Discovering Computers
Technology in a World of Computers, Mobile Devices, and the Internet

Chapter 2

The Internet

Objectives Overview

Discuss the evolution of the Internet

Briefly describe various broadband Internet connections

Describe the purpose of an IP address and its relationship to a domain name

Describe features of browsers and identify the components of a web address

Describe ways to enter effective search text

Explain benefits and risks of using social networking sites

Objectives Overview

Describe uses of various types of websites

Identify and briefly describe the steps required for web publishing

Explain how the web uses graphics, animation, audio, video, and virtual reality

Explain how email, email lists, instant messaging, chat rooms, discussion forums, VoIP, and FTP work

Identify the rules of netiquette

The Internet

- The **Internet** is a worldwide collection of networks that links millions of businesses, government agencies, educational institutions, and individuals

Evolution of the Internet

- The Internet originated as ARPANET in September 1969 and had two main goals:

Allow scientists at different physical locations to share information and work together

Function even if part of the network were disabled or destroyed by a disaster

Evolution of the Internet

1969 ARPANET becomes functional

Today Millions of hosts connect to the Internet

1984 ARPANET has more than 1,000 individual computers linked as hosts

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Connecting to the Internet

- With wired connections, a computer or device physically attaches via a cable or wire to a communications device

- Computers without a communications device can use a wireless modem

Connecting to the Internet
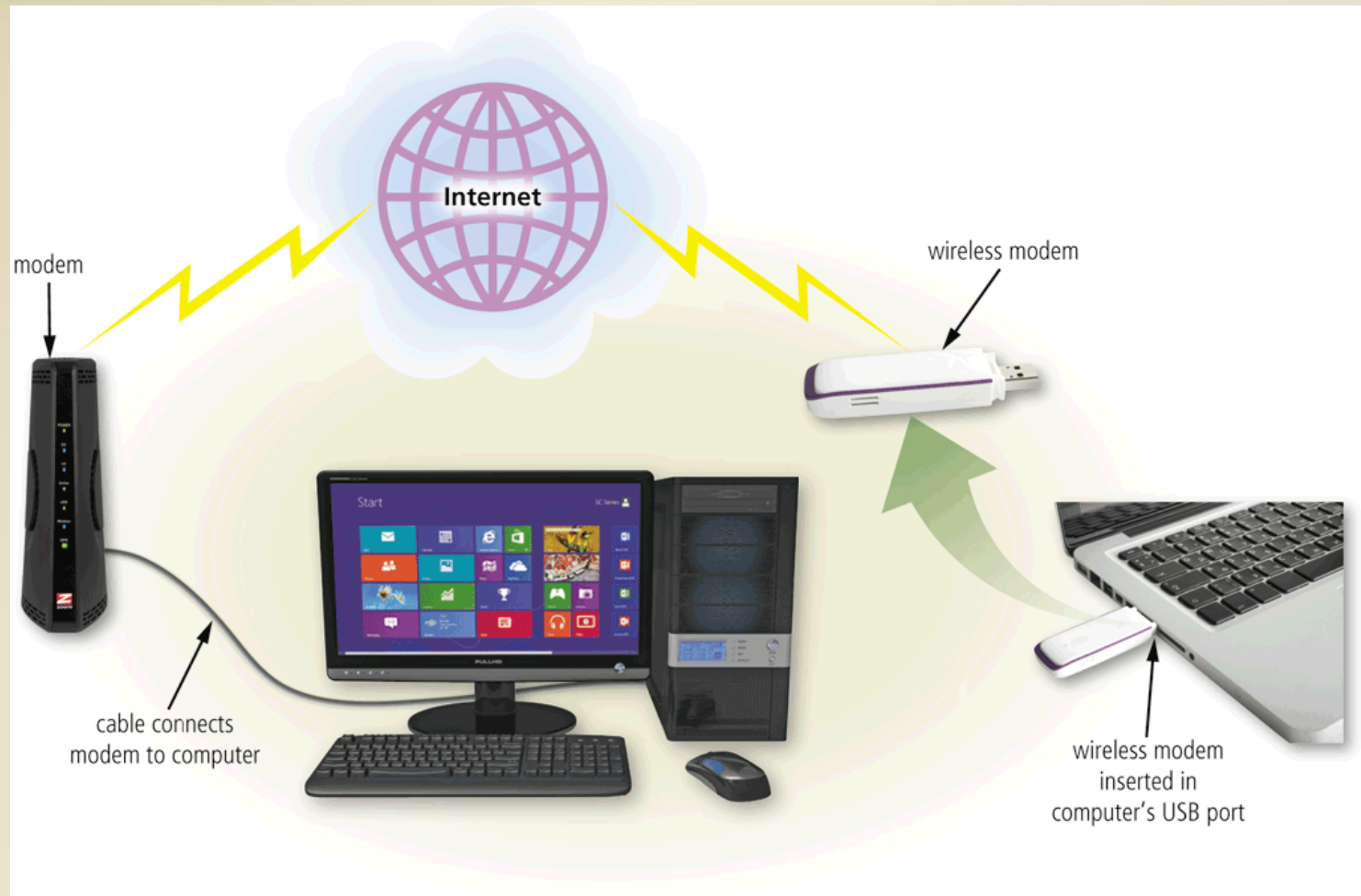
Connecting to the Internet

Wired
• Cable Internet service
• DSL (digital subscriber line)
• Fiber to the Premises (FTTP)

Wireless
• Wi-Fi (wireless fidelity)
• Mobile broadband
• Fixed wireless
• Satellite Internet Service

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Connecting to the Internet

- A **cybercafé** is a location that provides computers with Internet access, usually for a fee
- A hot spot is a wireless network that provides Internet connections to mobile computers and devices

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Connecting to the Internet

- An **Internet service provider** (**ISP**) is a business that provides individuals and organizations access to the Internet free or for a fee

- Bandwidth represents the amount of data that travels over a network
  - Megabyte (MB)
  - Gigabyte (GB)

Connecting to the Internet

How a Home User's Request for a Webpage Might Travel the Internet Using Cable Internet Service

Step 1
You send a request to the Internet. For example, you enter the web address of a webpage you want to visit in the address bar of your browser.

Step 2
A cable modem transfers the computer's digital signals to the cable television line in your house.

Step 3
Your request (digital signals) travels through cable television lines to a central cable system, which is shared by up to 500 homes in a neighborhood.

Step 4
The central cable system sends your request over high-speed fiber-optic lines to the cable operator, who often also is the ISP.
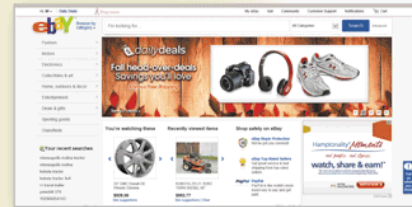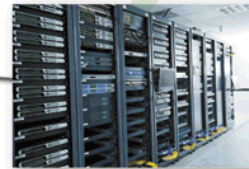
Step 5
The ISP routes your request through the Internet backbone to the destination server (in this example, the server that contains the requested webpage).
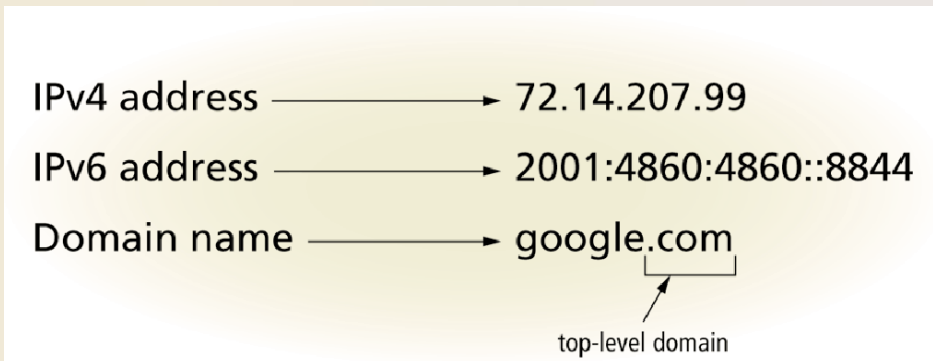
Step 6
The server retrieves the requested webpage and sends it back through the Internet backbone to your computer.

Connecting to the Internet

- An **IP address** is a sequence of numbers that uniquely identifies each computer or device connected to the Internet

- A **domain name** is a text-based name that corresponds to the IP address

- A **DNS server** translates the domain name into its associated IP address

IPv4 address ──────────▶ 72.14.207.99

IPv6 address ──────────▶ 2001:4860:4860::8844

Domain name ──────────▶ google.com
                                    └──┬──┘
                              top-level domain

Connecting to the Internet

| Table 2-3	Popular TLDs
TLD	**Intended Purpose**
.com	Commercial organizations, businesses, and companies
.edu	Educational institutions
.gov	Government agencies
.mil	Military organizations
.net	Network providers or commercial companies
.org	Nonprofit organizations

Connecting to the Internet

How a Browser Displays a Requested Webpage

Step 1
Run the browser and enter the web address in the browser's address bar.
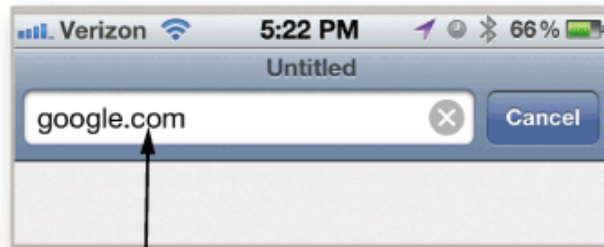
web address contains domain name

Step 2
The browser communicates with a DNS server maintained by your ISP or another provider. The DNS server looks up the domain name portion of the web address, finds its associated IP address, and then sends the IP address to your computer or mobile device.

Step 3
The browser uses the IP address to contact the web server at the specified IP address to request the content of the desired webpage. The web server fulfills the user's request by sending the desired content to the user's browser, which formats the page for display on the screen.

72.14.207.99
2001:4860:4860::8844

The World Wide Web

- The **World Wide Web** (**WWW**), or **web**, consists of a worldwide collection of electronic documents (**webpages**)
- A **website** is a collection of related webpages and associated items
- A **web server** is a computer that delivers requested webpages to your computer
- **Web 2.0** refers to websites that provide a means for users to share personal information, allow users to modify website content, and provide applications through a browser
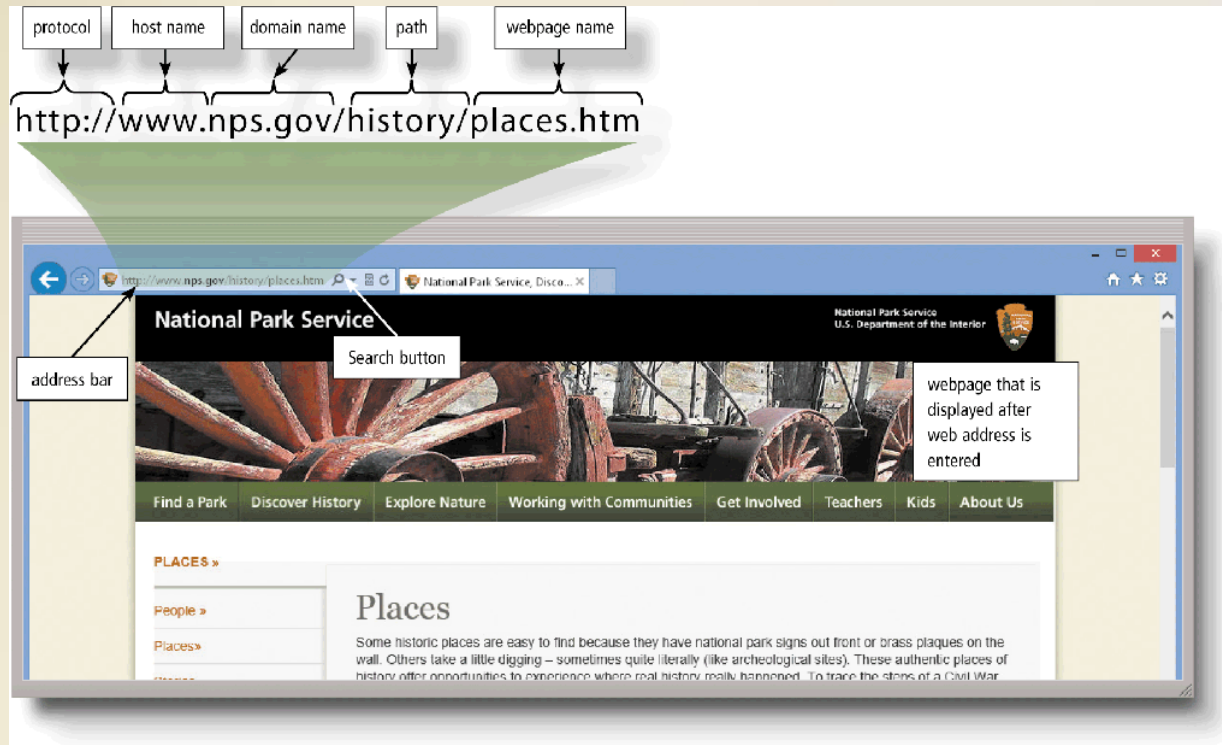
The World Wide Web

- A **browser** is an application that enables users with an Internet connection to access and view webpages on a computer or mobile device

multiple tabs open in browser window

website on desktop browser

website on mobile browser

- A **home page** is the first page that a website displays

- Desktop browsers typically support **tabbed browsing**
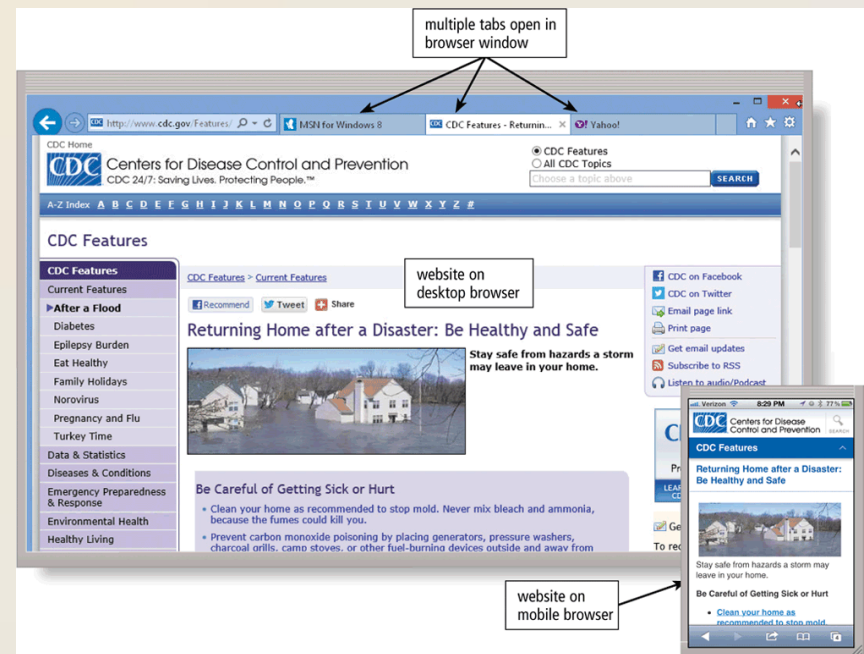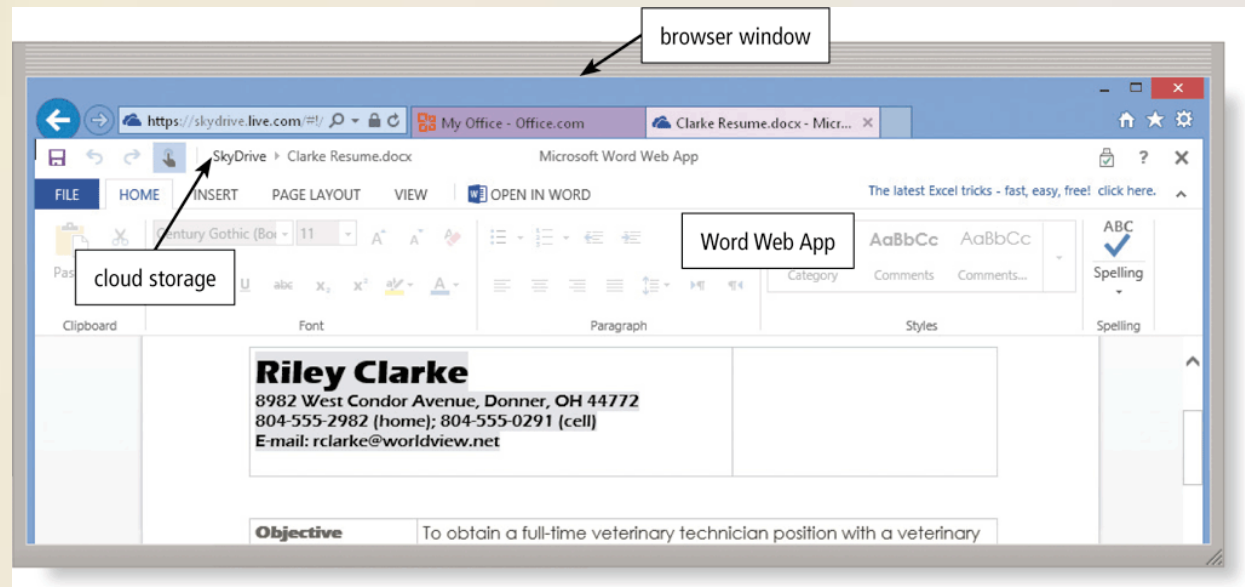
The World Wide Web

- A webpage has a unique address called a **web address** or URL

The World Wide Web

- A web app is an application stored on a web server that you access through a browser
  - Web app hosts usually provide storage for users' data and information on their servers, known as cloud storage

Types of Websites

- A **search engine** is software that finds websites, webpages, images, videos, news, maps, and other information related to a specific topic

- A subject directory classifies webpages in an organized set of categories, such as sports or shopping, and related subcategories

Types of Websites

- Search operators can help to refine your search

Table 2-4 Search Engine Operators			
Operator	**Description**	**Examples**	**Explanation**
Space or +	Display search results that include specific words.	art + music art music	Results have both words, art and music, in any order.
OR	Display search results that include only one word from a list.	dog OR puppy	Results have either the word, dog, or the word, puppy.
		dog OR puppy OR canine	Results have the word, dog, or the word, puppy, or the word, canine.
( )	Combine search results that include specific words with those that include only one word from a list.	Kalamazoo Michigan (pizza OR subs)	Results include both words, Kalamazoo Michigan, and either the word, pizza, or the word, subs.
−	Exclude a word from search results.	automobile −convertible	Results include the word, automobile, but do not include the word, convertible.
" "	Search for an exact phrase in a certain order.	"19th century literature"	Results include the exact phrase, 19th century literature.
*	Substitute characters in place of the asterisk.	writer*	Results include any word that begins with the text, writer (e.g., writer, writers, writer's)

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The World Wide Web

- There are thirteen types of Web sites

Online social network	Informational	Media sharing and bookmarking sites
News, weather, sports, and other mass media	Educational	Business, Governmental, and Organizational

The World Wide Web

Blogs	**Wikis**	Health and Science
Entertainment	Financial	Travel and Mapping

The World Wide Web

Shopping and Auctions	Careers and Employment
E-Commerce	**Portals**

The World Wide Web

- **Web publishing** is the development and maintenance of websites

Plan the website → Design the website → Create the website → Host the website → Maintain the website

Media on the Web

- Multimedia refers to any application that combines text with:

Graphics

Animation

Audio

Video

Virtual Reality

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Media on the Web

- A **graphic** is a digital representation of nontext information

- Graphic formats include BMP, GIF, JPEG, PNG, and TIFF

Media on the Web

- An infographic is a visual representation of data and information, designed to communicate quickly, simplify complex concepts, or present patterns or trends
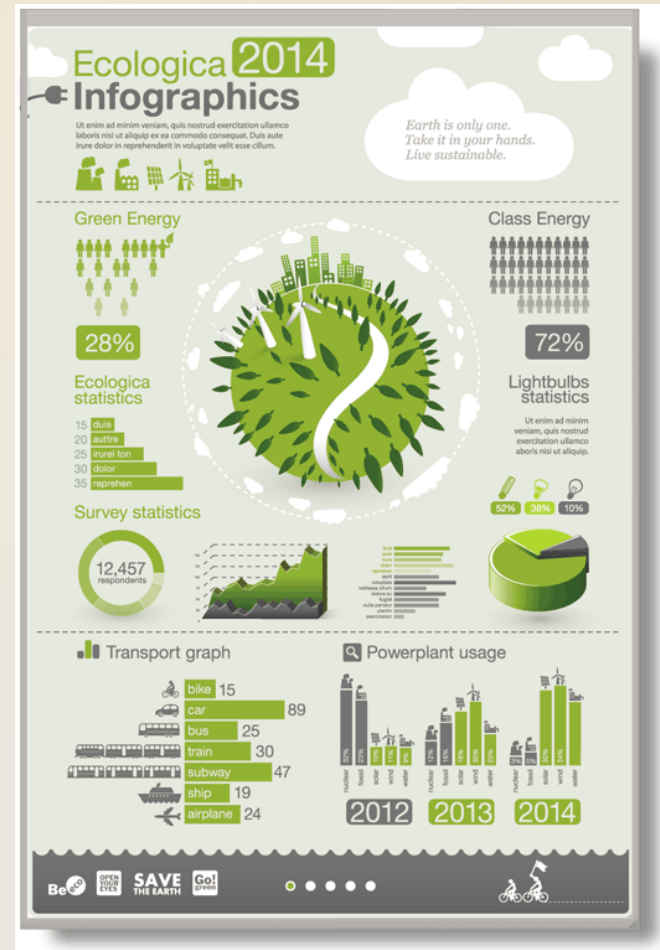
Media on the Web

- **Animation** is the appearance of motion created by displaying a series of still images in sequence

Media on the Web

- Audio includes music, speech, or any other sound
  - Compressed to reduce file size
- You listen to audio on your computer using a media player

Media on the Web

- Video consists of images displayed in motion

- **Virtual reality** (**VR**) is the use of computers to simulate a real or imagined environment that appears as a three-dimensional space

Gemini 7 Space Capsule VR – Smithsonian

360 High Definition VR movie of the Gemini 7 space capsule at the Smithsonian Air and Space Museum in Washington DC

explore inside of a space capsule in this VR world

Click and drag inside the 360° VR, click here 👆 for full screen

Media on the Web

A plug-in is a program that extends the capability of a Web browser

Other Internet Services

- **Email** is the transmission of messages and files via a computer network

- An **email program** allows you to create, send, receive, forward, store, print, and delete email messages
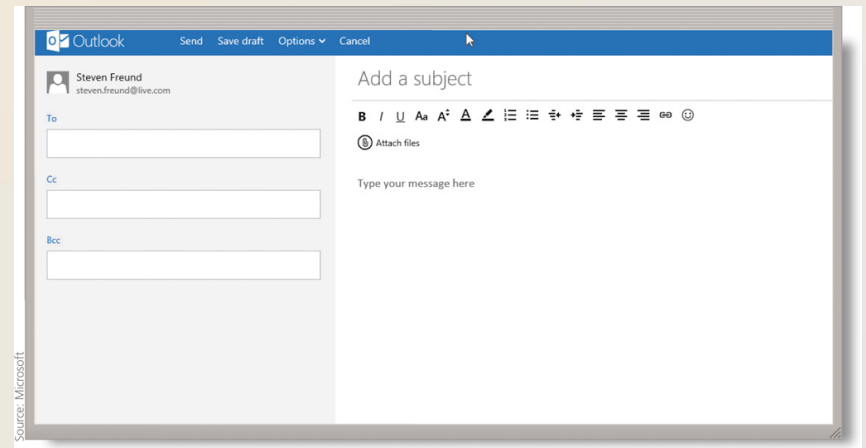
Other Internet Services

How an Email Message May Travel from a Sender to a Receiver

Step 1
Using an email program, you create and send a message on a computer or mobile device.

Step 2
Your email program contacts software on the outgoing mail server.

Step 3
Software on the outgoing mail server determines the best route for the data and sends the message, which travels along Internet routers to the recipient's incoming mail server.

incoming mail server

INCOMING MAIL SERVER

Ann Ed Steve
Betty Ted Jean
Louie Joe Fred

1 New Email

Step 4
When the recipient uses an email program to check for email messages, the message transfers from the incoming mail server to the recipient's computer or mobile device.
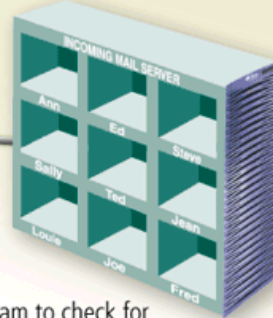
Internet router

Internet router

Other Internet Services

- An **email list** is a group of email addresses used for mass distribution of a message

Other Internet Services

- **Instant messaging** (**IM**) is a real-time Internet communications service
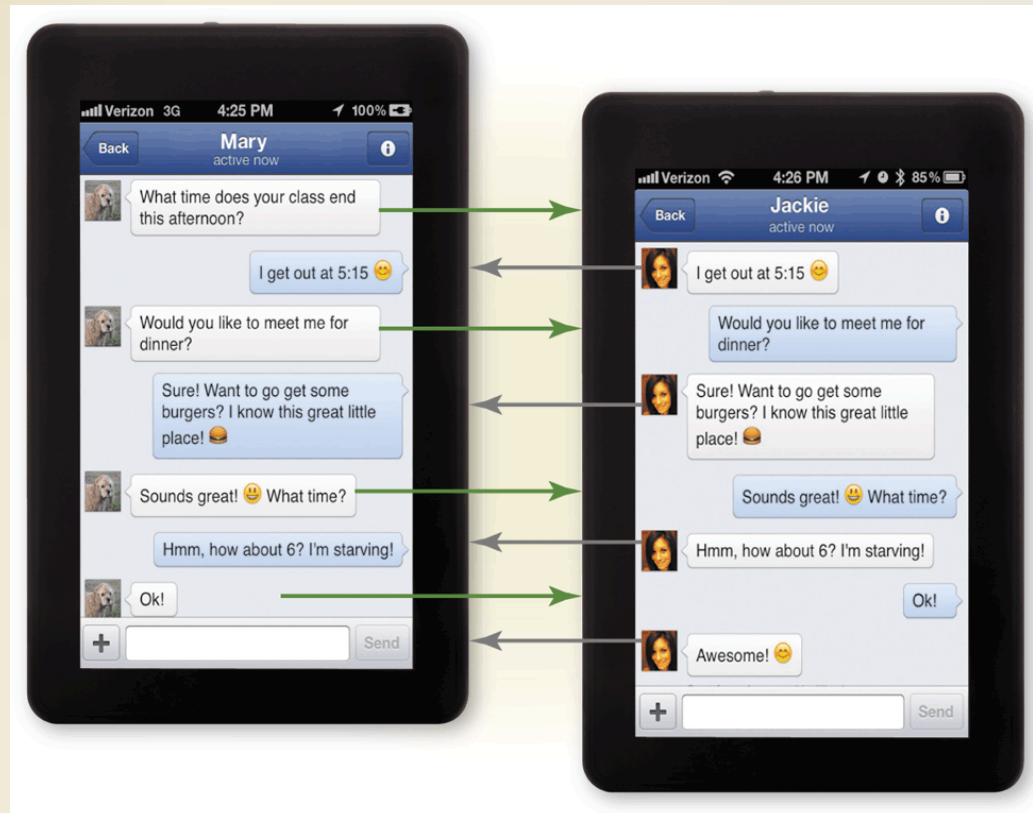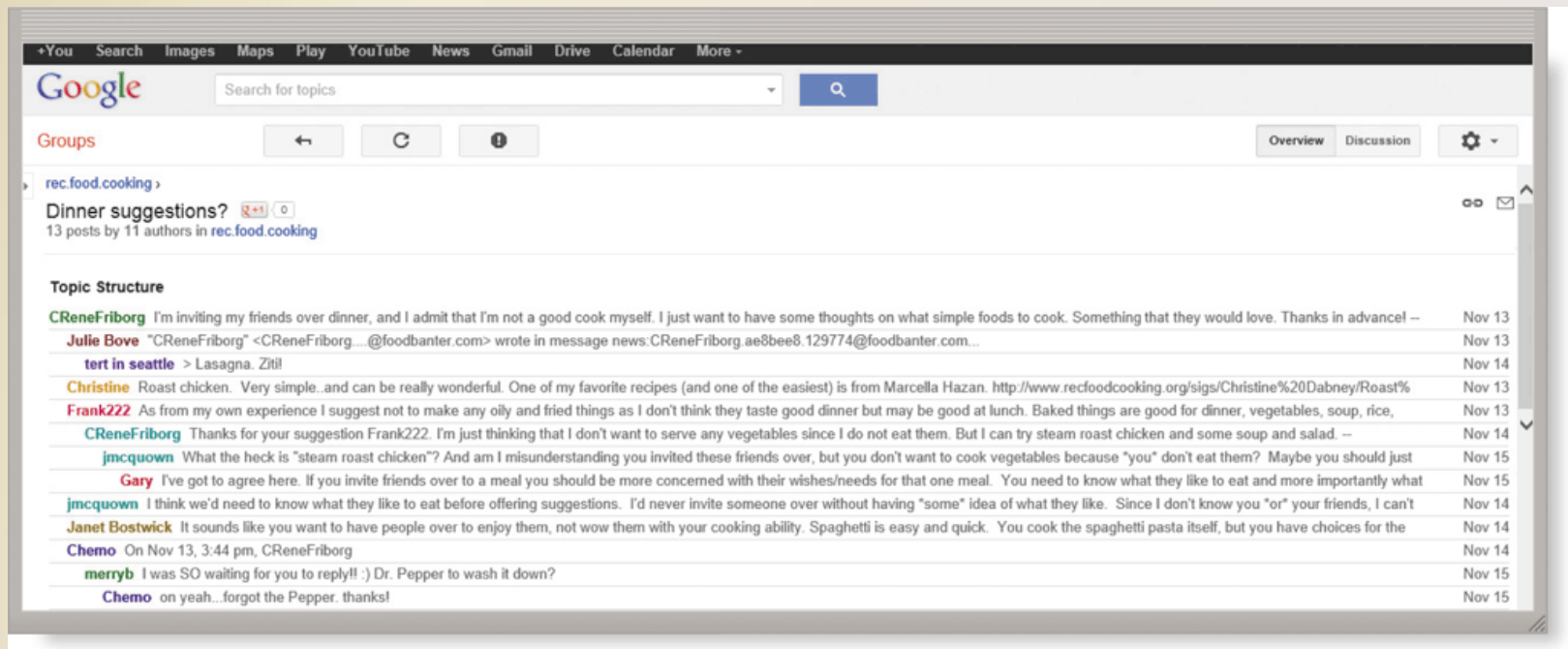
Other Internet Services

- A **chat** is a real-time typed conversation that takes place on a computer or mobile device

- A **chat room** is a website or application that permits users to chat with others who are online at the same time

Other Internet Services

- A **discussion forum** is an online area in which users have written discussions about a particular subject

Other Internet Services

- **VoIP** (Voice over IP) enables users to speak to other users over the Internet

Source: Microsoft

Other Internet Services

- **FTP** (File Transfer Protocol) is an Internet standard that permits file uploading and downloading to and from other computers on the Internet

- Many operating systems include FTP capabilities

- An FTP server is a computer that allows users to upload and/or download files using FTP

Netiquette

- **Netiquette** is the code of acceptable Internet behavior

Netiquette Guidelines for Online Communications

Golden Rule: Treat others as you would like them to treat you.

Be polite. Avoid offensive language.

Avoid sending or posting *flames*, which are abusive or insulting messages. Do not participate in *flame wars*, which are exchanges of flames.

Be careful when using sarcasm and humor, as it might be misinterpreted.

Do not use all capital letters, which is the equivalent of SHOUTING!

Use **emoticons** to express emotion. Popular emoticons include:

:) Smile	:| Indifference	:o Surprised	:(Frown	:\ Undecided	;) Wink

Use abbreviations and acronyms for phrases:

BTW	by the way	IMHO	in my humble opinion	FWIW	for what it's worth
FYI	for your information	TTFN	ta ta for now	TYVM	thank you very much

Clearly identify a spoiler, which is a message that reveals an outcome to a game or ending to a movie or program.

Be forgiving of other's mistakes.

Read the *FAQ* (frequently asked questions), if one exists.

Summary

Evolution of the Internet

The Web

Various types of websites

Other services available on the Internet

Netiquette

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Discovering Computers

**Technology in a World of Computers,
Mobile Devices, and the Internet**

Chapter 2

The Internet

Chapter 2 Complete