



Course 6422A & 6331A:

# Windows Server 2008 Virtualisation Workshop

This five-day instructor-led course comprises 2 main courses: 1) Implementing & Managing Windows Server 2008 Hyper-V and 2) Deploying and Managing Microsoft System Center Virtual Machine Manager.

Part I - Course 6422A:

## Implementing and Managing Windows Server 2008 Hyper-V

This course teaches students how to implement and manage Windows Server 2008 Hyper-V. It also teaches students how to manage Hyper-V with Solution Center Virtual Machine Manager (VMM) and with PowerShell.

### Audience Profile

The primary audience for this course is Windows Server 2003/2008 System Administrators who manage and implement Server Virtualization technologies within their network.

The secondary audience for this course is Enterprise System Architects who plan enterprise server resources with an emphasis on server consolidation.

### At Course Completion

After completing this course, students will be able to:

- Install and configure Windows Server 2008 Hyper-V.
- Understand Hyper-V Virtual Networking.
- Understand the types of Virtual Hard Drives and their benefits.
- Create and manage Virtual Machines on the Hyper-V server.
- Understand how to configure the Hyper-V server to ensure high availability.



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- Monitor the performance of the Hyper-V server.
- Understand how to use existing virtual machines in the Hyper-V server.
- Understand the issues with migrating existing Virtual Machines to Hyper-V.
- Understand how System Center Virtual Machine Manager (VMM) can be used to manage Hyper-V servers throughout the enterprise.
- Use PowerShell to manage the Hyper-V server and the virtual machines hosted on the Hyper-V server.
- Implement a disaster recovery plan for Virtual Machines on Hyper-V.

## Pre-requisites

In addition to their professional experience, students who attend this training should have technical knowledge in the following areas.

- Windows Server 2000/2003 System Administration
- Server Virtualization using Virtual Server 2005 or Virtual PC

## Course Outline

### Module 1: Introduction to Windows Server 2008 Hyper-V

This module introduces the concepts related to and the history of server virtualization. Through this module, the student will understand the business need for virtualization and how virtualization fits into their existing environment. Selecting the required hardware and basic installation and configuration are also covered.

#### Lessons

- Introducing Windows Server 2008 Hyper-V
- Hyper-V Requirements
- Installing the Hyper-V Server Role
- Configure Hyper-V to Be Highly Available



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### Lab: Install Hyper-V and Perform Initial Configuration

- Install Hyper-V
- Explore the Hyper-V Management Console

After completing this module, students will be able to:

- Explain the need for virtualization and list the benefits of Hyper-V on Windows Server 2008.
- List the hardware requirements for Hyper-V.
- Install the Hyper-V server role.
- Recognize the key areas of the Hyper-V management console.

## Module 2: Configure Hyper-V Settings and Virtual Networks

This module provides information on the configuration options available on the Hyper-V server and the Hyper-V Virtual Networks.

### Lessons

- Configuring Hyper-V Options
- Configuring the Virtual Network

### Lab: Configuring Hyper-V and Virtual Networks

- Configure Hyper-V Server Settings
- Configure Hyper-V Virtual Networks

After completing this module, students will be able to:

- Understand the configurable settings available in the management console.
- Understand Hyper-V Virtual Networking.
- Understand the configurable options for the Virtual Network.
- Understand how to either isolate the virtual machine from the enterprise network or ensure access to the server on the network.



## Module 3: Hyper-V Remote Administration

This module explores the requirements for remote management of the Hyper-V Server and the tools available for remote management.

### Lessons

- Configuring Hyper-V Remote Administration
- Connecting to Hyper-V Remotely

### Lab: Accessing and Managing Hyper-V Remotely

- Configure the Windows Firewall
- Install the Hyper-V Manager on Windows Vista
- Connect to the Hyper-V Server Remotely

After completing this module, students will be able to:

- Understand how to configure the Hyper-V server to allow remote administration.
- Understand the options available to connect to the Hyper-V server and the scenarios to which these options apply.
- Configure Windows Firewall and Remote Desktop Protocol (RDP) to facilitate remote connectivity.

## Module 4: Creation of Virtual Hard Drives and Virtual Machines

This module explores the creation of the Hyper-V Virtual Machines and their associated Virtual Hard Drives. The options available for the Virtual Machines and the types of Virtual Hard Drives will be covered. This module also covers the importance of Hyper-V Integration Services and Hypervisor.

### Lessons

- Creating Virtual Hard Drives
- Creating Virtual Machines



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### Lab: Creating Virtual Hard Drives and Virtual Machines

- Creating New Virtual Hard Disks
- Creating New Virtual Machines

After completing this module, students will be able to:

- Understand the types of Virtual Hard Drives and their benefits.
- Create and manage Virtual Machines on the Hyper-V server.

## Module 5: Virtual Machine Settings, Snapshots, and High Availability

This module explores the settings available on each Virtual Machines hosted on the Hyper-V server and how to use and manage Virtual Machine snapshots. The module will also cover configuring Hyper-V for high availability and performance monitoring on the Hyper-V server.

### Lessons

- Managing Virtual Machine Settings
- Using Virtual Machine Snapshots
- Configuring Hyper-V for High Availability
- Monitoring Hyper-V Performance

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### Lab: Managing Virtual Machine Settings

- Configure Virtual Machine Settings
- Monitor Hyper-V Performance

After completing this module, students will be able to:

- Configure the settings on the Virtual Machine.
- Use and manage Hyper-V Virtual Machine snapshots.
- Configure the Hyper-V server to ensure high availability.
- Monitor the performance of the Hyper-V server, understand the factors that may affect server performance, and troubleshoot performance issues.



## Module 6: Migration of Virtual Machines to Hyper-V

This module provides instruction on how to migrate virtual machines hosted on earlier virtualization technologies to the Hyper-V server.

### Lessons

- Migrating Legacy Virtual Machines
- Understanding the Impact of Migrated VMs

### Lab: Migrating Legacy Virtual Machines to Hyper-V

- Migrate Existing Virtual Machines to Hyper-V
- Troubleshoot Issues on the Migrated VMs

After completing this module, students will be able to:

- Understand how to use existing Virtual Machines in the Hyper-V server.
- Understand the issues with migrating existing Virtual Machines to Hyper-V.

## Module 7: Introduction to System Center Virtual Machine Manager

This module introduces System Center Virtual Machine Manager and shows how it can be used to manage Hyper-V servers throughout an enterprise.

### Lessons

- Introducing System Center Virtual Machine Manager
- Managing Virtual Machines with VMM

### Lab: Using VMM to Manage Hyper-V

- Configuring VMM
- Managing Hosts
- Creating a New Virtual Machine
- Creating a VM from an Existing Hard Disk
- Converting a VMware Virtual Machine
- VMM Administration



After completing this module, students will be able to:

- Understand how System Center Virtual Machine Manager can be used to manage Hyper-V servers throughout the enterprise.
- Understand how to manage Hyper-V Virtual Machines using VMM.

## Module 8: Managing the VMM Virtual Machine Image Library and Checkpoints

This module explores the Virtual Machine image library and checkpoints available in System Center Virtual Machine Manager.

### Lessons

- Using the VMM Library
- Managing the Image Library in VMM
- Managing Checkpoints

### Lab: Using the VMM Library

- Configuring Library Resources
- Working with Templates
- Creating Profiles
- Deploying a Virtual Machine from the Library
- Creating a Self-Service Policy

### Lab: Managing Checkpoints

- Performing Checkpoint Operations

After completing this module, students will be able to:

- Use of Virtual Machine Image Library.
- Manage and provide access to the Image Library in VMM.
- Use of the Hyper-V Image Library.



## Module 9: Windows PowerShell and Disaster Recovery

This module explores how to use PowerShell to manage the Hyper-V server. This module also explores how to backup Virtual Machines in Hyper-V.

### Lessons

- Using PowerShell to Manage Hyper-V
- Virtual Machine Backup and Recovery

### Lab: Using PowerShell with VMM

- Introducing the VMM Command Shell
- Using Basic PowerShell Cmdlets
- Using VMM Cmdlets
- PowerShell Scripts in VMM Wizards
- Creating a Simple VMM Script

### Lab: Creating Backups

- Using Windows Server Backup to Backup Virtual Machines

After completing this module, students will be able to:

- Use PowerShell to manage the Hyper-V server and the Virtual Machines hosted on the Hyper-V server.
- Implement a disaster recovery plan for Virtual Machines on Hyper-V.

## Part II - Course 6331A:

# Deploying and Managing Microsoft System Center Virtual Machine Manager

This instructor-led course teaches students how to implement a Microsoft System Center Virtual Machine Manager V2 solution in an organization. The course also discusses how to install, configure, and deploy VMM.



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## Audience Profile

The audience for this class would be Consultants or Integrators planning on doing Enterprise VMM implementations and advanced VMM administrators.

## At Course Completion

After completing this course, students will be able to:

- Identify installation prerequisites and requirements for VMM, select secure settings for VMM installations; and install VMM management packs.
- Describe prerequisites for installing the Administrator Console; configure the Windows Firewall for the VMM Administrator Console; and configure managed hosts.
- Describe prerequisites for the VMM Self-Service Portal; configure IIS to support the Self-Service Portal; and install the Self-Service Portal.
- Configure host server hardware to support VMs.
- Add VM hosts to VMM; install the VMM agent; add VMWare servers to VMM; and create filters.
- Configure delegated administration; set host or group permissions; and configure VMM settings to support a test environment.
- Configure access to the VMM Self-Service Portal; configure quotas on the VMM Self-Service Portal; and self-provision VMs using the VMM Self-Service Portal.
- Add a VMM library including library shares and library servers and manage the contents of VMM library shares.
- Deploy VMs using multiple methods; and use Intelligent Placement to deploy VMs.
- Identify considerations for SAN VM migrations; perform a Quick Migration; and use Intelligent Placement to move a VM.
- Convert a physical computer to a VM.
- Convert other VM formats to Hyper-V VMs using VMM.
- Describe considerations for configuring host clustering and describe procedures for configuring host clustering.
- Describe considerations for configuring guest clustering and describe procedures for configuring guest clustering.
- Identify scenarios where VMM Checkpoints may be used to meet operational requirements and create a VM Checkpoint.



- Describe considerations for patch management using System Center Configuration Manager (SCCM) and deploy patches using WSUS.
- Describe and configure SCOM reporting.
- Use SCOM to select potential virtualization targets based on workload and performance characteristics.
- Describe considerations for monitoring host server utilization; measure and analyze host server utilization; and identify important considerations in growth planning.
- Monitor and manage the progress of VMM jobs.
- Locate failed jobs and recover failed jobs.

## Pre-requisites

Before attending this course, students must have technical knowledge and skills in the following areas:

- Windows Server 2000/2003 System Administration
- Basic understanding of System Center Virtual Machine Manager (VMM) (optional)
- Server Virtualization using Virtual Server 2005, Virtual PC, or VMWare
- Operating knowledge of System Center Operations Manager 2007

## Course Outline

### Module 1: Installing System Center Virtual Machine Manager

Module 1 describes the installation prerequisites for VMM and describes the procedure for installing VMM. In addition, Module 1 describes the procedure to install the VMM Administrator Console and the VMM Self-Service Portal.

#### Lessons

- Installing System Center Virtual Machine Manager Server Components
- Installing the VMM Administrator Console
- Installing the VMM Self-Service Portal



## Lab: Installing System Center Virtual Machine Manager

- Installing VMM Server
- Installing the VMM Administrator Console
- Installing the VMM Self-Service Portal and Configuring a DNS Record

After completing this module, students will be able to:

- Identify installation prerequisites and requirements for VMM.
- Select secure settings for VMM installations.
- Install VMM management packs.
- Describe prerequisites for installing the Administrator Console.
- Configure the Windows Firewall for the VMM Administrator Console.
- Configure managed hosts.
- Describe prerequisites for the VMM Self-Service Portal.
- Configure IIS to support the Self-Service Portal.
- Install the Self-Service Portal.

## Module 2: Configuring VM Hardware, Hosts, and User Roles

Module 2 describes host server hardware configuration considerations. In addition, Module 2 describes general host server configuration procedures including security configuration procedures.

### Lessons

- Adding Hosts to VMM
- Configuring Hardware
- Configuring VMM Settings
- Managing VMM Security

## Lab: Configuring VM Hardware, Hosts, and User Roles

- Configuring Hosts
- Configuring VM Hardware
- Configuring User Roles



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After completing this module, students will be able to:

- Configure host server hardware to support VMs.
- Add VM hosts to VMM.
- Install the VMM agent.
- Add VMWare servers to VMM.
- Create filters.
- Configure delegated administration.
- Set host or group permissions.
- Configure VMM settings to support a test environment.

### Module 3: Configuring the VMM Self-Service Portal and Library

Module 3 describes considerations and procedures for configuring the VMM Self-Service Portal and Library. This includes enabling user- or group-level access to the Self-Service Portal, configuring quotas, and using the Self-Service Portal to self-provision VMs. In addition, Module 3 describes procedures for maintaining VMM library servers and shares and the contents of library shares.

#### Lessons

- Configuring the VMM Self-Service Portal
- Maintaining a VMM Library
- Managing Library Files

#### Lab: Configuring the VMM Self-Service Portal and Library

- Configuring the VMM Self-Service Portal
- Maintaining a VMM Library

After completing this module, students will be able to:

- Configure access to the VMM Self-Service Portal.
- Configure quotas on the VMM Self-Service Portal.
- Self-provision VMs using the VMM Self-Service Portal.
- Add a VMM library including library shares and library servers.
- Manage the contents of VMM library shares.



## Module 4: Deploying and Managing VMs

Module 4 describes VM deployment and management tasks. This includes using VMM Intelligent Placement, VM Templates, and other automated VM deployment tools. In addition, Module 4 describes using VMM to move VMs between available hosts.

### Lessons

- Deploying VMs
- Moving VMs Between Hosts

### Lab: Deploying and Managing VMs

- Deploying VMs
- Using Intelligent Placement

After completing this module, students will be able to:

- Deploy VMs using multiple methods.
- Use Intelligent Placement to deploy VMs.
- Identify considerations for SAN VM migrations.
- Perform a Quick Migration.
- Use Intelligent Placement to move a VM.

## Module 5: Converting from Physical or Virtual Platforms

Module 5 describes important considerations for converting physical and virtual computers to Microsoft VMs. This includes procedures for using deployment agents to execute conversions to Microsoft VMs as well as converting from third-party formats.

### Lessons

- Converting Physical Computers to Virtual Machines
- Migrating Virtual Machines to Hyper-V

### Lab: Converting Virtual Machines Using VMM

- Converting a Microsoft Virtual Server VM
- Converting a VMware Virtual Machine



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After completing this module, students will be able to:

- Convert a physical computer to a VM.
- Convert other VM formats to Hyper-V VMs using VMM.

## Module 6: Deploying Highly Available VMs

Module 6 describes considerations and procedures for deploying clustered VMs.

### Lessons

- Introducing Virtual Machine High Availability
- Deploying Host Clustering
- Deploying Guest Clustering

### Lab: Planning for Highly Available Virtual Machines

- Designing Host Clustering Hardware
- Selecting Guest Clustering Type

After completing this module, students will be able to:

- Describe considerations for configuring host clustering.
- Describe procedures for configuring host clustering.
- Describe considerations for configuring guest clustering.
- Describe procedures for configuring guest clustering.

## Module 7: Managing Virtual Machine Checkpoints and Updates

Module 7 describes procedures for managing VMs using checkpoints and updates. This includes identifying scenarios for using VMM VM Checkpoints and procedures for creating VM Checkpoints. In addition, Module 7 describes update deployment using WSUS and SCCM tools.

### Lessons

- Managing Virtual Machine Checkpoints
- Managing Virtual Machine Updates



## Lab: Managing Virtual Machine Checkpoints and Updates

- Managing Virtual Machine Checkpoints
- Managing Virtual Machine Updates

After completing this module, students will be able to:

- Identify scenarios where VMM Checkpoints may be used to meet operational requirements.
- Create a VM Checkpoint.
- Describe considerations for update management using System Center Configuration Manager (SCCM).
- Deploy updates using WSUS.

## Module 8: Implementing Monitoring and Reporting

Module 8 describes procedures for integrating System Center Operations Manager with VMM to extend the capabilities of VMM. This includes using SCOM reporting with VMM. In addition, Module 8 describes using SCOM to select potential virtualization targets and to monitor and plan host server utilization.

### Lessons

- Integrating System Center Operations Manager
- Performance and Resource Optimization
- Planning and Managing Hyper-V

## Lab: Configuring VMM and Operations Manager for Reporting

- Setting Up VMM for Reporting and PRO
- Enabling PRO
- Viewing Reports

After completing this module, students will be able to:

- Describe and configure SCOM reporting.
- Use SCOM to select potential virtualization targets based on workload and performance characteristics.
- Describe considerations for monitoring host server utilization.



- Measure and analyze host server utilization.
- Identify important considerations in growth planning.

## Module 9: Monitoring and Troubleshooting Jobs

Module 9 describes procedures for monitoring and troubleshooting VMM jobs. This includes monitoring and verifying multiple job types as well as recovering from failed jobs.

### Lessons

- Monitoring Jobs
- Troubleshooting and Repairing Jobs

### Lab: Troubleshooting Jobs

- Using PowerShell to View Jobs
- Running PowerShell Script to Generate Jobs
- Managing Jobs
- Troubleshooting Failed Jobs

After completing this module, students will be able to:

- Monitor and manage the progress of VMM jobs.
- Locate failed jobs and recover failed jobs.