



Lesson Plans

Configuring Server 2008 Network Infrastructure

(Exam 70-642)

Version 2.1

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Course Overview

This course prepares students for the 70-642 Technology Specialist exam: Windows Server 2008 Network Infrastructure, Configuring. It focuses on the details of configuring the infrastructure of a network.

Module 0 – Introduction

This module introduces Microsoft's recommendations of the technical experience a candidate should have before attempting the certification test. Students will become familiar with server and remote management tools. This module provides the mathematical calculations of how to convert numbers from binary to decimal and hexadecimal. This mathematical foundation is necessary for students to understand the IPv4 and IPv6 addresses they will be studying in the course.

Module 1 – IPv4

This module discusses the details of configuring IPv4 addressing and subnetting. This includes topics of converting IPv4 addresses from binary to decimal, converting subnet masks to slant notation, identifying IPv4 classes and ranges of IP addresses, and determining local and non-local hosts. Students will learn how to customize the number of subnets and hosts allowed on each subnet.

Module 2 – IPv6

In this module students will learn why it will become necessary to migrate to IPv6. They will learn the basic format of IPv6 addresses, identifying IPv6 address types, and configuring IPv6 addresses using the GUI and command line. Interoperability strategies for implementing IPv4 and IPv6 are explored.

Module 3 – DHCP

This module covers DHCP configuration, customization options, and advanced settings. Students will learn proper server placement to assure client communication with the DHCP server, the rationale for creating superscopes and split scopes, and DHCPv6 options.

Module 4 – DNS

In Module 4 students will learn the details of how DNS translates host names to IP addresses and the process of DNS name resolution for both the client and server. Topics will also include; creating zone and zone transfers, creating or converting an Active Directory-integrated zone, creating and editing resource records, configuring client registration, automatically updating DNS using Dynamic DNS, resolving queries using stub zones and forwarding, using root hints and a root zone, managing zones through zone delegation, creating WINS-integrated zones and GlobalNames zones support, and implementing strategies and goals when designing a DNS solution.

Module 5 – Routing

Module 5 teaches the students the basics of routing and how to manage routing table entries. Students will become familiar with installing RRAS components, and configuring RIP, demand-dial routing, and NAT solutions.

Module 6 – Remote Access

Module 6 discusses the details of configuring remote access and network authentication. Topics include; configuring a Remote Access server to use Dial-up and VPN connections, configuring client connections, configuring a VPN using SSTP, and using CMAK to manage remote access.

Module 7 – Network Access and Security

In Module 7 students will learn several strategies for controlling network access and enhancing network security. These will include: controlling network location profiles, configuring wireless connection, configuring a RADIUS client, server and proxy, configuring a DHCP server as an enforcement point, enforcing network authentication using Kerberos and NTLM, configuring a firewall, and configuring IPsec to protect IP packets during transmission.

Module 8 – File and Print

This module discusses managing network files and printing. Topics include: managing network file sharing and shared folders, controlling access using NTFS and share permissions, encrypting files and folders, protecting integrity of data through shadow copy, and backup and restore, restricting disk space using disk quotas and FSRM, and managing print services.

Module 9 – WSUS

In this module students will learn how to configure a WSUS server and client to manage the updating of software. They will also learn how to use MBSA to scan for security compliance.

Module 10 – Performance and Reliability

This module covers tools that are used to collect and monitor network data for performance and reliability. The Reliability and Performance Monitor provides network performance statistics. Event Viewer is used to monitor event logs. Network Monitor is used to gather information about network traffic. SNMP is used to manage network-attached devices.

Practice Exams

In Practice Exams students will have the opportunity to test themselves and verify that they understand the concepts and are ready to take the certification test.

Section 0.1: Introduction

Preparation

This course prepares students for the 70-642 Technology Specialist exam: Windows Server 2008 Network Infrastructure, Configuring.

Microsoft recommends at least one year experience in the following underlying technologies:

- IP addressing and services
- Names resolution
- File and print services
- Network access and remote access
- Monitoring network services

This section introduces the instructor and the concepts that will be covered in this course.

Time

About 2 minutes

Section 0.2: Server Management

Preparation

This section discusses a new management console, Server Manager, used to install and manage server components. Server Manager uses the following elements:

- Role
- Role services
- Feature

Server Core, a scaled-down version of Server 2008, provides a reduced foot print, reduced maintenance, less crashes and downtimes, and uses less disk space. To provide these benefits a limited set of server roles are supported. Student will learn how to configure and manage a server using Server Manager. They will also learn how to install roles on a Server Core server.

Configuring Server 2008 Network Infrastructure Objectives

- 102. Configure Dynamic Host Configuration Protocol (DHCP)
- 201. Configure a Domain Name System (DNS) server.

Lecture Focus Questions:

- What are the differences among roles, role services, and features?
- How are dependencies handled during role installation?
- How does the server core installation differ from a standard server installation?
- What are the limitations of a server core installation? What are the advantages?

Time

About 20 minutes

Section 0.3: Remote Management

Preparation

This section examines remote management options. Students will learn how to enable Remote Desktop on a Server Core, enable remote management of the firewall, and open firewall ports to allow remote use of MMC snap-ins.

Lecture Focus Questions:

- How do firewall ports affect your ability to remotely manage a server?
- What firewall port must be opened for Remote Desktop connections?
- What advantage does using TS Gateway have over using Remote Desktop?
- What is the effect of enabling the Remote Administration exception in the firewall?
- What are the operating system requirements for RSAT?
- Which remote administration tools could you use if the firewall had only ports 80 and 443 open?

Time

About 25 minutes

Section 0.4: Mathematical Foundations

Preparation

This section explains the mathematical calculations to convert the following numbering systems:

- Base 2 - Binary
- Base 10 – Decimal
- Base 16 - Hexadecimal

For students to understand IPv4 and IPv6 addresses they will need to know how to convert from binary to decimal and hexadecimal.

Configuring Server 2008 Network Infrastructure Objectives

- 101. Configure IPv4 and IPv6 Addressing.

Lecture Focus Questions:

- How does the decimal form of the binary number 10000000 differ from 01000000?
- What formula can you use to find the decimal equivalent for the binary number 00010000?
- How can you determine the binary value of the decimal number 161?
- What is the binary value for the hexadecimal value of E? What is E's decimal value?
- How many hexadecimal digits replace a full binary octet?

Time

About 13 minutes

Section 1.1: IPv4 Addressing

Preparation

In this section the students will learn how to convert IPv4 addresses and subnet masks from binary to decimal and how to convert subnet masks to slant notation. Students will learn the five IPv4 classes of IP addresses with the range of IP addresses and the default subnet mask for each class. They will learn how to identify the Network ID, host ID, and the default gateway address to determine local and non-local hosts.

Configuring Server 2008 Network Infrastructure Objectives

- 101. Configure IPv4 and IPv6 Addressing.

Lecture Focus Questions:

- What is the format of an IPv4 address?
- What is the purpose of a subnet mask?
- What is the relationship between slash notation and the subnet mask?
- What is the default address class of the IP address 132.11.166.5?

Time

About 20 minutes

Section 1.2: IPv4 Subnetting

Preparation

This section discusses using Variable Length Subnet Masks (VLSMs) to subnet a single network address into multiple smaller subnets or create a supernet which combines multiple network addresses into a single larger subnet. Students will learn, given a scenario, how to identify valid subnet addresses, choose a subnet address and mask, and identify valid host addresses on a subnet.

Configuring Server 2008 Network Infrastructure Objectives

- 101. Configure IPv4 and IPv6 Addressing.

Lecture Focus Questions:

- How many hosts can you have if you use a subnet mask of 255.255.255.192?
- How is a *supernet* different from a *subnet*?
- How can a *magic number* help you identify the possible subnet addresses when using a custom subnet mask?
- What is the decimal mask value for a /27 mask?
- How many approximate and actual hosts can you have when using a mask value of /23?
- What are the first and last addresses in a range used for?

Time

About 30 minutes

Section 1.3: IPv4 Host Configuration

Preparation

This section explores four methods to configure IPv4 configuration settings:

- Static (manual) assignment
- Dynamic Host Configuration Protocol (DHCP)
- Automatic Private IP Addressing (APIPA)
- Alternate IP configuration

Students will practice using the *Network and Sharing Center* to configure static and automatic IPv4 addressing, and specify an alternate IPv4 configuration. They will also learn how to use the command line tool, netsh, to configure IPv4 settings.

Windows Firewall blocks Ping by default. To enable Ping through the Windows Firewall, the students will learn how to use the *Windows Firewall with Advanced Security* program to configure inbound rules to allow Ping.

Configuring Server 2008 Network Infrastructure Objectives

- 101. Configure IPv4 and IPv6 Addressing.

Lecture Focus Questions:

- What is the purpose of an alternate IPv4 configuration?
- When is a static configuration advantageous?
- When does a Windows computer use APIPA? What are its limitations?
- How can you tell when a computer has used APIPA to configure its IP address?
- What does the MAC address identify?

Time

About 25 minutes

Lab/Activity

- Configure IP Settings
- Configure Automatic and Alternate Addressing
- Configure a Subnetted Address

Section 2.1: IPv6

Preparation

This section discusses the need to migrate from IPv4 to IPv6. IPv4 was developed in 1974 and due to the rapid Internet growth we are running out of IPv4 addresses. Students will become familiar with the new features in IPv6 that are designed for the long term health and security of networks.

Configuring Server 2008 Network Infrastructure Objectives

- 101. Configure IPv4 and IPv6 Addressing.

Lecture Focus Questions:

- What are the reasons for the shift from IPv4 to IPv6?
- How does IPv6 make route summarization more efficient?
- How is IPsec treated differently in IPv6 than in IPv4?
- Why is NAT not needed when using IPv6?

Time

About 7 minutes

Section 2.2: IPv6 Addressing

Preparation

Students will learn the basic format of IPv6 addresses. IPv6 is a 128 bit address in which the first 64 bits called the *prefix* identifies the network and subnet address and the last 64-bits is the *interface ID* which identifies the network connection. They will also learn how to obtain the EUI-64 interface ID from the MAC address.

The instructor highly recommends that the students memorize the following IPv6 address types:

IPv6 Address Types	Address Beginning	Address Beginning Range
Reserved	00::<8	
Multicast	FF00::<8	
Global	2000::<3	2 or 3
Link-local	FE80::<10	FE8 - FEB
Site Local (<i>Replaced by Unique Local</i>)	FEC0::<10	FEC-FEF
Unique-Local	FC::<7	FC or FD
Anycast (<i>1 to 1 of many</i>)	NA	NA

Configuring Server 2008 Network Infrastructure Objectives

- 101. Configure IPv4 and IPv6 Addressing.

Lecture Focus Questions:

- What is the format of an IPv6 address?
- How can you represent leading zeroes and groups of zeroes in IPv6?
- Which type of IPv6 address uses the FC00::<7 prefix?
- How can you identify a link-local address?
- What does IPv6 use instead of a broadcast address?
- How can you easily identify IPv6 multicast addresses?
- What does the address ::1 represent?
- What is the purpose of the prefix length?
- What are the steps for deriving the EUI-64 interface ID from the MAC address?

Time

About 40 minutes

Section 2.3: IPv6 Configuration

Preparation

This section examines four methods to configure IPv6 information on a host and the process used to configure an IPv6 address for each interface. Students will learn how to configure IPv6 addresses using the GUI and the command line. They will also learn how to configure an advanced firewall rule to allow the ping command and how to specify the IPv6 address and scope ID when using ping for a link-local address.

Configuring Server 2008 Network Infrastructure Objectives

- 101. Configure IPv4 and IPv6 Addressing.

Lecture Focus Questions:

- How does a host get its IPv6 address when using stateless autoconfiguration?
- What information does the DHCP server provide when using stateless DHCPv6?
- What address does a host use to request an address from a DHCP server?
- What is the difference between the M and O flags?
- What are the five states of an autoconfigured IPv6 address?
- How is the interface ID determined in static partial assignment?

Time

About 35 minutes

Section 2.4: IPv6 Implementation

Preparation

In this section students will learn various strategies for deploying IPv4 and IPv6 interoperability; tunneling, ISATAP, 6to4, Teredo, and PortProxy.

The instructor recommends that the students memorize the following information from the IPv6 Tunnel Cheat Sheet:

Tunnel Type	Address Prefixes
ISATAP	FE80::5EFE:<IP>/128
6to4	2002:<IP>::/48
Teredo	2001:0:<IP>::/64

Configuring Server 2008 Network Infrastructure Objectives

- 101. Configure IPv4 and IPv6 Addressing.

Lecture Focus Questions:

- How does IPv6 support differ on various Microsoft operating systems?
- What limitations does ISATAP have for IPv6 implementation?
- Which IPv6 tunneling methods work through NAT?
- When should you implement Teredo?
- When is 6to4 tunneling automatically configured in Windows Server 2008?
- What technology allows an IPv4-only host to communicate with an IPv6-only host?

Time

About 20 minutes

Section 3.1: DHCP Configuration

Preparation

This section discusses how to configure a DHCP server to deliver IP addresses to clients. Students will learn how to install and authorize a DHCP server, create and activate scopes, and configure exclusion ranges and reservations.

Configuring Server 2008 Network Infrastructure Objectives

- 102. Configure Dynamic Host Configuration Protocol (DHCP).

Lecture Focus Questions:

- What are the steps a client uses to acquire an address from DHCP?
- When must you authorize a DHCP server? What permissions do you need to authorize a DHCP server?
- Why does a DHCP server shut down if its address is not found in Active Directory? What does this protect against?
- How are *reservations* different from exclusions?
- How can you change the subnet on a scope?
- What are the two ways to exclude IP addresses from a scope?
- What information is necessary to configure a reservation?

Time

About 45 minutes

Lab/Activity

- Authorize DHCP Servers
- Create a Scope
- Create Exclusion Ranges
- Create Client Reservations

Section 3.2: DHCP Options

Preparation

In this section students will learn how to configure server, scope and user/vendor class options. They will also learn how to design DHCP options to customize configuration and minimize administration.

Configuring Server 2008 Network Infrastructure Objectives

- 102. Configure Dynamic Host Configuration Protocol (DHCP).

Lecture Focus Questions:

- What are the most common DHCP options?
- Where can you configure DHCP options?
- How can you determine which options take precedence?
- How are DHCP options configured for IPv4 and IPv6?

Time

About 30 minutes

Lab/Activity

- Configure Server Options
- Configure Scope Options
- Design Scope Options
- Design DHCP Options

Section 3.3: Advanced DHCPv4 Settings

Preparation

This section examines using advanced DHCPv4 settings to configure server bindings, backup or restore a DHCP server, configure proxy settings for dynamic DNS updates, and set the number of conflict detection attempts. Students will also learn the steps to configure a DHCP server to support Bootstrap Protocol (BOOTP) clients for diskless network boot.

Configuring Server 2008 Network Infrastructure Objectives

- 102. Configure Dynamic Host Configuration Protocol (DHCP).

Lecture Focus Questions:

- How does conflict detection work? How can this affect system performance?
- How can you transfer the DHCP configuration from one server to another?
- Why would you configure BOOTP?
- Which options should you configure through the BOOTP table and not DHCP options?
- What should you do so that host names for computers running Windows NT 4.0 are automatically registered using DDNS?

Time

About 15 minutes

Section 3.4: Server Placement

Preparation

In this section students will learn how DHCP server placement affects the ability of clients to communicate with the DHCP server. Strategies to provide DHCP for multiple subnets are presented. Students will practice configuring a DHCP relay agent.

Configuring Server 2008 Network Infrastructure Objectives

- 102. Configure Dynamic Host Configuration Protocol (DHCP).

Lecture Focus Questions:

- How can you provide DHCP services to clients on subnets that do not have a DHCP server?
- What is a *multihomed* server, and how is it used with DHCP?
- How does a DHCP relay agent differ from a router that has BOOTP forwarding enabled?
- What are the advantages to having a DHCP server on every subnet?
- How can BOOTP forwarding affect your network?

Time

About 10 minutes

Lab/Activity

- Configure a DHCP Relay Agent

Section 3.5: Superscopes and Split Scopes

Preparation

This section discusses how and when to use superscopes and split scopes. Superscopes are used to combine multiple address ranges into a single logical range. Split scopes provide fault tolerance by two DHCP servers servicing a portion of each range for each subnet. Students will practice creating a split scope using the 80/20 rule.

Configuring Server 2008 Network Infrastructure Objectives

- 102. Configure Dynamic Host Configuration Protocol (DHCP).

Lecture Focus Questions:

- What are the reasons for deploying a *superscope*?
- When using multiple DHCP servers for a single scope, how should you configure the scope range for each server? Why do you configure an exclusion for a part of the address range?
- How should you configure the relay agent to ensure that the preferred server responds before the backup server in a split scope deployment?
- How does a clustered server provide fault tolerance?

Time

About 15 minutes

Lab/Activity

- Add a DHCP Server on Another Subnet

Section 3.6: DHCPv6

Preparation

This section examines the three main methods to assign IPv6 addresses to clients: stateless, stateless DHCPv6 and stateful DHCPv6. Students will learn how to create and activate an IPv6 scope using the global unicast prefix. They will also learn how to include address range exclusions as part of an IPv6 scope.

Configuring Server 2008 Network Infrastructure Objectives

- 102. Configure Dynamic Host Configuration Protocol (DHCP).

Lecture Focus Questions:

- What configuration information is provided by IPv6 routers when using IPv6 autoconfiguration? How does this differ from using APIPA with IPv4?
- What are the messages used to configure clients in stateful DHCPv6?
- Under what circumstances do you use stateful DHCPv6? What are the flag settings?
- What makes autoconfiguration of IPv6 hosts possible?

Time

About 10 minutes

Section 4.1: DNS Concepts

Preparation

In this section students will learn how the Domain Name System (DNS) translates host names to IP addresses. DNS is a distributed database with multiple servers holding different portions of the data. A fully qualified domain name (FQDN) includes the host name and the name of all domains back to the root. Students will learn the different types of authoritative DNS zones and common resource records. The instructor recommends that the students memorize the common resource records types located in *4.1.6 Common Resource Records*.

Configuring Server 2008 Network Infrastructure Objectives

- 201. Configure a Domain Name System (DNS) server.
- 203. Configure DNS records.

Lecture Focus Questions:

- What is the purpose of DNS?
- How does an *FQDN* identify a host?
- How is an Active Directory-integrated zone different from a primary zone?
- How is secondary zone data changed?
- What is the difference between a *forward* lookup zone and a reverse lookup zone?
- What is the purpose of PTR records?
- How does DDNS simplify DNS management?
- What type of zone would you create if you wanted to use secure dynamic updates?

Time

About 30 minutes

Section 4.2: Name Resolution

Preparation

This section examines the process of DNS name resolution for both the client and the server. On the client side, there are three checks a client can go through to resolve a DNS name to an IP address; Hosts file, local cache, and DNS server. Students need to know the DNS suffixes and search order; primary suffix, connection-specific, and parent suffix. On the server side, there are five checks; DNS server cache, authoritative, stub zone or conditional forward, standard forward, and root hints.

Configuring Server 2008 Network Infrastructure Objectives

- 205. Configure name resolution for client computers.

Lecture Focus Questions:

- How does the DNS resolution process on a client differ from the resolution process on a server?
- Why are there two different DNS cache locations on a DNS server?
- How do entries in the HOSTS file affect name resolution?
- What are root hints and how do they affect name resolution performed by a DNS server?

Time

About 25 minutes

Section 4.3: Zone Configuration

Preparation

In this section students will learn the basics of zone configuration such as adding the DNS server role to a server. They will practice creating primary, secondary, and reverse lookup zones and learn how to configure zone transfers between primary and secondary zones.

Configuring Server 2008 Network Infrastructure Objectives

- 201. Configure a Domain Name System (DNS) server.
- 202. Configure DNS zones.
- 204. Configure DNS replication.

Lecture Focus Questions:

- How does a caching-only server reduce name resolution traffic?
- How can a secondary zone provide security for a DNS domain?
- What is the role of the SOA record during a zone transfer?
- What are the advantages to changing zone data through the **dnscmd** command rather than manually editing the zone file?
- Why would you choose a secondary server over a caching-only server?
- What type of name resolution is performed by reverse lookup zones?

Time

About 60 minutes

Lab/Activity

- Create a Primary Zone
- Create a Secondary Zone
- Create a Reverse Lookup Zone

Section 4.4: Active Directory-integrated Zones

Preparation

This section discusses how active directory-integrated zones can be used to manage zone information. Students will learn how to create an Active Directory-integrated zone and configure the replication scope. They will also convert a primary zone to an Active Directory-integrated zone.

Configuring Server 2008 Network Infrastructure Objectives

- 202. Configure DNS zones.
- 204. Configure DNS replication.

Lecture Focus Questions:

- What are some of the benefits of Active Directory-integrated (AD-I) zones?
- How is zone data for Active Directory-integrated zones replicated?
- Under which circumstances could you disable zone transfers for an AD-I zone? When would you need to continue using DNS zone transfers?
- How do AD-I zones integrate with other zone types such as primary or secondary?
- What are the four replication scopes of an AD-I zone?

Time

About 35 minutes

Lab/Activity

- Create an Active Directory-integrated Zone
- Convert a Zone

Section 4.5: Resource Records

Preparation

This section provides information about the eight major resource records; SOA, NS, A, PTR, CNAME, MX, AAAA, and SRV. Student will learn how to create common resource records and troubleshoot DNS by adding or editing resource records.

Configuring Server 2008 Network Infrastructure Objectives

- 203. Configure DNS records.

Lecture Focus Questions:

- What is the advantage to using DDNS to manage records?
- What record type would you use to add alternate names for a DNS host?
- What records are used to identify and locate domain controllers?
- What happens if you create A and PTR records together if the reverse lookup zone doesn't exist?
- What happens when you create a CNAME record with a blank name?

Time

About 40 minutes

Lab/Activity

- Create a Zone and Add Records
- Create A and CNAME Records
- Troubleshoot Name Resolution 1
- Troubleshoot Name Resolution 2

Section 4.6: Client Configuration

Preparation

In this section students will learn how to configure a connection-specific suffix using advanced TCP/IP properties. They will also learn how to specify a suffix search order and manage DNS client registration.

Configuring Server 2008 Network Infrastructure Objectives

- 205. Configure name resolution for client computers.

Lecture Focus Questions:

- What is the purpose of listing multiple DNS IP addresses on the client?
- What are the differences between a primary suffix and a connection-specific suffix?
- What is a parent suffix? How are they used during name resolution?
- How do custom search suffixes differ from the default suffix search order?

Time

About 30 minutes

Lab/Activity

- Configure DNS Server Addresses
- Configure Search Suffixes 1
- Configure Search Suffixes 2
- Configure DNS Client Registration
- Configure DNS Group Policy Settings

Section 4.7: Dynamic DNS

Preparation

This section covers using Dynamic DNS to automatically update DNS records. Students will learn how to enable dynamic updates on a DNS zone and configure DHCP server settings to support dynamic updates.

Configuring Server 2008 Network Infrastructure Objectives

- 202. Configure DNS zones.
- 203. Configure DNS records.

Lecture Focus Questions:

- What is the relationship between DNS and DHCP when using dynamic updates?
- What are the DDNS settings you can configure on the DHCP server?
- Which operating systems support dynamic updates?
- What are the restrictions on record creation when using secure dynamic updates? Which zone types support secure dynamic updates?
- How can DHCP be used to help the dynamic update process?

Time

About 25 minutes

Lab/Activity

- Enable Dynamic DNS Updates
- Troubleshoot Dynamic DNS 1
- Troubleshoot Dynamic DNS 2
- Troubleshoot Dynamic DNS 3

Section 4.8: Stub Zones and Forwarding

Preparation

This section discusses using stub zones and forwarding to resolve queries. Stub zones contain only a partial copy of the zone database which is used to identify name servers that can be contacted for full zone information. A forwarder is a DNS server that can be used by another DNS server to resolve queries for records that cannot be resolved. A conditional forwarder is used only for unknown hosts with a given domain. Students will learn how to create a stub zone and configure forwarders and conditional forwarding.

Configuring Server 2008 Network Infrastructure Objectives

- 201. Configure a Domain Name System (DNS) server.
- 204. Configure DNS replication.

Lecture Focus Questions:

- How does conditional forwarding differ from standard forwarding?
- How does a stub zone differ from a secondary zone?
- How do conditional forwarders differ from stub zones?
- What records are copied to the zone when you create a stub zone?
- Why isn't a stub zone authoritative for the zone?

Time

About 35 minutes

Lab/Activity

- Configure a Stub Zone
- Configure Conditional Forwarding

Section 4.9: Root Hints and Root Zone

Preparation

This section provides an overview of root hints and the root zone. Root hints is the method of last resort after all other attempts to resolve a name to an IP address have been attempted. When a root zone is created (named . (dot)) on a DNS server, the server will act as a root zone server and will not access the Internet to forward DNS queries. Students will learn how to configure or delete a root zone. They will also learn how to configure other DNS servers to point to their server via root hints.

Configuring Server 2008 Network Infrastructure Objectives

- 201. Configure a Domain Name System (DNS) server.

Lecture Focus Questions:

- Why would you want to create a zone named . (dot)?
- What is the purpose of the root hints file?
- Why would you delete the root hints?
- What is the name and location(s) of the root hints file on a Windows 2008 server?

Time

About 15 minutes

Lab/Activity

- Configure Root Hints
- Create a Root Zone

Section 4.10: Zone Delegation

Preparation

This section explores using zone delegation to divide DNS namespace into separate zones. Students will learn the steps to manage zones through delegation.

Configuring Server 2008 Network Infrastructure Objectives

- 202. Configure DNS zones.

Lecture Focus Questions:

- Why might you decide to use zone delegation?
- What does a delegation identify?
- What records are created when you delegate a domain?

Time

About 20 minutes

Lab/Activity

- Delegate Domains
- Create a Delegated Zone

Section 4.11: WINS and GlobalNames

Preparation

This section discusses creating and configuring WINS-integrated zones, and enabling GlobalNames zone support. Students will learn how to create a GlobalNames zone and add a CNAME record to support single-label name resolution.

Configuring Server 2008 Network Infrastructure Objectives

- 201. Configure a Domain Name System (DNS) server.
- 202. Configure DNS zones.
- 205. Configure name resolution for client computers.

Lecture Focus Questions:

- How does the client node type control NetBIOS name resolution?
- How can you disable NetBIOS name resolution?
- What DNS record type is created when you configure a WINS-integrated zone?
- Why might you choose to not replicate WINS data in a DNS zone?
- When can you use the GlobalNames zone to replace a WINS server?
- What type of records do you create in the GlobalNames zone?
- How can you extend the GlobalNames zone across multiple forests?
- Which strategies can you use to provide single-label name resolution for IPv6 hosts?
- When will a Windows client use LLMNR? What limitations does relying on LLMNR have?

Time

About 40 minutes

Lab/Activity

- Enable WINS Replication

Section 4.12: DNS Features

Preparation

This section discusses the following DNS features:

- Aging and Scavenging
- Round Robin
- Link-Local Multicast Name Resolution (LLMNR)
- Background zone loading
- IPv6 DNS Support
- Read-only Domain Controller (RODC)
- GlobalNames Zones
- Global Query Block List
- Conditional Forwarding
- Domain controller search
- DNSSEC Support

Students will learn how to configure DNS Round Robin. They will also learn how to manage DNS from the command line.

Configuring Server 2008 Network Infrastructure Objectives

- 202. Configure DNS zones.
- 204. Configure DNS replication.

Lecture Focus Questions:

- How do stale records affect DNS server performance?
- How does the **no-refresh interval** affect scavenging?
- When is a DNS record considered *stale*?
- What is the difference between DNS Round Robin and Network Load Balancing?
- How does convergence make NLB a dynamic solution?
- How does background loading have a positive affect on name resolution?

Time

About 40 minutes

Lab/Activity

- Configure DNS Round Robin

Section 4.13: DNS Design

Preparation

In this section students will learn the strategies and goals for designing DNS namespace. They will also learn a variety of configuration options to use and security considerations when designing a DNS solution.

Configuring Server 2008 Network Infrastructure Objectives

- 201. Configure a Domain Name System (DNS) server.
- 202. Configure DNS zones.
- 204. Configure DNS replication.

Lecture Focus Questions:

- When using internal and external DNS, what are the three possible scenarios for the DNS namespace?
- What are the advantages and disadvantages of each of the three methods?
- What are the goals of any split namespace design?
- When should you use conditional forwarding instead of a standard forward?
- When should you use a WINS server instead of configuring a GlobalNames zone?
- How do Active Directory-integrated zones improve security and fault tolerance of DNS data?
- What type of zones should you use on DNS servers exposed to the public network?

Time

About 20 minutes

Section 5.1: Routing

Preparation

In this section students will become familiar with routing concepts and the commands to manage routing table entries. They will learn how to install the RRAS components of the Network Policy and Access Services and how to add and modify IPv4 and IPv6 routes through the command line or GUI.

Configuring Server 2008 Network Infrastructure Objectives

- 103. Configure Routing.

Lecture Focus Questions:

- Which role do you install on a Windows Server 2008 server to get the routing component?
- What is the purpose of a default route?
- Under what circumstances can you most effectively use static routes?
- What is the **route add** switch that allows you to make a route permanent?
- What routes are automatically added to the routing table when routing is enabled?

Time

About 45 minutes

Lab/Activity

- Enable LAN Routing
- Add Static Routes

Section 5.2: RIP

Preparation

This section provides an overview of RIP dynamic routing protocols. RIP characteristics and configurable RIP features are discussed. Students will learn how to configure RIP by adding the RIP protocol and adding interfaces to run RIP. They will also learn how to configure RIP sending and receiving protocols, filters and neighbor lists.

Configuring Server 2008 Network Infrastructure Objectives

- 103. Configure Routing.

Lecture Focus Questions:

- What is the difference between static and dynamic routing?
- What routing protocols does Windows Server 2008 support?
- What is the difference between RIP version 2 and RIP? Why has RIP version 2 become the standard?
- What is Silent RIP and how does it affect learning and sharing routes?
- What affect does configuring neighbors have on RIP broadcasts and multicasts?
- What is route summarization?

Time

About 25 minutes

Lab/Activity

- Configure RIP Routing

Section 5.3: Demand-dial Routing

Preparation

This section discusses the processes to establish demand-dial routing to connect two networks through a link that is available on demand. Students will learn to use the Routing and Remote Access wizard to configure demand-dial routing. They will also practice configuring auto-static routing for RIP.

Configuring Server 2008 Network Infrastructure Objectives

- 103. Configure Routing.

Lecture Focus Questions:

- How is a demand-dial link established?
- What is the difference between dial-in and dial-out credentials?
- How do demand-dial filters differ from packet filters?
- Which filter type would you configure to prevent a specific traffic type from using a demand-dial link?
- Why is auto-static routing important when using demand-dial routing?

Time

About 30 minutes

Lab/Activity

- Configure Demand Dial Routing
- Configure Auto-static Routing

Section 5.4: ICS and NAT

Preparation

In this section students will learn the basics of using Internet Connection Sharing (ICS) and Network Address Translation (NAT) to share an Internet connection with an internal private network. ICS is designed for smaller internal networks and allows multiple computers to share a single Internet connection. NAT is designed for larger environments and is enabled on a 2008 RRAS server. It is used to connect a private network to the Internet by translating the public address of the NAT router. Students will learn how to configure a server as a NAT router, configure a NAT router to provide DHCP and DNS proxy services, and configure address and port mappings in NAT.

Configuring Server 2008 Network Infrastructure Objectives

- 301. Configure remote access.

Lecture Focus Questions:

- What does a NAT router do?
- What are the address ranges you can use when you deploy NAT?
- How can NAT provide security for a private network?
- What changes take place automatically to the TCP/IP settings when you enable ICS on an interface?
- What are the limitations of using ICS over NAT? When would ICS be a good choice? When must you use NAT instead of ICS?

Time

About 25 minutes

Lab/Activity

- Configure NAT

Section 6.1: Remote Access Concepts

Preparation

Students will learn the details of the three stages of the Remote Access process. Remote Access connections available are dialup, VPN and SSTP. Authentication protocols ensure that remote users have the necessary credentials for remote access. Authorization determines if access is granted based on connections and other criteria.

Configuring Server 2008 Network Infrastructure Objectives

- 301. Configure remote access.
- 303. Configure network authentication.

Lecture Focus Questions:

- Which VPN protocols does Windows Server 2008 support?
- Which authentication protocols support smart card use?
- What makes CHAP vulnerable to security breaches?
- What is the difference between *authorization* and *authentication*?
- What is the server's response to a connection that doesn't match the conditions for a policy?
- What is the difference between *constraints* and *conditions*? How are they similar?
- What happens to a connection that matches the policy conditions but not the policy constraints? How many other policies will be checked in this scenario?
- Where does the server find the permissions for a connection?
- What must occur before *settings* are applied?

Time

About 25 minutes

Section 6.2: Dial-up and VPN

Preparation

This section explores configuring a Remote Access server to use Dial-up and VPN connections. Students will learn how to enable remote access on a Windows Server 2008 server, configure VPN ports on a server and control remote access by configuring network access policies. They will also learn how to create a client dial-up connection and configure a client VPN connection.

Configuring Server 2008 Network Infrastructure Objectives

- 301. Configure remote access.

Lecture Focus Questions:

- Which setting must you configure in Routing and Remote Access to allow remote clients to access the private network, and not just the resources on the remote access server?
- What object in Routing and Remote Access identifies a logical connection to the remote access server?
- What are the ways that you can configure a remote access client to get an address for the remote access connection?
- What role do network policies play when you configure the remote access server?
- How do network policy *constraints* differ from *conditions*? When would you use the same setting in a constraint instead of a condition?
- Why does the policy application order affect whether or not clients can connect to a remote access server?
- When viewing the properties of a network connection, when will the Sharing tab be visible?

Time

About 70 minutes

Lab/Activity

- Configure a Remote Access Server
- Reconfigure a Server for Remote Access
- Configure a VPN Server
- Configure VPN Ports
- Create a Network Access Policy 1
- Create a Network Access Policy 2

Section 6.3: SSTP

Preparation

This section examines using Secure Socket Tunneling Protocol (SSTP) to establish a VPN connection. Students will learn how to request a server certificate for SSTP, configure a remote access server to allow SSTP connections and configure a VPN connection on a client computer to use SSTP.

Configuring Server 2008 Network Infrastructure Objectives

- 301. Configure remote access.

Lecture Focus Questions:

- What advantages does using SSTP have over using either PPTP or L2TP for a VPN connection?
- What ports must you open in a firewall to allow SSTP?
- How can you ensure that the SSTP client trusts the SSTP server certificate?
- What client and server operating systems support SSTP?

Time

About 10 minutes

Section 6.4: CMAK

Preparation

This section provides an overview of how the Connection Manager Administration Kit (CMAK) is used to manage remote access for larger deployments. Connection Manager is used to configure client remote access connections. Connection settings are stored in profiles for either VPN or dial-up connections.

Configuring Server 2008 Network Infrastructure Objectives

- 301. Configure remote access.

Lecture Focus Questions:

- What permissions do you need to create a profile?
- How do profiles facilitate remote access connection configuration deployment?
- What methods can you use to distribute profiles to clients?
- What does a phone book tell clients?

Time

About 5 minutes

Section 7.1: Network Location Profiles

Preparation

This section provides a summary of network location profiles. The network profile determines the behavior for components like the Windows Firewall and Network Discovery. Students will learn how to change the location type on a client computer and configure Network List Manager Policies to control client network connection profiles.

Configuring Server 2008 Network Infrastructure Objectives

- 208. Describe enhanced switching technologies
- 213. Configure, verify, and troubleshoot VTP

Lecture Focus Questions:

- What are the characteristics of a Public network? Why is network discovery disabled for the Public profile?
- What are the firewall and antivirus software recommendations for the Private profile?
- How are security settings controlled in the Domain profile?
- What can you control through the **All Networks** policy?

Time

About 10 minutes

Section 7.2: Wireless

Preparation

In this section students will learn how to configure a client wireless connection and to configure wireless settings through Group Policy. They will learn methods which can be implemented to improve security of wireless access points.

Configuring Server 2008 Network Infrastructure Objectives

- 303. Configure network authentication.
- 304. Configure wireless access.

Lecture Focus Questions:

- Under which circumstances might you choose an ad hoc wireless network?
- How does WPA-Personal differ from WPA-Enterprise?
- What type of authentication method should you not use when using WEP?
- How can you allow users to access a wireless network that does not broadcast its SSID?
- What settings in Group Policy allow you to restrict access to wireless networks?
- How does Fast Reconnect allow users to move from access point to access point?
- What are three actions you should take to increase the security of a wireless access point?
- How does MAC address filtering improve security of a wireless access point? Why is this action by itself insufficient to prevent unauthorized access?

Time

About 55 minutes

Lab/Activity

- Create a Wireless Policy

Section 7.3: RADIUS

Preparation

This section discusses using Remote Authentication Dial-In User Service (RADIUS) to consolidate network policies for multiple servers to authenticate remote access clients. Students will learn how to configure a remote access server as a RADIUS client and configure a RADIUS server. They will also learn how to configure a RADIUS proxy by configuring Remote RADIUS server groups and Connection Request policies.

Configuring Server 2008 Network Infrastructure Objectives

- 301. Configure remote access.

Lecture Focus Questions:

- When using a RADIUS solution, where are network access policies configured?
- What is the difference between a RADIUS client and a remote access client?
- Why would you implement a RADIUS proxy?
- What is the difference between a RADIUS client and a RADIUS proxy?
- What is the difference between a connection request policy and a network access policy?
- How does the RADIUS proxy use the remote RADIUS server group when processing authentication requests?

Time

About 35 minutes

Lab/Activity

- Configure a RADIUS Server
- Configure a RADIUS Client
- Configure a RADIUS Proxy

Section 7.4: Network Access Protection (NAP)

Preparation

This section examines how NAP can be used to regulate network access or communication based on a computer's compliance with health requirement policies. Students will learn how to configure a DHCP server as an enforcement point. They will also learn how to configure SHV settings, remediation server groups, health policies, network policies and enable NAP enforcement on a client computer.

Configuring Server 2008 Network Infrastructure Objectives

- 302. Configure Network Access Protection (NAP).

Lecture Focus Questions:

- Why is a non-compliant computer not necessarily an immediate security threat?
- What happens to a computer that receives a limited access health state validation?
- What functions are performed by the System Health Validator (SHV)?
- Which NAP component do you modify to identify the health checks that should be performed?
- How do remediation servers and auto-remediation help clients become compliant?
- Which enforcement method uses Connection Authorization Policies? Which one uses Connection Request Policies? Which one uses a Health Registration Authority (HRA)?
- What type of communication occurs in the boundary network when using IPsec enforcement?

Time

About 60 minutes

Section 7.5: Network Authentication

Preparation

In this section students will learn two network authentication mechanisms for logging on to the server or domain: Kerberos and NTLM. They will learn how to configure Group Policy to enforce the use of NTLMv2 for authentication.

Configuring Server 2008 Network Infrastructure Objectives

- 303. Configure network authentication.

Lecture Focus Questions:

- What advantages does Kerberos have over NTLM? What disadvantages does it have compared to NTLM?
- What are the conditions for running NTLMv2?
- When can you deploy Kerberos?
- When should you use NTLM instead of NTLMv2?

Time

About 15 minutes

Lab/Activity

- Enforce NTLM v2

Section 7.6: Firewall

Preparation

This section discusses the specifics of Windows Firewall. Students will learn how to use the Basic Firewall to allow traffic based on port, protocol, or application and how to use the Windows Firewall with Advanced Security to manage custom firewall rules. They will also learn how to use Group Policy to enforce firewall rules.

Configuring Server 2008 Network Infrastructure Objectives

- 305. Configure firewall settings.

Lecture Focus Questions:

- When must you use the Advanced Firewall instead of the Basic Firewall?
- When would you configure a custom exception?
- What does the exception scope do?
- What are the components of a policy?
- Why should you allow traffic based on application instead of port when possible?
- How can a policy help you maintain security integrity in your network?

Time

About 35 minutes

Section 7.7: IPsec

Preparation

This section provides the details of how Internet Protocol Security (IPsec) protects IP packets during transmission. IPsec is configured through the Windows Firewall with Advanced Security console for Vista and Windows Server 2008. Connection security rules are configured by determining the rule type, requirements, authentication method, and profile(s) to which the rule applies. Students will learn how to monitor connection security rules and security associations.

Configuring Server 2008 Network Infrastructure Objectives

- 104. Configure IPsec.

Lecture Focus Questions:

- Under which circumstances should you not use Authentication Header (AH)?
- What additional services does Encapsulating Security Payload (ESP) provide over AH?
- What is the difference between data *integrity* and data *confidentiality*?
- What method is used to provide data integrity? What method provides confidentiality?
- What enhancements does AuthIP provide over IKE? What are the requirements for using AuthIP?
- What are the phases of an IPsec connection?
- What does the key lifetime affect?
- What function is performed by the Diffie-Hellman protocol?

Time

About 35 minutes

Section 8.1: File Services

Preparation

This section explores installing the File Services Role to manage network file sharing. When installing the File Services role, the following role services are available to choose from:

- File Server
- Distributed File System (DFS)
- File Server Resource Manager (FSRM)
- Services for Network File System (NFS)
- Windows Search Service
- Windows Server 2003 File Services

Configuring Server 2008 Network Infrastructure Objectives

- 401. Configure a file server.

Lecture Focus Questions:

- What features are provided by File Server Resource Manager (FSRM)?
- What does file screening allow you to do?
- When might you use Services for Network File System (NFS)?
- What role service would you add to allow replication for DFS with non-Windows Server 2008 servers?

Time

About 7 minutes

Section 8.2: File Shares

Preparation

This section discusses creating and managing shared folders. The instructor presents six methods to share a folder:

1. net share
2. File System
3. Advanced Sharing
4. fsmgmt.msc
5. Network and Sharing Center
6. Server Manager

Students will learn how to configure and manage shared folders and files. They will learn how to restrict share access through share permissions and user limits.

Configuring Server 2008 Network Infrastructure Objectives

- 401. Configure a file server.

Lecture Focus Questions:

- What permissions do you need to share a folder or configure share permissions?
- What is the difference between read and change permissions?
- How does using access-based enumeration on shared folders modify what users can see?
- What tools are available to you to create and manage shares?
- What is the effect of appending \$ to a share name?

Time

About 35 minutes

Lab/Activity

- Share a Folder with a Second Name
- Remove a Shared Folder

Section 8.3: Offline Files

Preparation

This section provides information about using offline files to work with documents in shared folders even when the user is not connected to the network. Students will learn how to configure caching options for offline files, including automatic caching of files and caching of applications. They will learn how to configure offline availability on the client and manage synchronization settings through the Sync Center.

Configuring Server 2008 Network Infrastructure Objectives

- 401. Configure a file server.

Lecture Focus Questions:

- How does the offline files feature ease file management for mobile users?
- What happens to NTFS permissions on cached copies of files?
- How does synchronization affect files?
- What steps can you take to reconcile synchronization conflicts?
- What is the result of encrypting the offline files cache with the user key?
What security vulnerability does this resolve?

Time

About 30 minutes

Lab/Activity

- Enable Share Caching
- Disable Share Caching

Section 8.4: NTFS Permissions

Preparation

This section explores using NTFS permissions to control access to folders and files on an NTFS partition. Students will learn how to configure NTFS permissions, and how to copy, remove and modify inherited permissions. When they complete this section they should also be able to identify the effective permissions a user has to a file or folder and change file or folder ownership.

Configuring Server 2008 Network Infrastructure Objectives

- 401. Configure a file server.

Lecture Focus Questions:

- When do NTFS permissions apply?
- What are the differences between the NTFS Full Control permission and the Modify permission?
- Which permission assignment overrides all other permission assignments?
- What is the advantage of the Take Ownership right? When can you use this right to the greatest effect?
- What happens to permissions when a file with NTFS permissions is moved to a non-NTFS partition?
- How might a user end up with more NTFS permissions to a folder than what appear on the access control list for that user?
- How can you prevent a member of a group from getting the NTFS permissions assigned to the group without removing the user from the group?

Time

About 40 minutes

Lab/Activity

- Configure NTFS Permissions
- Remove Inherited Permissions

Section 8.5: Share and NTFS Permissions

Preparation

In this section students will learn how share permissions and NTFS permissions work together to control access. Students will learn to configure combined NTFS and share permissions.

Configuring Server 2008 Network Infrastructure Objectives

- 401. Configure a file server.

Lecture Focus Questions:

- What are the differences and similarities between NTFS permissions and share permissions?
- What strategy can you use to combine NTFS and share permissions?
- Why should you assign permissions to groups rather than users?
- How do logged on users get updated permissions?

Time

About 30 minutes

Lab/Activity

- Configure Share Permissions
- Configure NTFS and Share Permissions 1
- Configure NTFS and Share Permissions 2

Section 8.6: EFS

Preparation

This section discusses using Encrypting File System (EFS) to encrypt a file or folder. EFS uses a combination of symmetric and asymmetric encryption.

1. EFS uses symmetric encryption to encrypt the file.
2. The symmetric encryption key is then encrypted using asymmetric encryption.

Students will learn how to encrypt or decrypt a file or folder, add authorized users to allow encrypted file access, designate designated recovery agents (DRAs) for file recovery and configure EFS settings in Group Policy.

Configuring Server 2008 Network Infrastructure Objectives

- 401. Configure a file server.

Lecture Focus Questions:

- What is the importance of the DRA in the encryption process?
- Which users have access to encrypted files and folders?
- What is the relationship between encryption and compression?
- What is the significance of encrypting the pagefile?
- How does **Rekeywiz** affect your encryption deployment?

Time

About 35 minutes

Lab/Activity

- Encrypt a Folder

Section 8.7: Distributed File System (DFS)

Preparation

This section explores using DFS to logically organize shared folders on multiple servers into a single logical folder hierarchy. Students will learn how to create stand-alone or domain-based DFS namespaces, add folders and folder targets to a namespace, and configure DFS replication by creating replication groups and replicated folders.

Configuring Server 2008 Network Infrastructure Objectives

- 402. Configure Distributed File System (DFS).

Lecture Focus Questions:

- What is the advantage of a domain-based namespace over a stand-alone namespace?
- What is the role of a namespace server?
- How can you achieve fault tolerance using DFS?
- How does DFS replication differ from FRS replication? What conditions must be met before you can use DFS replication?
- How do you add FRS replication support to your file server? How do you manage FRS replication?
- What role do *connections* play in DFS replication?

Time

About 40 minutes

Lab/Activity

- Create a DFS Structure

Section 8.8: Shadow Copy

Preparation

This section covers using shadow copy to make copies of files at regular intervals. This allows you to take a snapshot of files and shared folders which can be used at a later date to recover previous versions of a file or recover a deleted file. Students will learn how to enable shadow copies on a volume and configure shadow copy settings, including storage location, size, and schedule. They will learn how to create snapshots and save, copy, or restore previous versions of files.

Configuring Server 2008 Network Infrastructure Objectives

- 403. Configure shadow copy services.

Lecture Focus Questions:

- How much disk space do shadow copies take by default?
- What is the maximum number of shadow copies the system stores? What happens when the system reaches this limit?
- What happens to NTFS permissions when you restore a file? When you copy a file?
- Why is it recommended that you place shadow copies on different volumes?
- How should client work patterns affect your shadow copies schedule?
- What is the relationship between shadow copies and regular backups?

Time

About 25 minutes

Lab/Activity

- Enable Shadow Copies

Section 8.9: Backup and Restore

Preparation

In this section students will become familiar with Windows Server Backup which is used to provide backup and recovery for Windows Server 2008 and replaces NTbackup.exe. Students will learn how to install the Windows Server Backup features, configure a regular backup schedule, and configure and run a Backup Once backup operation. They will also learn how to restore a backup, restoring the full volume or selected folders and files.

Configuring Server 2008 Network Infrastructure Objectives

- 404. Configure backup and restore.

Lecture Focus Questions:

- Which backup storage type(s) would you choose if you wanted to be able to restore individual folders or files?
- What volumes are always included in scheduled backups? How can you create a backup to exclude these volumes?
- What storage types are available when using automatic backups?
- What happens to a local disk when you designate it for use by Windows Server Backup?
- How can you create automatic backups with a frequency less than once a day?
- Which backup type can only be performed from the command prompt?
- What can you do using **Ntbackup** on a Windows Server 2008 system?

Time

About 40 minutes

Section 8.10: Disk Quotas

Preparation

This section examines using disk quotas to restrict the amount of disk space user's files can use on an NTFS volume. Disk quotas are set up per volume and per user and cannot be configured using groups. Students will learn how to configure disk quotas and enforce quota limits, add quota entry exceptions for specific users, and enable quota logging for warning levels.

Configuring Server 2008 Network Infrastructure Objectives

- 405. Manage disk quotas.

Lecture Focus Questions:

- Are disk quotas configured on disks, volumes, folders, or files?
- What effect does compressing files have on the disk quota limit?
- What actions can be taken when a user exceeds the disk quota limit?
- How can you have a disk quota configured, but still allow users to exceed the quota limits?
- What conditions must be met before you can delete a disk quota entry?
- Which user is exempt from disk quotas?

Time

About 25 minutes

Lab/Activity

- Enable Quota Restrictions
- Create a Quota Entry
- Modify Quota Limits

Section 8.11: FSRM Features

Preparation

This section explores using the File Server Resource Manager (FSRM) snap-in to manage folder and volume quotas. There are three main components to FSRM with a command line version of each:

Components	Command Line Version
Quota Management	Dirquota.exe
File Screening Management	Filescrn.exe
Storage Reports Management	Storrept.exe

Students will learn how to:

- Configure volume and folder quotas
- Create quota templates.
- Configure file screens and file screen exceptions.
- Create custom file groups.
- Generate FSRM reports for both quotas and overall file system use. Schedule FSRM reports.

Configuring Server 2008 Network Infrastructure Objectives

- 405. Manage disk quotas.

Lecture Focus Questions:

- What are the primary differences between disk quotas and quotas implemented through FSRM?
- How does a *soft* quota differ from a *hard* quota?
- How do quota templates facilitate quota management?
- What is the difference between a quota and a file screen?
- How is an active file screen more restrictive than a passive file screen?

Time

About 30 minutes

Section 8.12: Print Services

Preparation

In this section students will learn how to manage print services on a Windows Server 2008 system by installing the Print Services role. They will learn how to create and share a printer, modify various printer properties, and deploy printers using Group Policy.

Configuring Server 2008 Network Infrastructure Objectives

- 406. Configure and monitor print services.

Lecture Focus Questions:

- What is the difference between a *print device* and a *printer*?
- When would you add the LPD service when configuring the Print Services role?
- For which physical printing configurations would you choose a local printer when adding a printer? When would you choose a network printer?
- Under which circumstances would you configure a printer to use multiple print devices? When would you configure multiple printers for a single print device?
- How can you ensure important print jobs will automatically be printed before any other print jobs?
- How do clients obtain the correct driver for shared printers?

Time

About 60 minutes

Lab/Activity

- Create and Share a Printer
- Configure Printer Pooling
- Restrict Printer Access

Section 9.1: WSUS

Preparation

This section discusses how Windows Server Update Services (WSUS) allows you to configure a server on your intranet as a centralized point for updating software. Students will learn how to install WSUS and configure a WSUS server to download updates from Microsoft Update. They will learn how to synchronize and approve updates, and configure a child server as a replica of an upstream server. They will also learn how to run reports to view client and update information.

Configuring Server 2008 Network Infrastructure Objectives

- 501. Configure Windows Server Update Services (WSUS) server settings.

Lecture Focus Questions:

- How do clients receive updates in the absence of WSUS? What are the disadvantages that this method poses for your network?
- When should you deploy multiple, independent WSUS servers? How is this configuration similar to a single WSUS server?
- How would you deploy WSUS when an Internet connection is not allowed for an isolated network?
- How does the **Store updates locally** setting affect where client computers go to get update files?
- What is the difference between synchronizing updates, downloading updates, and approving updates?

Time

About 45 minutes

Section 9.2: Client Configuration

Preparation

This section covers WSUS Client Configuration and Targeting. Each client computer must have the Automatic Updates client software to use automatic updates. Targeting allows you to manage deployment of updates to specific computers through the use of groups. Students will learn how to:

- Control client update behavior through Group Policy.
- Create computer groups for targeting, and manually modify group membership.
- Enable client-side targeting on the WSUS server.
- Configure client-side targeting through Group Policy.

Configuring Server 2008 Network Infrastructure Objectives

- 501. Configure Windows Server Update Services (WSUS) server settings.

Lecture Focus Questions:

- By default, how often does the client check for updates? Which policy allows you to have clients check more frequently?
- Which policy do you edit to point clients to your WSUS server instead of the Microsoft Update website?
- How are updates installed if you enable the **Do not display 'Install Updates and Shut Down' option in Shut Down Windows dialog box** policy?
- When using client-side targeting, how do you identify the computer group for a specific computer? How does this differ from server-side targeting?

Time

About 40 minutes

Lab/Activity

- Enforce WSUS Settings

Section 9.3: MBSA

Preparation

This section explores using Microsoft Baseline Security Analyzer (MBSA) to scan computers for security compliance. Students will learn how to use MBSA to scan machines and create security reports.

Configuring Server 2008 Network Infrastructure Objectives

- 501. Configure Windows Server Update Services (WSUS) server settings.

Lecture Focus Questions:

- What types of system vulnerabilities can you find with MBSA?
- How can you initiate a scan on a single computer?
- Why does MBSA require Internet connectivity?
- How does the Enterprise Scan Tool (EST) enhance an MBSA scan?

Time

About 15 minutes

Section 10.1: Reliability and Performance Monitor

Preparation

This section examines using Reliability and Performance Monitor to:

- View system real-time statistical displays.
- Add specific object counters to Performance Monitor for local or remote machines.
- Use the System Stability Chart to see historical system information.
- Configure and run Data Collector Sets for system baselines and to preserve performance statistics.

Configuring Server 2008 Network Infrastructure Objectives

- 502. Capture performance data.

Lecture Focus Questions:

- What is the relationship between a *counter* and an *object*?
- What service must a remote computer run to allow you to connect to it using Reliability and Performance Monitor?
- What kind of data collector allows you to capture software process events?
- What action can you take if you want to know when the CPU in a system runs over 80% more than 15% of the time?
- How do data collector sets help you manage data collection and reports?

Time

About 45 minutes

Section 10.2: Event Viewer

Preparation

In this section students will learn how to access and manage event logs through Event Viewer. They will learn how to:

- View events to gather information, such as Event ID, Log Name, User, and Computer.
- Create event filters and custom log views.
- Search and save logs.
- Attach tasks to events or to logs.
- Configure subscriptions to pull events from remote machines.

Configuring Server 2008 Network Infrastructure Objectives

- 503. Monitor event logs.

Lecture Focus Questions:

- Which log do you view to troubleshoot errors during a software installation?
- What options do you have for a log file that has reached its designated capacity?
- What happens to the data in a log that you save that has a filter on it?
- How does a custom view differ from adding a filter to a log?
- How can you combine events from multiple logs into a single report?
- What tasks can you attach to an event or log?
- What is the purpose of the Event Log Online Help link inside each event?
- What two services are required to configure event subscriptions?
- Where do you go to view events collected from remote computers collected using event subscriptions?

Time

About 40 minutes

Section 10.3: Network Monitor

Preparation

This section discusses the basics of using Network Monitor to monitor network traffic. Students will learn how to:

- Configure Network Monitor to capture packets.
- Configure and remove capture and display filters.
- Configure conversations to group data by type.
- Save captured files for troubleshooting and analysis.

Configuring Server 2008 Network Infrastructure Objectives

- 504. Gather network data.

Lecture Focus Questions:

- What are the differences between display filters and capture filters?
- What should you do after you have modified a capture filter? Why is this unnecessary when reconfiguring a display filter?
- What is the difference between capturing in promiscuous mode and capturing without promiscuous mode? When will using promiscuous mode not result in significant differences in the data captured?
- How can aliases make troubleshooting easier?
- What permissions do you need to run Network Monitor?

Time

About 20 minutes

Section 10.4: SNMP

Preparation

This section discusses using Simple Network Management Protocol (SNMP) to manage network-attached devices. Students will learn how to add SNMP Agent support to workstations and servers, and configure the SNMP Agent service properties.

Configuring Server 2008 Network Infrastructure Objectives

- 504. Gather network data.

Lecture Focus Questions:

- What is the difference between *polling* and *traps*?
- Why is the default community name a security vulnerability?
- What does each of the community rights allow the agent or device to do? Why might READ WRITE and READ CREATE rights pose a security threat?

Time

About 20 minutes

Practice Exams

Preparation

This section provides information to help prepare students to take the exam and to register for the exam.

Students will also have the opportunity of testing their mastery of the concepts presented in this course to reaffirm that they are ready for the certification exam. For example, all questions that apply to **Objective 100. IP Addressing** are grouped together and presented in practice exam *100. IP Addressing, All Questions*. Students will typically take about 60-90 minutes to complete each of the following practice exams.

- 100. IP Addressing, All Questions (73 questions)
- 200. Name Resolution, All Questions (78 questions)
- 300. Network Access, All Questions (65 questions)
- 400. File and Print, All Questions (89 questions)
- 500. Monitoring and Managing, All Questions (39 questions)

The *Certification Practice Exam* consists of 52 questions that are randomly selected from the above practice exams. Each time the Certification Practice Exam is accessed different questions may be presented. The Certification Practice Exam has a time limit of 90 minutes -- just like the real certification exam. A passing score of 95% should verify that the student has mastered the concepts and is ready to take the real certification test.