

Installation, Storage, and Compute with Windows Server 2016

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Meet the expert: Patrick Loner has certifications for MCSA, MCSE, MCITP, A+, Network+, Security+, and more. He has been working as a Microsoft Certified Trainer, network administrator, and network consultant for over ten years. He has over a decade of experience working with and teaching about Windows networks with client and server operating systems. He has guided many students toward Microsoft and CompTIA certifications. Most recently, he has worked as a freelance trainer and network consultant specializing in Windows Server 2008 and Microsoft Exchange 2007 and Exchange 2010 implementations, design, and upgrades. Patrick continues to branch out now working with and training on Windows Server 2012, Windows 8, Exchange 2013, and System Center Configuration Manager 2012.

Prerequisites: none

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Course description: This series covers how to install Windows Server 2016 as well as how to navigate the storage and computing protocols. Students will learn about installing windows servers in host and computer environments and maintaining and monitoring server environments. Students will also learn how to implement storage solutions, Hyper-V virtualization, windows containers and high availability.

Course outline:

Introduction to Windows Server 2016

- Introduction
- Introduction to Windows Server 2016
- Windows Server Editions
- Hardware Requirements
- Hardware Considerations
- Installation Options
- Options for Managing Servers
- Windows PowerShell
- Windows PowerShell Basics
- Demo: PowerShell
- Demo: Using Parameters and Values
- Demo: Finding Cmdlets
- What's New Since 2008
- What's New in Windows Server 2016
- Summary

Nano Server Installation

- Introduction
- Planning for Installation
- Planning for Nano Server
- Understanding Nano Server Roles
- Installing Nano Server Roles
- Planning for Server Core
- Nano Server Installation
- Installation Steps
- Alternative Steps to Install Nano Server

- Demo: Prepare to Install Nano Server
- Demo: Install Nano Server with a VHD
- Summary

Managing and Configuring Nano Server

- Introduction
- Managing and Configuring Nano
- Demo: Provisioning the Server
- Demo: Enable PowerShell Remoting
- Demo: Using net.exe
- Demo: Features
- Summary

Server Core Installation

- Introduction
- Installing Server Core
- Demo: Pre-Installation
- Demo: Install Server Core
- Demo: Local Server Configuration
- Demo: Server Group
- Demo: Remote Configuration
- Demo: Add Computer to Domain
- Upgrades vs. Migrations
- Choosing in-Place Upgrades
- Choosing to Migrate
- Installation and Migration Tools
- Choosing an Activation Model
- Activation Methods
- Post-Installation Tasks

- Summary

Images to Deploy

- Introduction
- Creating and Managing Deployment Images
- File-Based Imaging
- Windows Image File Format
- Types of Images
- Image-Based Installation Tools
- Creating Install Images
- Considerations for Image Creation
- Windows ADK for Windows 10
- Basic Deployment Process
- Windows Deployment Services
- WDS Components
- Microsoft Deployment Toolkit 2013
- Summary

Manage Disks and Volumes

- Introduction
- Managing Disks and Volumes
- Partition Table Formats
- Disk Types
- Required Disk Volumes
- File Systems
- Resilient File System
- Demo: File System Options
- Demo: File System Conversion
- Virtual Hard Disks

- Selecting Physical Disk Types
- Working with Disk Volumes
- Volume Management Tools
- Demo: Volume Management
- Demo: Manipulating Volumes
- Understanding RAID
- Hardware vs. Software RAID
- RAID Types
- Summary

Storage Spaces

- Introduction
- Implementing and Managing Storage Spaces
- Requirements for Storage Spaces
- Storage Space Features
- Demo: Create Storage Pool
- Demo: New Volume
- Changes to Storage Spaces
- Storage Space Usage Scenarios
- Direct Deployment Scenarios
- Managing Storage Spaces
- Using PowerShell with Storage Spaces
- Managing Disk Failure with Storage Spaces
- Monitoring Storage Spaces
- Summary

Configure Data Deduplication

- Introduction
- Overview of Data Deduplication

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- Enhancements in Windows Server 2016
- Data Deduplication Requirements
- Data Deduplication Components
- Data Deduplication Process
- Planning Data Deduplication
- Data Deduplication Usage Scenarios
- Demo: Install Data Deduplication
- Demo: Deduplication PowerShell Commands
- Demo: Deduplication Examples
- Monitoring and Maintaining Data Deduplication
- Summary

Understanding Storage Types

- Introduction
- Overview of Storage Solutions
- Direct Attached Storage
- Network Attached Storage
- Storage Area Networks
- Comparing Storage Solutions
- Comparing Storage Technology
- Summary

Fibre Channel, iSCSI, and Ethernet

- Introduction
- Fibre Channel
- Fibre Channel Layouts
- Fibre Channel Considerations
- iSCSI
- iSCSI Target Server
- iSCSI Initiator
- Considerations for Implementing iSCSI
- Summary

Understand iSNS, DCB, and MPIO

- Introduction
- iSNS
- iSNS Functions and Installation
- Data Center Bridging
- MPIO
- Summary

File and Folder Sharing

- Introduction
- Configuring Sharing in Windows Server 2016
- Server Message Block
- Configuring SMB Shares
- Demo:
- Demo: 2
- Network File System
- Configuring NFS Shares
- Summary

Nested Virtualization

- Introduction
- Introducing Hyper-V
- New Host Features in Windows

- New VM Features in Windows Server 2016
- Introducing Windows Server Containers
- Hyper-V Prerequisites
- Nested Virtualization
- Demo: Nested Virtualization
- Demo: Starting a Nested VM
- Summary

Configure Storage and Networks on Hyper-V Hosts

- Introduction
- Using Virtual Hard Disks in Hyper-V
- Virtual Hard Formats
- Virtual Hard Disk Types
- Considerations for Virtual Hard Disks
- Fibre Channel in Hyper-V
- Choosing Storage for Virtual Machines
- Demo: Manage Hyper-V Storage
- Demo: Create VHD
- Hyper-V Networks
- Demo: Virtual Switches
- Considerations for Hyper-V Networks
- New Features in Windows Server 2016
- Summary

Configure and Manage VMs

- Introduction
- Overview of Virtual Machines
- Configuration Versions
- Generation Versions
- Demo: Create a VM in Hyper-V Manager
- Demo: Create a VM in PowerShell
- Virtual Machine Settings
- New Options in Windows Server 2016
- Shielded Virtual Machines
- Best Practices for Virtual Machines
- Overview of VM Management
- Managing VM States
- Working with Checkpoints
- Importing and Exporting VMs
- Windows PowerShell Direct
- Summary

Windows Server and Hyper-V Containers

- Introduction
- Overview of Windows Server Containers
- Concepts and Definitions
- Windows Server Containers
- Overview of Hyper-V Containers
- Benefits of Hyper-V Containers
- Usage Scenarios
- Installation Requirements

- Deploying Windows Server Containers
- Deploying Hyper-V Containers
- Managing Containers
- Demo: Install Containers Feature
- Summary

Docker and Containers

- Introduction
- Overview of Docker
- Support for Docker in Windows
- Docker Toolbox
- Docker Solutions
- Management of Docker
- Overview of Docker Hub
- Docker with Microsoft Azure
- Summary

Overview of Availability and Disaster Recovery

- Introduction
- Understanding High Availability
- Continuous Availability
- Business Continuity
- Business Continuity Strategies
- Developing Disaster Recovery Plans
- Service Level Agreements
- Highly Available Networking
- Highly Available Storage
- High Availability for Virtual Machines
- Live Migration
- Hyper-V Replica
- Planning for Hyper-V Replica
- Implementing Hyper-V Replica
- Overview of Windows Backup
- Demo: Windows Backup
- Overview of Failover Clustering
- HA Through Failover Clustering and Terminology
- Clustering Types and Categories
- Summary

Network Load Balancing

- Introduction
- Understanding NLB
- NLB Operation
- NLB Features in Windows Server 2016
- NLB Deployment Requirements
- Demo: Deploy NLB
- NLB Configuration Options
- NLB Host Parameters
- Network Considerations for NLB
- Planning NLB Implementation
- Summary

Plan and Create a Failover Cluster

- Introduction

- The Importance of Planning
- Application Considerations
- Storage Considerations
- Storage Requirements
- Hardware Requirements
- Network Requirements
- Demo: Verify Network Adapter Compatibility
- Additional Planning Configurations
- Introducing Quorum
- Dynamic Quorum
- Creation Process
- Demo: Create Virtual Disks
- Demo: Target Portal
- Demo: Format Volumes
- Demo: System Configuration
- Summary

Failover Cluster Details

- Introduction
- Cluster Roles
- Common Cluster Management Tasks
- Cluster Properties
- Failover and Failback Configuration
- Storage Configuration
- Network Configuration
- Configuring Quorum Options
- Demo: Quorum Configuration
- Summary

Maintain Failover Clusters

- Introduction
- Overview of Maintaining Failover Clusters
- Monitoring Failover Clusters
- Backup and Restore
- Troubleshooting Failover Clusters
- Managing Cluster Communication
- Cluster Aware Updating
- Summary

Troubleshoot Failover Clustering

- Introduction
- Troubleshooting Communication
- Troubleshooting Cluster Name Objects
- Using Event Viewer
- Using Windows PowerShell
- Summary

Failover and Hyper-V

- Introduction
- High Availability Options
- Host Clustering Overview
- Clustering for Hyper-V in Windows Server 2016
- Hyper-V Cluster Components
- Hyper-V Failover Cluster Prerequisites

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- Implementation Process
- Cluster Shared Volumes
- Configuring a Shared VHD
- Scale Out File Server
- SOFS Requirements
- Summary

Configure Site Availability

- Introduction
- Stretch Clustering
- Prerequisites for Stretch Clustering
- Types of Replication
- Overview of Storage Replica
- Quorum Models for Stretch Clusters
- Summary

Update Services and State Configuration

- Introduction
- Overview of WSUS
- Deployment Options
- Server Requirements
- Configuring Clients
- Administering WSUS
- Approving Updates
- Demo: Install WSUS
- Demo: Update Services Settings
- Demo: Computers and Group Policy Settings
- Overview of PowerShell DSC
- Requirements for PowerShell DSC
- Implementing PowerShell DSC
- Summary

Monitoring Tools

- Introduction
- Overview of Monitoring Tools
- Using Task Manager
- Demo: Task Manager
- Performance Monitor
- Demo: Performance Monitor
- Demo: Create a Data Collector Set
- Monitoring Resources and Reliability
- Event Viewer
- Demo: Event Viewer
- Demo: Subscriptions and Filters
- Demo: Get-EventLog
- Monitoring with Server Manager
- Summary