

LESSON 1,2_B

98-366 Networking Fundamentals

Understand VLANs, Wired LANs, and Wireless LANs

Lesson Overview

In this lesson, you will review:

- Wired local area networks
- Wireless local area networks
- Virtual local area networks (VLANs)

Anticipatory Set

- Explain why wireless networks are so popular, especially in homes
- Describe the elements that make up a wireless network
- What is the opposite of a wireless network?

LAN

- A local area network (LAN) is a single broadcast domain. This means the broadcast will be received by every other user on the LAN if a user broadcasts information on his/her LAN. Broadcasts are prevented from leaving a LAN by using a router.



Wired LAN

- An electronic circuit or hardware grouping in which the configuration is determined by the physical interconnection of the components

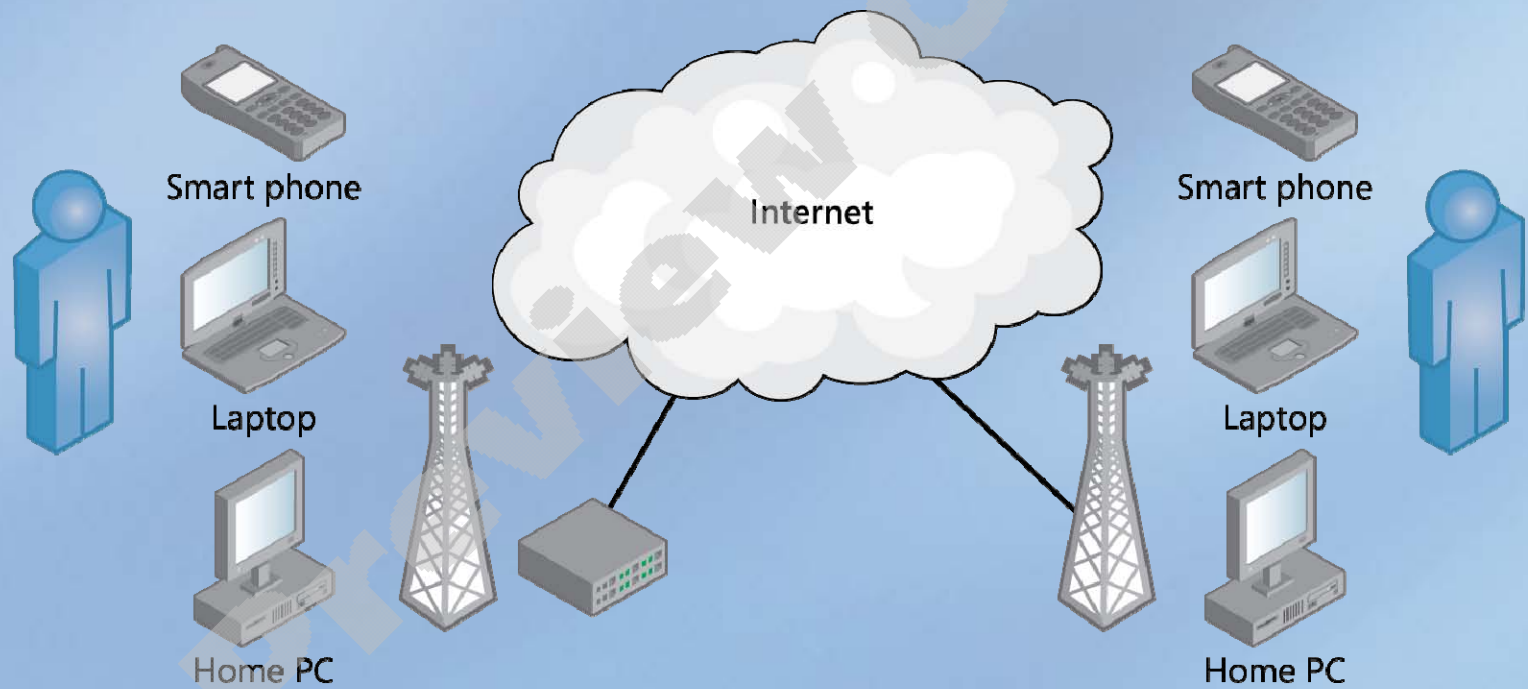
Wireless LAN

- Communications that take place without the use of interconnecting wires or cables, such as by radio, microwave, or infrared light
- Wireless networks can be installed:
 - Peer-to-peer “Ad hoc” mode—wireless devices can communicate with each other
 - "Infrastructure" mode—allows wireless devices to communicate with a central node that can communicate with wired nodes on that LAN

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Sample example of a wireless LAN design:



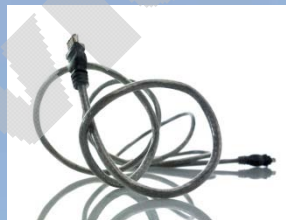
Wired LANs: Advantages

Most wired LANs are built with inexpensive hardware:

1. Network adapter



2. Ethernet cables



3. Hubs



Advantages

- Wired LANs provide superior speed and performance

Disadvantages

- Difficult to run cables under the floor or through walls especially when computers sit in different rooms
- Require central devices like hubs or routers to accommodate more computers, which can be expensive
- Generally it costs less than wireless equipment for the equivalent wired Ethernet products

Wireless LANS: Advantages

- Easy access to the Internet in public places
- Less expensive to install and maintain
- Alleviates the need to run wiring through buildings

Disadvantages

- The data transfer rate will decrease as computers are added
- Lower wireless bandwidth means video streaming will be slow
- Security is more difficult to guarantee and requires configuration

Application of LANs

- Home and small business computer networks can be built using either wired or wireless technology
- Large companies are trying to move toward wireless but there are more challenges, especially with security
- Wired Ethernet has been the traditional choice in homes, but Wi-Fi wireless technologies are quickly replacing wired LANs

VLAN

- A virtual LAN, known as a VLAN, is a group of hosts with a common set of requirements that communicate regardless of their physical location
- Sometimes called a “logical network”
- Has the same attributes as a physical LAN, but 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

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- The VLAN controller can change or add workstations and manage load balancing and bandwidth allocation more easily than with a physical picture of the LAN
- Network management software keeps track of relating the virtual picture of the local area network with the actual physical picture

Lesson Review

1. Why is a VLAN sometimes referred to as a “logical network”?
2. List the advantages and disadvantages for a wired network and a wireless network. Give examples of a typical uses for each.