts and host groups
- Managing an Azure subscription by using VMM

After completing this module, students will be able to:

- Describe the main features in System Center 2016 VMM.
- Install System Center 2016 VMM.
- Add virtualization hosts to VMM and manage host groups.

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

This module explains how to manage storage fabric and fabric updates in VMM.

Lessons

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

Lab: Managing storage fabric and fabric updates

- Implementing a storage infrastructure

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- 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 VMM utilizes.
- Deploy and manage a storage fabric in VMM 2016.
- Manage updates of the VMM 2016 fabric.

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

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

Lessons

- Overview of the VMM library
- Preparing Windows for deployment in VMM
- Working with profiles
- Working with virtual machine templates

Lab: Configuring and managing VMM library and library objects

- Configuring and managing a VMM library
- Creating a Windows image for the VMM library
- Creating and managing profiles and templates

After completing this module, students will be able to:

- Describe the VMM library.
- Prepare Windows for deployment in VMM.
- Explain working with profiles.
- Describe working with VM templates.

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

This module explains how to manage networking fabric in VMM.

Lessons

- Networking concepts in VMM
- Managing Software-Defined Networking
- Understanding network function virtualization

Lab: Creating and configuring the networking fabric

- Associating virtual network adapters of Hyper-V hosts
- Deploying Network Controller

Lab: Configuring and testing Hyper-V Network Virtualization

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- Configuring Hyper-V Network Virtualization
- Provisioning and testing tenant virtual machine networks

After completing this module, students will be able to:

- Explain the primary networking concepts in System Center 2016 VMM.
- Implement the Software Defined Networking by using System Center 2016 VMM.
- Describe the core 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 VMM.

Lessons

- Virtual machine management tasks
- Creating, cloning, and converting virtual machines

Lab: Creating and managing virtual machines by using System Center 2016 VMM

- Creating a virtual machine and modifying its properties
- Creating and managing checkpoints
- Cloning and migrating a virtual machine

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 virtual machines.

## **Module 8: Managing clouds in System Center 2016 Virtual Machine Manager**

This module explains how to create and manage clouds by using VMM.

Lessons

- Introduction to clouds
- Creating and managing a cloud
- Creating user roles in VMM

Lab: Managing clouds in System Center 2016 VMM

- 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 VMM to create a cloud.
- Create and manage cloud services.

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- Create user roles in VMM.

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

This module explains how to create and manage services in VMM.

### Lessons

- Overview of services in VMM
- Creating and managing services in VMM

### Lab: Managing services in VMM

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

After completing this module, students will be able to:

- Describe the services in VMM.
- Create and manage services in VMM.

## **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 VMM and DPM

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

- Implementing the Operations Manager agents
- Integrating Operations Manager with VMM

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 VMM and DPM.

## **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

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#### 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 DPM for protecting virtualization infrastructure.

#### Lessons

- Overview of backup and restore options for virtual machines
- Configuring and managing DPM for virtualization infrastructure protection

Lab: Protecting virtualization infrastructure by using DPM

- 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 DPM for protecting a virtualization infrastructure.