

Networks

Chapter 17

Objectives

- The students should understand
 - What is a network?
 - What are the components of a network?
 - Types of Internet Connections
 - E-Commerce
 - Advantages and Disadvantages of Networks.

What is a network?

- A **network** is any collection of devices with the ability to communicate with each other.
 - telephone network
 - cellular phone network
- A **communications protocol** is a set of rules for transmitting and receiving voice or digital data.
- Communications protocols are implemented by **communications software**.



Computer Networks

- A **Computer Network** consists of two or more computers with communications software, connected in a way that allows information and devices to be shared.

Types of Network

- A **Local Area Network (LAN)** typically connects personal computers within a very limited geographical area – usually a single building.
- A **Wide Area Network (WAN)** covers a large geographical area and typically consists of several smaller networks.

The Internet and Intranet

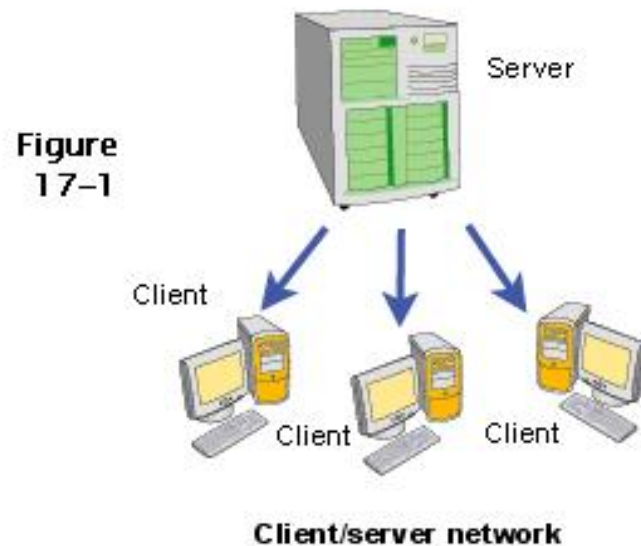
- ❑ The **Internet** is the world's largest WAN, which is a collection of local, regional, national and international computers linked together to exchange data and distribute processing tasks.
- ❑ An **intranet** is a type of LAN typically maintained by a private business or organization and access is typically limited to employees.
- ❑ Intranets are commonly used to store and circulate internal documents.

Components of a network

- ❑ A network connection point is typically referred to as **node**.
- ❑ A personal computer connected to a network is often referred to as a **workstation**.
- ❑ A **server** is a computer configured to provide a network service.
- ❑ A **client** is a computer requesting a service from a server through a network.

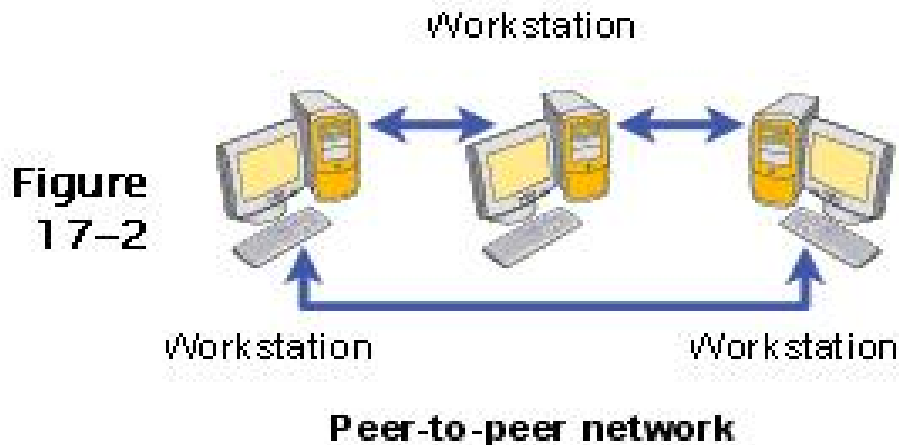
Client/Server Network

- A **client/server network** contains one or more computers configured with server software, and other computers configured with client software to access the servers.



Peer-to-Peer Network

- A **peer-to-peer network** treats every computer as an “equal” so that workstations can store network data and transport it directly to other workstations without passing through a central server.

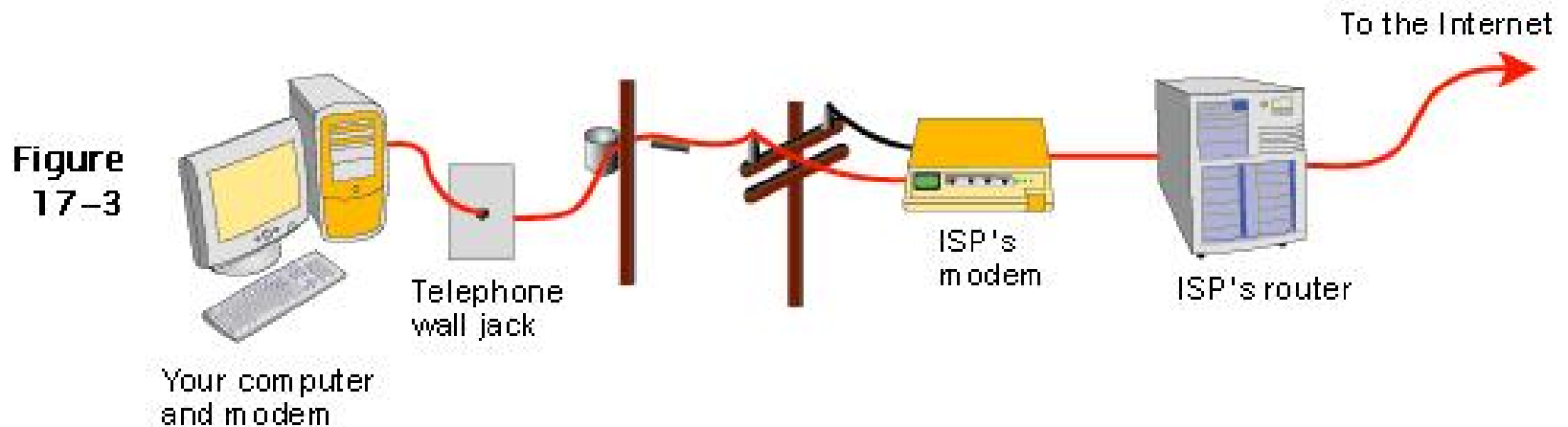


Internet Connections

- An ISP (Internet Service Provider) is a company that sells access to phone lines or a cable company that sells access to the internet.
- A **dial-up** connection uses standard telephone service to transport data between your computer and your ISP.

Internet Connections (contd)

- A **dial-up** connection requires a dial-up modem.
- Dial-up provides the slowest access, but is typically the least expensive.



Internet Connections (contd)

- **Cable Internet Service** is offered by cable television companies that serve as ISPs.
- **DSL** (Digital Subscriber line) service requires a DSL modem that connects to standard telephone lines but transmits data at a much higher rate of speed than a dial-up modem.

Internet Connections (contd)

- ❑ **ISDN** (Integrated Services Digital Network) also uses telephone lines.
- ❑ ISDN is not as fast as DSL or cable Internet service.
- ❑ **T1 service** is one of the fastest Internet Connection technologies but is the most expensive.

Internet Connections (contd)

- A **Wi-Fi** service uses a wireless network to access the Internet.
- A public Wi-Fi Service is wireless LAN that provides open Internet access to the public.
- The range of network coverage is called a **hotspot**.

Figure 17-6

	Dial-up	ISDN	DSL	Cable	Satellite	Public Wi-Fi
Downstream speed (max)	56 Kbps	128 Kbps	384 Kbps–1.5 Mbps	1.5 Mbps	500 Kbps	11 or 56 Mbps
Upstream speed (max)	33 Kbps	128 Kbps	128 Kbps–1.5 Mbps	56–256 Kbps	40–60 Kbps	11 or 56 Mbps
Downstream speed (avg)	44 Kbps	128 Kbps	384 Kbps	800 Kbps	400 Kbps	4.5 or 27 Mbps
Latency	100–200 ms	10–30 ms	10–20 ms	10–20 ms	1–3 seconds	3-4 ms
Image file (2 MB) download time	6 minutes	2 minutes	43 seconds	20 seconds	40 seconds	4 seconds
Short video (72 MB) download time	4 hours	78 minutes	26 minutes	12 minutes	25 minutes	2.5 minutes
Requirements	Telephone line, ISP, voiceband modem	Computer must be located within 3 miles of local telephone switch	Computer must be located within 3 miles of local telephone switch	Cable TV service that offers Internet access	Clear view of southern sky	Wi-Fi equipped computer or PDA, access to Wi-Fi hotspot
Monthly fee	\$10–\$30	\$50–\$100	\$50–\$200	\$30–\$50	\$35–\$80	\$0–\$20
Installation cost	\$0	\$0–\$300	\$0–\$200	\$0–\$50	\$200–\$300	\$0–\$50

E-Commerce

- **E-commerce** typically describes financial transactions conducted electronically over a computer network.
- Examples are online shopping, electronic auctions, online banking, and online stock trading.

E-Commerce (contd)

Shopping at Cooking.com: Find small appliances, gifts, cookware, gift baskets, cutlery...

File Edit View Favorites Tools Help

Address <http://www.cooking.com/>

Cooking.com™

YOUR CART 0 Items - \$0.00

HOME SPECIAL VALUES GIFT IDEAS WEDDING REGISTRY RECIPES & MORE

FREE NEWSLETTERS BUYING GUIDES MY ACCOUNT TOP BRANDS CONTACT US

enter to WIN A \$500 Shopping Spree!

SEARCH

Keyword or Item#

GO

Advanced Search

On-Line Catalog

FREE KitchenAid Attachment

+ free shipping with purchase of any KitchenAid Stand Mixer

citrus juicer

Free SUBSC

Make a purch until April 24 subscription review of you

See Rules and

BEST PERFC

From cookw and then so

start Shopping at Cooking... 1:36 PM

A shopping cart keeps track of the merchandise you want to purchase.

You can find items by browsing through the catalog, or by searching for specific items.

Advantages of Computer Networks

- ❑ Sharing networked hardware can reduce costs.
- ❑ Sharing networked hardware can provide access to a wide range of services and devices.
- ❑ Sharing data on a network is easy.
- ❑ Networks enable people to work together regardless of time and place.

Disadvantages of a Network

- Unauthorized access from many sources and locations could cause
 - Theft of confidential data
 - Introduction and Spreading of “malicious code” or viruses.

Summary

- We discussed
 1. What is a network
 2. Network Components
 3. Types of Network
 4. Internet Connections
 5. Advantages and Disadvantages of a network.