

- 1 Chapter 9
Communications and Networks
- 2 Chapter 9 Objectives
- 3 Communications
 - 1 **What are computer communications?**
 - 2 ❖ Process in which one computer transfers data, instructions, and information to another computer(s)
- 4 Communications
What is needed for successful communications?
- 5 Communications
 - 1 **What is the primary function of a communications device?**
 - 2 ❖ To convert digital signals to analog signals or analog signals to digital signals
- 6 Sending and Receiving Devices
 - 1 **What is a sending and receiving device?**
 - 2 ❖ Initiates or accepts transmission of data, instructions, and information
- 7 Uses of Communications Technologies
What are some uses of communications technology?
- 8 Uses of Communications Technologies
What is instant messaging (IM)?
- 9 Uses of Communications Technologies
 - 1 **What is a chat room?**
 - 2 ❖ Permits users to converse in real time via the Internet
❖ Types of chat rooms
 - Voice chats
 - Video chats
 - Radio chats
- 10 Uses of Communications Technologies
 - 1 **What is a newsgroup?**
 - 2 ❖ Area on the Web where users conduct written discussions about a particular subject
❖ Also called threaded discussion
- 11 Uses of Communications Technologies
 - 1 **What is Internet telephony?**
 - 2 ❖ Enables you to talk to other people over the Internet
- 12 Uses of Communications Technologies
 - 1 **What is collaboration?**
 - 2 ❖ Working with other users connected to a server
❖ You can conduct online meetings
 - Allows you to share documents

with others in
real time

- ❖ Microsoft's
NetMeeting allows
collaboration

13 Uses of Communications Technologies

1 **What is groupware?**

- 2 ❖ **Software application that helps groups of people work together on projects and share information over a network**
- Lotus Notes
 - Microsoft Exchange

14 Uses of Communications Technologies

What is a global positioning system (GPS)?

15 Uses of Communications Technologies

1 **What is a Digital Angel?**

- 2 ❖ **Necklace, bracelet, or receiver woven into fabric that communicates with another party using GPS satellite system**
- ❖ **Measures and sends biological information to satellite**

16 Networks

1 **What is a site license?**

- 2 ❖ **Legal agreement that allows multiple users to run a software package simultaneously**
- ❖ **License fee usually based on number of users or number of computers attached to network**

17 Networks

1 **What is a local area network (LAN)?**

- 2 ❖ **Network in limited geographical area such as home, school computer laboratory, or office building**

18 Networks

1 **What is a peer-to-peer LAN?**

- 2 ❖ **Small network that shares hardware, data, or information located on any other computer in network**
- ❖ **Each computer stores files on its own storage devices**

19 Networks

1 **What is a client/server LAN?**

- 2 ❖ **Network in which one or more computers act as a server and other computers on the network can request services from server**

20 Networks

1 **What is a wide area network (WAN)?**

- 2 ❖ **Network that covers large geographic area**
- ❖ **Internet is world's largest WAN**

21 Networks

- 1 **What is an Internet use of peer-to-peer (P2P)?**
2 ✦ Enables users with same networking software to connect to each other's hard disks and exchange files directly
- 22 Networks
1 **What is a metropolitan area network (MAN) ?**
2 ✦ Backbone network that connects local area networks in a metropolitan area such as a city or town
- 23 Networks
1 **What is a network topology?**
2 ✦ Configuration, or physical arrangement, of devices in a communications network
✦ Networks usually use combinations of three topologies
- 24 Networks
1 **What is a bus network?**
2 ✦ Consists of a single central cable, to which all computers and other devices connect
✦ Bus is physical cable or backbone
✦ Inexpensive and easy to install
- 25 Networks
1 **What is a ring network?**
2 ✦ Cable forms closed ring, or loop, with all computers and devices arranged along ring
✦ Data travels from device to device around entire ring, in one direction
- 26 Networks
1 **What is a star network?**
2 ✦ All devices connect to a central computer, called the hub
✦ All data transferred from one computer to another passes through hub
- 27 Networks
1 **What are network communications technologies?**
2 ✦ Specific combinations of hardware and software that allow different devices on several types of networks to communicate
- 28 Networks
1 **What is Ethernet?**
2 ✦ LAN technology that allows personal computers to contend for access to network
✦ Based on bus technology
- 29 Networks
1 **What is token ring?**
2 ✦ LAN technology that controls access to network by requiring network devices to share or pass a special signal, called a token
✦ Device with token can transmit data over network
✦ Only one token exists per network

- ❖ **Based on ring topology, although it can use star topology**

30 Networks

1

What is TCP/IP?

2

- ❖ **Short for transmission control protocol/Internet protocol**
- ❖ **Transmits data by breaking it up into packets**
- ❖ **Commonly used for Internet transmissions**

31 Networks

1

What is the Wireless Applications Protocol (WAP)?

2

- ❖ **Allows wireless mobile devices to access Internet and its services**
- ❖ **Wireless device contains client software, which connects to Internet service provider's server**

32 Networks

1

What is an intranet?

2

- ❖ **Internal network that uses Internet technologies**
- ❖ **Lets company make information accessible to employees and facilitate working in groups**
- ❖ **Typically includes a connection to Internet**

33 Networks

1

What is an extranet?

2

- ❖ **Allows customers or suppliers to access part of company's intranet**

34 Networks

1

What is a firewall?

2

- ❖ **Hardware and/or software that restricts access to data and information on network**

35 Networks

1

What is a home network?

2

- ❖ **Ways to connect**
 - **Ethernet – connect each computer via cable**
 - **HomePLC (powerline cable) – use electrical lines in house**
 - **Phoneline – use telephone lines**
 - **HomeRF (radio frequency) – wireless**

36 Networks

1

What is an intelligent home network?

2

- ❖ **Extends basic home network to include features such as lighting control, thermostat adjustment, and security system**

37 Communications Software

1

What is communications software?

2

- ❖ **Programs that help establish connection to another computer or network**

- 38 Communications Software
- 1 **What is file transfer protocol (FTP)?**
 - 2 ❖ Internet standard that allows you to upload and download files to and from a Web server, called the FTP server
- 39 The Telephone Network
- 1 **What is the public switched telephone network (PSTN)?**
 - 2 ❖ Worldwide telephone system that handles voice-oriented telephone calls
- 40 The Telephone Network
- 1 **What is a dial-up line and a dedicated line?**
 - 2 ❖ Dial-up line is temporary connection using telephone line for communications
❖ Dedicated line is line always connected between two communications devices
- 41 The Telephone Network
- 1 **What is transfer rate?**
 - 2 ❖ Speed at which a line carries data and information
❖ Faster the transfer rate, the faster you can send and receive data and information
❖ Usually expressed as a measure of bits per second
- 42 The Telephone Network
- What are popular types of digital dedicated lines?**
- 43 Communications Devices
- 1 **What is a communications device?**
 - 2 ❖ Any type of hardware capable of transmitting data, instructions, and information between sending device and receiving device
- 44 Communications Devices
- 1 **What is a dial-up modem?**
 - 2 ❖ Communications device that converts computer's digital signals to analog signals and analog signals to digital signals
❖ ISDN and DSL use digital modem with a digital telephone line
- 45 Communications Devices
- 1 **What is a cable modem?**
 - 2 ❖ Modem that sends and receives data over cable television network
❖ Much faster than modem or ISDN
❖ Usually attaches to network card
- 46 Communications Devices
- 1 **What is a network interface card (NIC)?**
 - 2 ❖ Card inserted into expansion slot of personal computer or other device, enabling it to connect to a network
- 47 Communications Devices

- 1 **What is a hub?**
 2 ❖ Device that provides a central point for cables in a network
- 48 Communications Channel
 1 **What is a channel?**
 2 ❖ Communications path between two devices
- 49 Communications Channel
Sending a request over the Internet
- 50 Physical Transmission Media
 1 **What is physical transmission media?**
 2 ❖ Wire, cable, and other tangible (touchable) materials used to send communications signals
- 51 Physical Transmission Media
 1 **What is twisted-pair cable?**
 2 ❖ Transmission media used by telephone system and network cabling
- 52 Physical Transmission Media
 1 **What is coaxial cable?**
 2 ❖ Single copper wire surrounded by at least three layers
❖ Often used for cable television wiring
- 53 Physical Transmission Media
 1 **What is fiber-optic cable?**
 2 ❖ Contains core of dozens or hundreds of thin strands of glass or plastic
❖ Uses light to transmit signals
- 54 Wireless Transmission Media
 1 **What is wireless transmission media?**
 2 ❖ Send communications signals through air or space
❖ Used when inconvenient, impractical, or impossible to install cables
- 55 Wireless Transmission Media
What is an example of a wireless local area network?
- 56 Wireless Transmission Media
 1 **What is cellular radio?**
 2 ❖ Form of broadcast radio used widely for mobile communications
- 57 Wireless Transmission Media
 1 **What is a microwave station?**
 2 ❖ Earth-based reflective dish that contains antenna, transceivers, and other equipment necessary for microwave communications
❖ Uses line-of-sight transmission
• Must transmit in straight line with no obstructions between microwave antennas

58 Wireless Transmission Media

1 **What is a communications satellite?**

- 2 ❖ **Space station that receives microwave signals from an earth-based station, amplifies the signals, and then broadcasts the signals back over a wide area to any number of earth-based stations**

59 Wireless Transmission Media

1 **What is infrared (IR)?**

- 2 ❖ **Wireless transmission media that sends signals using infrared light waves**
❖ **Requires line-of-sight transmission**
❖ **Many computers and devices have an IrDA port that enables transfer of data using infrared light rays**

60 Summary of Communications and Networks

- ❖ **Communications**
- ❖ **Sending and receiving devices**
- ❖ **Uses of communications technologies**
- ❖ **Networks**
- ❖ **Communications software**
- ❖ **Telephone network**
- ❖ **Communications devices**
- ❖ **Communications channel**
- ❖ **Physical transmission media**
- ❖ **Wireless transmission media**