Iverson Associates Sdn Bhd (303330-M)

Suite T113 – T114, 3rd Floor, Centrepoint, Lebuh Bandar Utama
Bandar Utama, 47800 Petaling Jaya, Selangor Darul Ehsan
Tel: 03-7726 2678   Fax: 03-7727 9737   Website: www.iverson.com.my

Course Outline :: 55021A ::

Module Title : **Course 55021A : Configuring and Administering Hyper-V in Windows Server 2012**

Duration : **3 days**

Course Description

This three-day instructor-led course provides students with the knowledge and skills to configure and administer Hyper-V in Windows Server 2012. Students will learn the history of Virtualization as it pertains to Microsoft technologies. Students will learn the new features of Hyper-V in Windows Server 2012. After completing this course students will be able to install, configure, and administer Hyper-V in Windows Server 2012. Students will also be able to describe the High Availability features built into Hyper-V in Windows Server 2012.

Audience

This course is intended for Network Administrators who are responsible for virtualization in their environment specifically Hyper-V.

Prerequisites

Before attending this course, students should have experience:

- Deep understanding of Virtualization technologies
- Prior experience with Hyper-V or other virtualization technologies
- Previous storage configuration experience
- Previous networking configuration experience.

At Course Completion

After completing this course, you will be able to:

- Describe Microsoft's virtualization technologies.
- Implement Hyper-V.
- Design and Manage virtual machine storage solutions.
- Design and Manage virtual networks.
- Design the Hyper-V host architecture.
- Design the virtual machine architecture.
- Design a Windows Server 2012 Hyper-V Virtualization Infrastructure.

- Describe and manage Hyper-V Snapshots
- Describe Hyper-V host and virtual machine high availability.
- Describe storage options for Virtual Machines.
- Describe the different types of virtual hard disks.
- Describe the Hyper-V integration services.
- Describe Live Migration.
- Understand Storage Migration.
- Understand Virtual Machine Import.

Course Outline

Module 1: Planning for Virtualization

After completing this module students will be able to describe virtualization as it relates to server environments. Students will be able to plan for hardware requirements, storage, availability, and security.

Lessons

- Overview of Microsoft Virtualization
- Assessment of Virtualization Candidates
- Planning for Virtualization

Lab : Assessing the Environment for Virtualization

- Planning for the Hyper-V Server Role
- Assess the environment by using the Microsoft Assessment and Planning (MAP) Toolkit

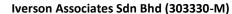After Completing this module, students will be able to:

- Describe virtualization.
- Describe the options available for server virtualization.
- Describe requirements for Hyper-V sever role.
- Design solutions using Hyper-V disks and storage.
- Design solutions using high availability for Hyper-V.
- Assess and environment using the Microsoft Assessment and Planning (MAP) toolkit.

Module 2: Implementing Server Virtualization with Hyper-V

This module describes how to install and configure Hyper-V virtual machines, configuring virtual storage, and configuring virtual networks. Students will be able to design their Hyper-V environment and storage networks.

Lessons

- Implementing Hyper-V
- Managing Virtual Machine Storage

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- Managing Virtual Networks

Lab : Installing and Configuring the Hyper-V Server Role

- Installing the Hyper-V Server Role
- Plan for Virtual Switch Configuration
- Configuring Virtual Networking

After completing this module, students will be able to:

- Describe the Hyper-V integration services.
- Install Hyper-V Server Role.
- Manage virtual machine storage.
- Manage virtual networks.
- Describe Hyper-V Extensible Switch.
- Describe Data Center Bridging (DCB).
- Describe Resource Metering in Hyper-V.

Module 3: Creating and Configuring Virtual Hard Disks and Virtual Machines

After completing this module students will be able to determine and configure the most appropriate virtual hard disk(s) format to use in their environment. Students also will be able to create and configure virtual machines.

Lessons

- Creating and Configuring Virtual Hard Disks
- Creating and Configuring Virtual Machines
- Managing Virtual Machine Snapshots
- Virtual Machine Import

Lab : Creating Virtual Hard Disks and Virtual Machines

- Creating Virtual Hard Disks
- Creating New Virtual Machines
- Modifying Virtual Machine Settings
- Creating and Modifying Virtual Machine Snapshots
- Import Virtual Machines into Hyper-V

After completing this module, students will be able to:

- Describe storage options for virtual machines.
- Describe the new vhdx format.
- Attach physical disks to a virtual machine.
- Describe pass-through disks.
- Create a new virtual hard disk using the new Virtual Hard Disk Wizard.
- Describe considerations for creating new virtual machines.

- Create a new virtual machine.
- Configure virtual machine settings.
- Creating and managing virtual machine snapshots.
- Describe Virtual Fibre Channel HBAs.
- Describe Multipath I/O (MPIO) functionality for Fibre Channel storage
- Describe the new Virtual Machine import features in Windows Server 2012
- Describe the P2V process
- Import Virtual machines without exports
- Plan for importing Virtual Machine from Windows Server 2008 R2
- Describe the virtual machine compatibility report
- Describe the PowerShell commands for importing Virtual Machines

Module 4: Configure Networking in Hyper-V

This module describes all of the new network features available in Hyper-V. Students will be able to describe Hyper-V Network Virtualization along with the Hyper-V Extensible Switch. Students will also be able to plan how to implement the new networking features available with Windows Server 2012 Hyper-V.

Lessons

- Advanced features of Virtual Network Adapters
- Hyper-V Network Virtualization
- Hyper-V Extensible Switch

Lab : Configuring Network Settings

- Configure NIC Teaming
- Configure Advanced Network Settings

After completing this module, students will be able to:

- Describe Hyper-V Extensible Switch.
- Describe Hyper-V Network Virtualization.
- Implement NIC Teaming.
- Describe VLAN Tagging.
- Understand MAC and ARP spoofing protections.
- Describe SR-IOV networking
- Implement Network QoS
- Implement Network metering
- Describe Network monitor modes
- Describe IPsec task offload
- Describe VM Trunk Mode

Module 5: Scale-up Virtual Machines

This module explains how Windows Server 2012 can be used to scale-up your virtual machines. Students will learn the details around non-uniform memory access (NUMA) and the other scale-up options in Windows Server 2012. It also compares the scale-up options in Windows Server 2012 with the options that were available in previous versions of Windows Server.

Lessons

- Overview of Scale-up options in Windows Server 2012
- Non-uniform memory access (NUMA)
- Hyper-v Scale Comparison

Lab : Configuring NUMA

- Planning for Hyper-V Scale
- Configuring NUMA

After completing this module, students will be able to:

- Describe the scale-up options in Windows Server 2012
- Describe Scaling in Hyper-V
- Plan for NUMA
- Plan for Hyper-V Scaling
- Describe how SQL Server supports NUMA
- Describe Dynamic Memory. Startup memory, and minimum memory
- Describe Hyper-V smart paging

Module 6: Hyper-V Replica and Disaster Recovery

This module describes disaster recovery options for Hyper-V, including Hyper-V Replica and backup/restore options for Hyper-V. Students will learn how to plan and prepare for Hyper-V Replica, learn how to configure and enable replication, perform planned failovers, and how to respond to unplanned failovers. They will also learn how to backup and restore Hyper-V hosts and virtual machines.

Lessons

- Overview of Hyper-V Replica
- Configuring Hyper-V Replica
- Hyper-V Replica Failover Operations
- Hyper-V Backup

Lab : Configuring Hyper-V Replica and Backups

- Configure Hyper-V Replica
- Configure Hyper-V Backup and Recovery

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After completing this module, students will be able to:

- Describe Hyper-V Replica.
- Describe Hyper-V Replica Security.
- Describe Hyper-V clustering enhancements.
- Design High-Availability Hyper-V Solutions.
- Understand unplanned failover.
- Understand planned failovers.
- Design backup solutions for Hyper-V hosts.
- Design backup solutions for virtual machines.
- Restore Hyper-V hosts from backup.
- Restore virtual machines from backup.

Module 7: Hyper-V Migration

This module describes the Hyper-V virtual machine (VM) mobility technologies. Students will learn changes to Live Migration that are introduced with Windows Server 2012. Students will also learn best practices for securing Live Migrations.

Lessons

- Live Migration Overview
- Storage Migration Overview
- Live Migration Security
- Live Migration using SMB

Lab : Implementing Migration in Hyper-V

- Configure a Failover Cluster for Hyper-V
- Configure a Highly Available Virtual Machine
- Configure Live Migration using SMB

After completing this module, students will be able to:

- Describe Storage Migration
- Design Storage Migration
- Describe the PowerShell commands for importing Virtual Machines
- Configure live migration without shared storage
- Describe Guest Fibre Channel
- Describe secure offloaded data transfer
- Implement Live Migration
- Describe mobility and protection technologies
- Describe "shared nothing" migration

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- Describe Live Migration without Infrastructure
- Describe Live Migration using SMB
- Describe Live Migration between clusters
- Describe Live Migration Security