

## REVIEW LESSON

MTA Course: 98-367 Security Fundamentals

Lesson name: Understand Network Security 3.3\_A

Topic: Understand network isolation

(One 50-minute class period)

File name: SecurityFund\_RL\_3.3\_A

### Lesson Objective

**3.3\_A:** Understand network isolation. *This objective may include, but is not limited to:* VLANs; routing; honeypot; perimeter network; NAT; VPN; IPsec; Server and Domain Isolation.

### Preparation Details

#### Instructor preparation activities

- Make copies of Student Activity SecurtyFund\_SA\_3.3\_A

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

- SecurityFund\_PPT\_3.3\_A
- SecurityFund\_SA\_3.3\_A
- SecurityFund\_SA\_3.3\_A\_Key

### Teaching Guide

#### Essential Vocabulary

**Perimeter Network**—a perimeter network (also known as DMZ, demilitarized zone, and screened subnet) is a physical or logical subnetwork that contains and exposes an organization's external services to a larger untrusted network, usually the Internet. perimeter network is to add an additional layer of security to an organization's local area network (LAN); an external attacker only has access to equipment in the perimeter network, rather than any other part of the network.

**honeypot**—a security program designed to lure and distract a network attacker with decoy data. The honeypot appears to be a system that the intruder would like to crack but which, in reality, is safely separated from the actual network. This allows network administrators to observe attackers and study their activities without the intruders knowing they are being monitored. Honeypot programs get their name from the “like a bear to honey” metaphor.

**Internet Protocol Security (IPsec)**—is an Internet protocol security standard that provides a general policy-based IP layer security mechanism that is ideal for providing host-by-host authentication. IPsec policies are defined as having security rules and settings that control the flow of inbound and outbound traffic on a host system. These policies are managed centrally in Active Directory® using Group Policy objects (GPOs) for policy assignments to domain members. They provide the ability to help establish secure communications between domain members, which is the basis for this solution.

**Network Address Translation (NAT)**--The process of converting between IP addresses used within an intranet or other private network and Internet IP addresses. This approach makes it possible to use a large number of addresses within the private network without depleting the limited number of available numeric Internet IP addresses. Variations of NAT displaying similar functions include IP aliasing, IP masquerading, and Port Address Translation.

**routing**—the process of forwarding packets between networks from source to destination.

**Virtual LAN (VLAN)**— is a group of hosts with a common set of requirements that communicate as if they were attached to the same broadcast domain, regardless of their physical location. A VLAN has the same attributes as a physical LAN, but it allows for end stations to be grouped together even if they are not located on the same network switch. Network reconfiguration can be done through software instead of physically relocating devices.

**Virtual Privat Network (VPN)**--nodes on a public network such as the Internet that communicate among themselves using encryption technology so that their messages are as safe from being intercepted and understood by unauthorized users as if the nodes were connected by private lines.

### **Lesson Sequence**

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

1. Student prompt (see PowerPoint® slides 3 and 4): Download and install “Microsoft® IPsec Diagnostic Tool.” Microsoft IPsec Diagnostic Tool checks for common network problems on the host machine and if any are found it will suggest repair commands.
2. Give students a few minutes to install, allowing them to work until they have finished.
3. As time permits, run the program and have the students work through the prompts and share their Diagnostic Report with others.

**Lesson activity (40 minutes)**

1. Teacher Instruction (30 minutes, Slides 5 and 6)
  - Use the included PowerPoint presentation to review Network Address Translation.
  - At the end of the slides 6 and 7, have the students view the screencast: Deploying SSTP Remote Access (<http://www.microsoft.com/downloads/en/confirmation.aspx?familyId=fc4d7d3f-0376-45bf-9544-ec35329a2fc1&displayLang=en>)
  - Have each student share his/her views with the whole group.
2. Guided Practice (10 minutes; SecurityFund\_SA\_3.3a)
  - Students complete the worksheet, identifying the scenarios in which you might deploy Windows Server® 2003 Routing and Remote Access NAT to include connecting a business or home to the Internet.
  - If time allows, you may review all or part of the worksheet, discussing student responses to the questions.

**Assessment/lesson reflection (10 minutes)**

1. Student prompt (see PowerPoint slides 15 and 16; answers on slide 17): On a sheet of paper, compare and contrast dynamic routing and static routing.
2. Give students a few minutes to research and respond, allowing them to work until they have finished.
3. As time permits, call on a few students to report to the group with their responses.
4. At the bottom of the page, tell students to write any questions they have or any topics about which they would like more assistance.
5. After class, look through the student responses and follow up with any student requiring additional help.

**Microsoft resources and Web links**

- **Microsoft Download Center: Screencast: Deploying SSTP Remote Access**  
(<http://www.microsoft.com/downloads/en/confirmation.aspx?familyId=fc4d7d3f-0376-45bf-9544-ec35329a2fc1&displayLang=en>)
- **Virtual LAN:**  
([http://en.wikipedia.org/wiki/Virtual\\_LAN](http://en.wikipedia.org/wiki/Virtual_LAN))
- **TechNet Networking and Access Technologies: IPsec**  
(<http://technet.microsoft.com/en-us/network/bb531150.aspx>)
- **Microsoft Download Center: IPsec Diagnostic Tool**  
(<http://www.microsoft.com/downloads/details.aspx?FamilyID=1d4c292c-7998-42e4-8786-789c7b457881&displaylang=en>)