

## 20247D - Monitoring and Operating a Private Cloud

### Overview

#### About this course

This course equips students with the skills they require to configure and deploy a cloud using Microsoft System Center 2012 R2. Using hands-on labs, students learn the following:

- Produce a high-level design that accounts for requirements for cloud environments.
- Configure and deploy the cloud fabric.
- Configure a PXE server, an update server, and a software update baseline.
- Configure Microsoft Server Application Virtualization (App-V) so that it can be used to sequence and deploy an application virtually.
- Build the core components necessary for delivering services on the fabric.
- Allocate resources to a cloud and grant access to a cloud.
- Understand how to monitor clouds using Operations Manager.
- Understand the tools necessary to extend and customize Operations Manager for cloud environments.
- Set up, configure, and integrate the core components of Service Manager into a cloud fabric.
- Configure a service catalog, and then publish it to the Self-Service Portal.
- Gain the knowledge necessary to deploy and configure Data Protection Manager in a cloud.
- Deploy and configure Orchestrator in a cloud, and then integrate it with other System Center components.

#### Audience profile

This course is intended for cloud administrators who will be responsible for designing, installing and configuring a cloud infrastructure.

#### At course completion

After completing this course students will be able to:

- Plan for a Hybrid Cloud
- Configure and deploy a Private Cloud with Microsoft System Center 2012 R2 Virtual Machine Manager
- Extend and maintain the Cloud infrastructure
- Configure application delivery for a cloud
- Create Private Cloud building blocks
- Deploy and access private clouds
- Monitor the Cloud infrastructure
- Extend and customize monitoring of the Cloud infrastructure

- Implement Service Management for the Cloud
- Configure High Availability, Disaster Recovery and Protection for a Cloud
- Automate and standardize the Cloud
- Configure a multi-tenant Cloud

## Prerequisite

This course describes cloud configuration and deployment with System Center 2012 R2. Because this is an extensive technical domain that includes several individual products and technologies, it is strongly recommended administrators have prerequisite knowledge in the following areas:

- Windows Server 2012 R2 operating system
- Active Directory Domain Services (AD DS)
- Working knowledge of previous versions of System Center products
- Microsoft SharePoint
- Windows Server 2012 R2 Hyper-V
- Microsoft Windows Azure
- Microsoft Windows Azure Pack
- Networking and storage experience
- Familiarity with cloud management processes
- Previous work with IT Infrastructure Library (ITIL)
- Previous work with Microsoft Operations Framework (MOF).

## Course details

### Course Outline

#### **Module 1: Planning for the Cloud**

Students learn how to plan for a hybrid cloud. This includes the various cloud models, understanding the requirements for a private and public cloud and designing a private cloud infrastructure. They are also provided with an overview of the System Center 2012 R2 components.

#### **Lessons**

- Understanding Cloud Models
- Benefits for Deploying a Private Cloud

- Designing a Private Cloud Infrastructure
- Overview of Windows Server 2012 R2 Hyper-V
- Overview of System Center 2012 R2 Components
- Deploying Hyper-V Clustering with VMM

### **Lab : Preparing the Private Cloud Infrastructure**

After completing this module, you will be able to:

- Describe the private cloud.
- Understand the requirements for deploying a private cloud.
- Design the private cloud infrastructure.
- Describe the Microsoft System Center 2012 R2 components.
- Deploy Hyper-V host clustering with Microsoft System Center 2012 R2 Virtual Machine Manager (VMM).

### **Module 2: Configuring and Deploying the Private Cloud with Microsoft System Center 2012 R2 Virtual Machine Manager**

Students learn how to configure and deploy a private cloud using Virtual Machine Manager. This includes an overview of the various Virtual Machine Manager components including Security Roles and host groups.

#### **Lessons**

- Overview of VMM Architecture and Components
- Configuring Advanced Networking in VMM
- Installing and Upgrading VMM
- Configuring VMM Security and Roles
- Understanding Host Groups

### **Lab : Configuring and Deploying the Private Cloud Infrastructure**

After completing this module, you will be able to:

- Define and describe the components of VMM and its architecture.

- Configure advanced networking in VMM.
- Install and upgrade VMM.
- Configure VMM security and roles.
- Understand host groups.

### **Module 3: Extending and Maintaining Cloud Infrastructure**

Students learn how to extend and maintain the private cloud infrastructure. This includes how VMM integrates with WDS and WSUS and how to deploy bare-metal Hyper-V host servers. They also learn how to configure software updates for the private cloud fabric using VMM.

#### **Lessons**

- Overview of the PXE and Update Server Roles
- Deploying Bare-Metal Hyper-V Host Servers
- Configuring the Update Server Role
- Creating and Using an Update Baseline

#### **Lab : Maintaining Cloud Infrastructure**

After completing this module, you will be able to:

- Describe how VMM integrates with WDS and WSUS to provide Pre-Boot eXecution Environment (PXE) Server role and Update Server roles.
- Describe how to deploy bare-metal Hyper-V host servers.
- Configure the Update Server role.
- Create and remediate a software update compliance baseline.

### **Module 4: Configuring Application Delivery**

Students learn how to configure application delivery for the private cloud using VMM. This includes configuring dynamic application deployment and sequencing applications using Server App-V.

#### **Lessons**

- Dynamic Application Deployment Overview
- Web Deployment Packages
- Server Application Virtualization Overview
- Configuring Server App-V Components
- Sequencing and Deploying Virtual Applications

### **Lab : Configuring Virtual Application Delivery**

After completing this module, you will be able to:

- Describe dynamic application deployment.
- Create web deployment packages by using the Web Deployment Tool.
- Configure the Server App-V Sequencer and agent.
- Sequence and then deploy a Server App-V virtualized application.

### **Module 5: Creating the Private Cloud Building Blocks**

Students learn about the private cloud building blocks which include configuring virtual machine templates and profiles in VMM. They also learn how to configure the Service Provider Foundation and networking in VMM.

#### **Lessons**

- Configuring Guest Operating System Profiles
- Configuring Hardware Profiles
- Configuring SQL Server Using SQL Server Profiles
- Configuring Application Profiles
- Configuring Virtual Machine Templates
- Configuring Service Provider Foundation
- Configuring User Roles

### **Lab : Creating the Private Cloud Building Blocks**

After completing this module, you will be able to:

- Configure the guest operating system profiles.

- Configure hardware profiles.
- Configure SQL Server by using SQL Server profiles.
- Configure application profiles.
- Configure virtual machine templates.
- Configure the Service Provider Foundation.
- Configure the self-service user role.

## **Module 6: Deploying and Configuring Access to a Private Cloud**

Students learn how to deploy and access a private cloud. This includes configuring private cloud resources and private cloud capacity. They also learn how to install and configure App Controller and how to manage services and service templates.

### **Lessons**

- Understanding Private Cloud Computing
- Installing and Configuring App Controller
- Creating and Managing Service Templates

## **Lab : Deploying and Configuring Accessing to a Hybrid Cloud**

After completing this module, you will be able to:

- Describe a private cloud.
- Install and configure App Controller.
- Create and manage services and service templates.

## **Module 7: Monitoring Cloud Infrastructure**

Students learn how to monitor the hybrid cloud infrastructure with Operations Manager. This includes installing and configuring Operations Manager and integrating Operations Manager with other System Center 2012 R2 components.

### **Lessons**

- Operations Manager Architecture and Security

- Operations Manager Installation Considerations
- Configuring User Roles and Notifications
- Configuring Management Packs
- Configuring Integration with System Center 2012 R2

### **Lab : Monitoring the Private Cloud Infrastructure**

After completing this module, you will be able to:

- Describe the security considerations and architecture of Operations Manager.
- Plan for high availability and disaster recovery.
- Upgrade from Operations Manager 2012 SP1 to Operations Manager 2012 R2.
- Configure notification subscriptions in Operations Manager.
- Install, configure, and upgrade management packs.
- Configure integration between Operations Manager and other System Center 2012 R2 components.

### **Module 8: Extending and Customizing Monitoring of the Cloud Infrastructure**

Students learn how to extend and customize the monitoring of the hybrid cloud infrastructure. This includes configuring System Center Advisor to assess the hybrid cloud infrastructure configuration, integrating Operations Manager with SharePoint and how monitoring templates are used in Operations Manager. They also learn how to implement distributed application monitoring in Operations Manager.

#### **Lessons**

- Configuring System Center Advisor
- Configuring the SharePoint Server Portal
- Monitoring Templates
- Distributed Application Monitoring

### **Lab : Extending and Customizing Monitoring**

After completing this module, you will be able to:

- Configure System Center Advisor.

- Configure the Operations Manager SharePoint Web Part.
- Describe how to use Management Pack templates in Operations Manager.
- Configure distributed application monitoring.

## **Module 9: Implementing Service Management for the Cloud**

Students learn how to implement service management for the private cloud using Service Manager. This includes an overview of Service Manager including the architecture, understanding work items and configuring connectors in Service Manager. They also learn how to configure notifications in Service Manager.

### **Lessons**

- Service Manager Architecture Overview
- Upgrading to System Center 2012 R2 Service Manager
- Understanding Service Manager Work Items
- Configuring Service Manager Connectors
- Configuring Service Manager Notifications

### **Lab : Implementing Service Management for a Cloud**

After completing this module, you will be able to:

- Describe the Service Manager architecture.
- Upgrade to System Center 2012 R2 Service Manager.
- Understand Service Manager work items.
- Configure Service Manager connectors.
- Configure Service Manager notifications.

## **Module 10: Configuring High Availability, Disaster Recovery and Protection for a Cloud**

Students learn how to configure protection and disaster recovery for the private cloud. This includes configuring Hyper-V Recovery Manager. Students are also provided with an overview of Data protection Manager (DPM) and learn how to configure data protection and recovery in DPM.



## Lessons

- Planning for Azure Site Recovery
- Planning DPM Deployment
- DPM Architecture and Components
- Upgrading DPM
- Configuring DPM for the Private Cloud
- Configuring Application Protection for a Cloud
- Restoring Applications to the Cloud

## Lab : Protecting the Private Cloud Infrastructure

After completing this module, you will be able to:

- Configure Azure Site Recovery.
- Plan DPM deployment.
- Describe DPM architecture and components.
- Upgrade DPM.
- Configure DPM for the private cloud.
- Configure application protection for the private cloud.
- Restore applications to the private cloud.

## Module 11: Automating and Standardizing a Cloud

Students learn how to automate and standardize the private cloud using System Center 2012 R2 Orchestrator. This includes an overview of Orchestrator including its architecture and components. They also learn how to configure Integration Packs and Runbooks in Orchestrator and how these can be used to automate processes in the private cloud.

## Lessons

- Orchestrator Architecture and Components Overview
- Deploying and Configuring Core Components
- Managing Runbooks

- Configuring Integration Packs

### **Lab : Automating a Private Cloud**

After completing this module, you will be able to:

- Describe Orchestrator architecture and components.
- Deploy and configure Orchestrator components.
- Create and execute run books.
- Configure integration packs.

## **Module 12: Configuring a Self-Service Multi-Tenant Cloud with the Windows Azure Pack**

Students learn how to configure a multi-tenant private cloud by Windows Azure Pack including how to configure virtual machine clouds, website clouds and SQL clouds.

### **Lessons**

- Configuring the Windows Azure Pack

### **Lab : Configuring the Windows Azure Pack**

After completing this lesson, you will be able to:

- Describe the Windows Azure Pack, configure VM Clouds, configure Website Clouds, configure SQL Clouds, and configure Plans.