

## REVIEW LESSON

MTA Course: 98-366 Networking Fundamentals

Lesson name: Understanding Protocols and Services 3.5

Topic: Understand networking services.

(One 50-minute class period)

File name: NetFund\_RL\_3.5

### Lesson Objective

**3.5:** Understand networking services. *This objective may include but is not limited to:* DHCP, IPsec, remote access.

### Preparation Details

#### Prerequisite student experiences and knowledge

This MTA Certification Exam Review lesson is written for students who have learned about networking fundamentals. Students who do not have the prerequisite knowledge and experiences cited in the objective will find additional learning opportunities using resources such as those listed in the Microsoft® resources and Web links at the end of this review lesson.

#### Instructor preparation activities

- Make copies of Student Activity NetFund\_SA\_3.5

#### Resources, software, and additional files needed for this lesson

- NetFund\_PPT\_3.5
- NetFund\_SA\_3.5
- NetFund\_SA\_3.5\_Key

## **Teaching Guide**

### **Essential Vocabulary**

**authentication service**—in a multiuser or network operating system, the process by which the system validates a user's logon information. A user's name and password are compared against an authorized list, and if the system detects a match, access is granted to the extent specified in the permission list for that user.

**directory services**—software system that stores, organizes, and provides access to information in a directory; a service on a network that returns mail addresses of other users or enables a user to locate hosts and services.

**Dynamic Host Configuration Protocol (DHCP)**—an autoconfiguration protocol used on IP networks. A TCP/IP protocol that enables a network connected to the Internet to assign a temporary IP address to a host automatically when the host connects to the network.

**domain name system (DNS)**—a naming system for computers, services, or any resource connected to the Internet or a private network.

**IPsec**—a protocol suite for securing Internet protocol (IP) communications by authenticating and encrypting each IP packet of a data stream.

**network file system (NFS)**---a distributed file system, which is accessed over a computer network. Allows users to access remote files and directories on a network as if they were local.

**networking services**—installed on servers to provide secure shared resources to client computers.

**remote access**—communication with a data processing facility from a remote location or facility through a data link.

## **Lesson Sequence**

### **Activating prior knowledge/lesson staging (Anticipatory Set: 10 minutes)**

1. Student prompt (see PowerPoint® slide 3):  
Most schools use DHCP to manage student access to networks.
  1. What happens when you log on?
  2. List all of the services a computer network provides when using DHCP.
  3. What IP address do you start with?

Discuss your answers with a partner.

**Answers for instructor****Answers to Anticipatory Set question 1:**

DHCP assigns an IP address when a system is started, for example:

1. A user turns on a computer with a DHCP client.
2. The client computer sends a broadcast request (called a DISCOVER or DHCPDISCOVER), looking for a DHCP server to answer.
3. The router directs the DISCOVER packet to the correct DHCP server.
4. The server receives the DISCOVER packet. Based on availability and usage policies set on the server, the server determines an appropriate address (if any) to give to the client. The server then temporarily reserves that address for the client and sends back to the client an OFFER (or DHCPOFFER) packet, with that address information. The server also configures the client's DNS servers, WINS servers, NTP servers, and sometimes other services as well.
5. The client sends a REQUEST (or DHCPREQUEST) packet, letting the server know that it intends to use the address.
6. The server sends an ACK (or DHCPACK) packet, confirming that the client has been given a lease on the address for a server-specified period of time.

**Answers to Anticipatory Set question 2:**

1. Authentication services—validates users or other systems
  2. Directory services—software system that stores, organizes, and provides access to information in a directory. Also returns mail addresses of other users or enables a user to locate hosts and services.
  3. DNS—acronym for **d**omain **n**ame **s**ystem—a naming system for computers, services, or any resource connected to the Internet or a private network
  4. E-mail—a method of exchanging digital messages across the Internet or other computer networks
  5. Printing—a process for reproducing text and image, typically with ink on paper using a printing press
  6. Network file system—distributed file system, which is accessed over a computer network
  7. DHCP Dynamic Host Configuration Protocol) —an autoconfiguration protocol used on IP networks
2. Have students form groups of three to discuss their answers.
  3. As time permits, call on a few students to report to the group with their responses.

**Lesson activity (30 minutes)****1. Teacher Instruction**

Use the included PowerPoint presentation to review networking services: DHCP, IPsec, and remote access.

**Assessment/lesson reflection (10 minutes)****1. Have students complete NetFund\_SA\_3.5**

- If time permits, review the questions and answers with the students.

**Microsoft resources and Web links**

- **Indiana University: DHCP**  
*<http://kb.iu.edu/data/adov.html>*
- **It.Toolbox: Why Should We Use DHCP**  
*<http://it.toolbox.com/blogs/locutus/why-we-should-use-dhcp-15577>*
- **Search Midmark Security: Remote Access**  
*[http://searchmidmarketsecurity.techtarget.com/sDefinition/0,,sid198\\_gci212887,00.html](http://searchmidmarketsecurity.techtarget.com/sDefinition/0,,sid198_gci212887,00.html)*
- **Wikipedia: IPsec**  
*<http://en.wikipedia.org/wiki/IPsec>*
- **Wikipedia: DHCP**  
*[http://en.wikipedia.org/wiki/Dynamic\\_Host\\_Configuration\\_Protocol](http://en.wikipedia.org/wiki/Dynamic_Host_Configuration_Protocol)*
- **Wikipedia: Remote Access**  
*[http://en.wikipedia.org/wiki/Remote\\_access](http://en.wikipedia.org/wiki/Remote_access)*