



PETER NORTON'S®

# Introduction to Computers



- Web integrated activities
- Self-assessments to reinforce main concepts
- Online Resource:  
[www.mhhe.com/peternorton](http://www.mhhe.com/peternorton)

 **Technology  
Education**

# Chapter 9B

# Data Communications

# Modem Communications

- Plain Old Telephone System (POTS)
  - Standard phone line
  - Two-way voice communication
  - Uses analog transmission techniques
  - Data communication is slow



# Modem Communications

- Modems
  - Modulator/Demodulator
    - Modulator converts digital to analog
  - Speed measured in bits per second (bps)
    - Current fastest speed is 56 Kbps
    - Quality of phone lines dictates speed
  - V.92 is the current modem standard
  - Several modem types
    - Internal
    - External
    - Voice
    - Fax

# Modem Communications

- Modem uses
  - Connection to the Internet
  - File transfer
    - Uploading
    - Downloading



# Digital Data Connections

- Digital phone lines
  - Local telephone companies are upgrading
  - Service will be faster and more reliable
  - New phones will be needed
  - Modems will need to be upgraded

# Digital Data Connections

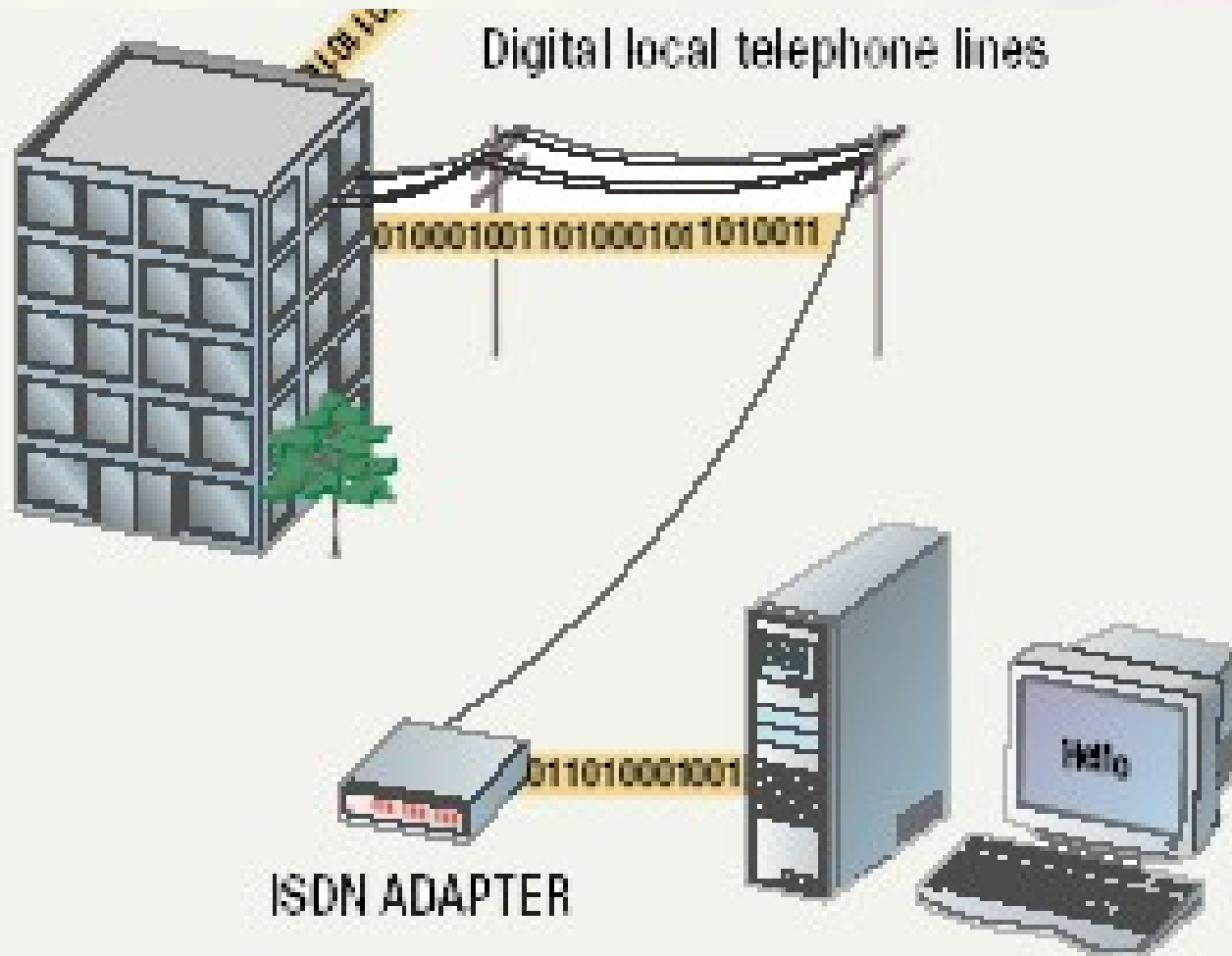
- Broadband connection
  - Any data connection faster than 56 Kbps
  - Common in business
  - Becoming popular in home installations

# Digital Data Connections

- ISDN lines
  - Integrated Services Digital Network
  - Basic rate uses three channels
    - Two data channels each support 64 Kbps
    - Error correction channel
  - Primary rate uses 24 data channels



# ISDN Connection



# Digital Data Connections

- T lines
  - High-capacity voice/data lines
  - Used to control phone and data
  - Several variants
    - T1 transmits at 1.544 Mbps
    - T3 transmits at 44.736 Mbps

# Digital Data Connections

- DSL technologies
  - Digital Subscriber Line
  - Popular with home users
  - Speeds range from 100 Kbps to 30 Mbps
  - Asymmetrical DSL (ADSL)
    - Upload speed slower than download speed
  - Symmetrical DSL (SDSL)
  - Requires a DSL modem

# Digital Data Connections

- Cable modem connections
  - Popular with home and office users
  - Speeds between 1 and 3 Mbps
  - Requires a cable modem



# Digital Data Connections

- ATM
  - Asynchronous Transfer Mode
  - Efficient transfer of video and sound
  - Requires a special NIC and hardware

# Wireless Networks

- **Benefits**
  - No cable to pull
  - Mobile devices access network resources
  - Mobility and flexibility for office workers

# Wireless Networks

- Wireless 802.11
  - Also called Wi-Fi
  - IEEE standard
    - Institute of Electronic and Electrical Engineers
  - Several versions
    - 802.11b connects up to 11Mbps
    - 802.11g connects up to 56Mbps
  - Use the same type of devices

# Wireless Networks

- Wireless Access Point
  - Center of a wireless network
  - WAPS combined cover a larger area
  - Distance to WAP determines bandwidth
  - Range is 50 to 150 meters
  - Extension points can extend range





# Wireless Networks

- Wireless Adapters
  - Used by devices to connect
  - Includes signal strength software



# Chapter 9B

End of Chapter