55349A: Networking with Windows Server

Elements of this syllabus are subject to change.

About this course

This five-day instructor-led course examines the services and features of Microsoft Windows Server from 2012 to 2022, including lessons and lab exercises on key attributes you'll need on the job. It's designed for IT professionals who have some networking knowledge and experience, and who are looking for a single course that provides insight into core and advanced Windows Server networking technologies. This audience typically includes network administrators and system and infrastructure administrators.

Audience Profile

This course is for IT pros that have some networking knowledge and experience, and who are looking for a single course that provides insight into core and advanced Windows Server networking technologies. This audience typically includes network administrators and system and infrastructure administrators.

At Course Completion

After completing this course, students will be able to:

- Plan and implement IPv4.
- Implement Dynamic Host Configuration Protocol (DHCP).
- Plan and implement IPv6.
- Implement name resolution with Domain Name System (DNS).
- Implement and manage IP Address Management (IPAM).
- Plan and implement remote access.
- Implement networking for branch offices.
- Configure advanced networking features.

Prerequisites

- Experience installing PC hardware and devices.
- Knowledge of the TCP/IP protocol stack, addressing, and name resolution.
- Understanding of networking-infrastructure components, such as cabling, routers, hubs, and switches.
- Familiarity with networking topologies and architectures, such as local area networks (LANs), wide area networks (WANs), and wireless networking.
- Knowledge of TCP/IP protocol stack, addressing, and name resolution.
- Practical experience with Windows Server.
- Practical experience with Windows Server Hyper-V.
- Practical experience with Windows 10 or Windows 11.

Module 1: Plan and implement IPv4

This module details how to plan and implement an IPv4 addressing scheme to support your organization's needs. The module also explains how to use fundamental networking tools and techniques to configure and troubleshoot IPv4-based networks.

Lessons
- Plan IPv4 addressing
- Configure IPv4
- Manage and troubleshoot IPv4

Lab 1: Plan an IPv4 addressing scheme
- Plan the IPv4 address assignments
- Verify IPv4 communication
- Troubleshoot IPv4

After completing this module, students will be able to:

- Plan IPv4 addressing and subnetting.
- Configure Windows Server with IPv4.
- Manage and troubleshoot IPv4 network connectivity.

Module 2: Implement DHCP

Automatic IP configuration makes it easier to manage IP hosts. In this module, students learn how to deploy and manage the DHCP server role, select a high-availability option for DHCP, and configure DHCP failover.

Lessons
- What is DHCP?
- Deploy DHCP
- Manage DHCP high availability
- Manage and troubleshoot DHCP

Lab 1: Implement DHCP
- Plan a DHCP server implementation
- Implement the DHCP configuration
- Implement DHCP failover
- Validate the DHCP implementation

After completing this module, students will be able to:

- Plan a DHCP server implementation.
- Implement a DHCP configuration.
- Plan DHCP high-availability options.
- Validate a DHCP deployment.

Module 3: Plan and implement IPv6

This module details how to plan and implement an IPv6 addressing scheme to support your organization's needs. It also includes specifics about configuring coexistence between IPv4 and IPv6 and explains options for transitioning to IPv6.

Lessons
- Implement IPv6
- Manage IPv4 and IPv6 Coexistence
- Migrate to IPv6

Lab 1: Configure and evaluate IPv6 transition technologies
- Review the default IPv6 configuration
- Implement DHCPv6
- Configure network integration by using ISATAP
- Configure native IPv6 connectivity
- Configure 6to4 connectivity

After completing this module, students will be able to:

- Review the default IPv6 configuration.
- Create and configure IPv6 configuration.
- Configure network integration by using ISATAP.
- Configure native IPv6 connectivity.
- Configure network integration by using 6to4 integration.

Module 4: Implement name resolution with DNS

This module explains the fundamentals of using Domain Name System (DNS) for simple name resolution, and then details more advanced topics, such as the Global Names zone, Domain Name System Security Extensions (DNSSEC), and split-brain syndrome. These modules detail how you can install, configure, and troubleshoot DNS within an organization's network.

Lessons
- Deploy DNS servers
- Configure zones in DNS server
- Configure name resolution between DNS zones
- Configure DNS integration with AD DS
- Configure advanced DNS settings

Lab 1: Plan and implement DNS name resolution
- Plan DNS name resolution
- Implement DNS servers and zones

Lab 2: Integrate DNS with AD DS
- Integrate DNS with AD DS

Lab 3: Configure advanced DNS settings
- Configure DNS policies
- Validate a DNS implementation
- Troubleshoot DNS

After completing this module, students will be able to:

- Plan and implement DNS name resolution
- Integrate DNS with AD DS
- Configure advanced DNS settings

Module 5: Implement and manage IPAM
This module introduces IPAM functionality, explains how to deploy IPAM, and shows student how to manage DNS and DHCP functionality by using IPAM.

Lessons
- What is IPAM?
- Deploy IPAM
- Manage IP address spaces with IPAM

Lab 1: Implement IPAM
- Install the IPAM Server feature
- Provision the IPAM Server
- Manage IP address spaces by using IPAM

After completing this module, students will be able to:

- What is IPAM?
- Deploy IPAM
- Manage IP address spaces with IPAM

Module 6: Implement remote access
In this module, students learn how to implement remote access technologies in Windows Server.

They will also learn about different implementation scenarios for small or medium-sized organizations and enterprise organizations. In Windows Server, four component technologies—virtual private network (VPN), DirectAccess, Routing, and Web Application Proxy—integrate into a single, unified server role called Remote Access.

Lessons
- Overview of remote access options
- Implement WAP
- Plan VPNs

Lab 1: Implement a Web Application Proxy
- Implement Web Application Proxy
- Validate a Web Application Proxy deployment

Lab 2: Implement a VPN
- Implement VPN
- Validate the VPN deployment
- Troubleshoot VPN access

After completing this module, students will be able to:

- Overview of remote access options
- Implement WAP
- Plan VPNs

Module 7: Implement branch office networking
In this module, students learn several ways in which to use Windows Server to overcome the limitations of branch-office scenarios. They'll learn about using Distributed File System (DFS) and Windows BranchCache.

Lessons
- Networking features and considerations for branch offices
- Implement DFSR
- Implement BranchCache for branch offices

Lab 1: Implement DFS for branch offices
- Implement DFS
- Validate the deployment

Lab 2: Implement BranchCache
- Implement BranchCache
- Validate the deployment

After completing this module, students will be able to:

- Networking features and considerations for branch offices
- Implement DFSR
- Implement BranchCache for branch offices

Module 8: Implement advanced networking

Windows Server includes advanced high-performance networking features, such as server message block (SMB) 3.1.1, Quality of Service (QoS) options, and several enhancements on the receiving end of network packet processing. Additionally, high-performance networking features are available to the Microsoft Hyper-V role and the virtual machines (VMs) that are running under Hyper V, such as expanded virtual-switch functionality and extensibility, single-root I/O virtualization (SR-IOV), dynamic virtual-machine queuing, and NIC Teaming for VMs. In this module, you will learn how to deploy and configure advanced networking in Windows Server and the new Hyper-V networking features.

Lessons
- Overview of high-performance networking features
- Configure advanced Hyper-V networking features

Lab 1: Configure advanced Hyper-V networking features
- Create and use Hyper-V virtual switches
- Configure and use the advanced features of a virtual switch

After completing this module, students will be able to:

- Overview of high-performance networking features
- Configure advanced Hyper-V networking features