

## REVIEW LESSON

MTA Course: 98-366 Networking Fundamentals

Lesson name: Understanding Network Infrastructures 1.5

Topic: Understand network topologies and access methods

(One 50-minute class period)

File name: NetFund\_RL\_1.5

### Lesson Objective

**1.5:** Understand network topologies and access methods. *This objective may include but is not limited to: star, mesh, and ring.*

### 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\_1.5

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

- NetFund\_PPT\_1.5
- (Student Activity) NetFund\_SA\_1.5
- (Student Activity) NetFund\_SA\_1.5\_Key

## **Teaching Guide**

### **Essential Vocabulary**

**bus networks**—a shared communications line with a common backbone to connect all devices is a bus network architecture topology.

**layer**—a layer is a collection of like functions that provide services to the layer above it and receives services from the layer below it.

**MAU**—an Ethernet multistation access unit (MSAU) that is a hub or concentrator that connects a group of computers ("nodes" in network terminology) to a Token Ring local area network.

**mesh networks**—Each node in the network acts as an independent router, connected or not; the network “hops” from node to node until the destination is reached, allowing for continuous connections and reconfiguration around broken or blocked paths.

**Open system interconnection (OSI)**—a way of sub-dividing a system into smaller parts (called layers).

**ring networks**—data travels from node to node, with each node along the way handling every packet. The ring network forms a single continuous pathway for signals through each node.

**star networks**—consists of one central switch, hub or computer, which acts as a conduit to transmit messages and forms a graph with the topology of a star.

**network topologies**—the physical design of a network and the interconnection of the various elements of computer equipment.

## **Lesson Sequence**

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

Student prompt (PowerPoint® slide 3):

Instruct students to draw a network that includes: 3 computers (2 desktops and a laptop) and a network printer.

1. Call on students to show their drawings and ask them what network topology is being used.
2. Instructor: Most students will draw either a bus or star topology. If students don't remember the name of the topology, ask questions about the appearance of their drawing—does it look like a star, bus, or a ring?

**Lesson activity (30 minutes)**

1. Guided Practice (30 minutes for both practice and instruction)
  - Distribute the mind map student activity document. Instruct the students to use the mind map during the PowerPoint presentation to record information about the different types of network topologies. They should include information about which topology types are appropriate for various situations.  
(All the materials that have been placed in the Teach 21 Strategy Bank are for instructors to freely use. You have permission to use it, but if you want to give credit, print “WVDE Teach 21 Strategy Bank” at the bottom. )
2. Teacher Instruction
  - Use the included PowerPoint slideshow to review the network topologies and access methods, the star, bus, mesh, hybrid, and ring topologies.

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

1. Have the students appoint a presenter to discuss the topology types that they felt were appropriate for the different scenarios.
2. If time permits, have groups informally present their applications to the class. Encourage students to discuss the different topologies they created.
3. Collect the completed students’ mind maps.

**Microsoft resources and Web links**

- **Search Networking: Fiber Distributed Data Interface**  
*[http://searchnetworking.techtarget.com/sDefinition/0,,sid7\\_gci213957,00.html](http://searchnetworking.techtarget.com/sDefinition/0,,sid7_gci213957,00.html)*
- **West Virginia Department of Education: Mind Map**  
*<http://wvde.state.wv.us/strategybank/MindMap.html>*
- **Wikipedia: Mesh Network**  
*[http://en.wikipedia.org/wiki/Mesh\\_network](http://en.wikipedia.org/wiki/Mesh_network)*
- **Wikipedia: Network Topology**  
*[http://en.wikipedia.org/wiki/Network\\_topology](http://en.wikipedia.org/wiki/Network_topology)*
- **Wikipedia: Ring**  
*[http://en.wikipedia.org/wiki/Network\\_topology#Ring](http://en.wikipedia.org/wiki/Network_topology#Ring)*
- **Wikipedia: Star Network**  
*[http://en.wikipedia.org/wiki/Star\\_network](http://en.wikipedia.org/wiki/Star_network)*
- **Wikipedia: Token Ring**  
*[http://en.wikipedia.org/wiki/Token\\_ring](http://en.wikipedia.org/wiki/Token_ring)*