Chapter 1

Learning Internet Basics

Are you ready to take advantage of the rich diversity of the Internet, whether for education or entertainment? If so, then you need to understand what the Internet is about and what you can do with it.

This chapter helps you do that by introducing you to the Internet. You learn the origins of the Internet and a number of key concepts that will help you understand other topics in the book.

You also learn how the Internet works, the various types of Internet services that are available to you, and what kinds of things you can do on the Internet.

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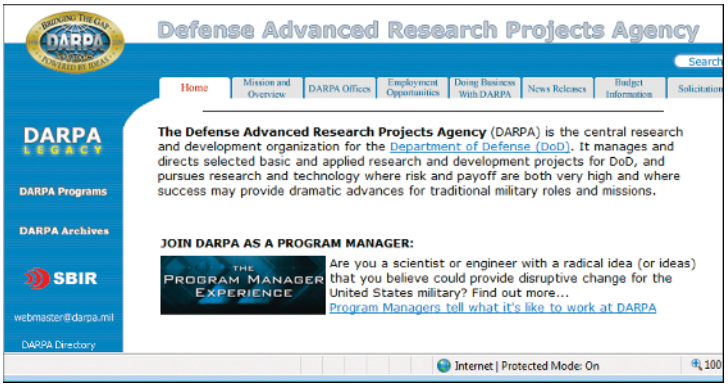
Introducing the Internet

The Internet is a vast, worldwide network that enables you to read the latest news, do research, shop, communicate, listen to music, play games, and access a wide variety of information.

Although the Internet has been popular only since about the mid-1990s, it has been around since the 1960s when it began as an experimental network with just a few participants in the United States. Now, thanks to ocean-spanning cables and satellite access, the Internet is a truly global phenomenon.

Origins

The Internet began in the late 1960s as a research project sponsored by the U.S. Defense Department's Advanced Research Projects Agency (ARPA). The original network — named ARPANET — launched in October 1969 and included just two sites: the Stanford Research Institute (SRI) and the University of California, Los Angeles (UCLA). The name "Internet" was first used in December 1974, and over time the Internet expanded to include other government agencies, universities, research labs, and businesses.



Worldwide Network

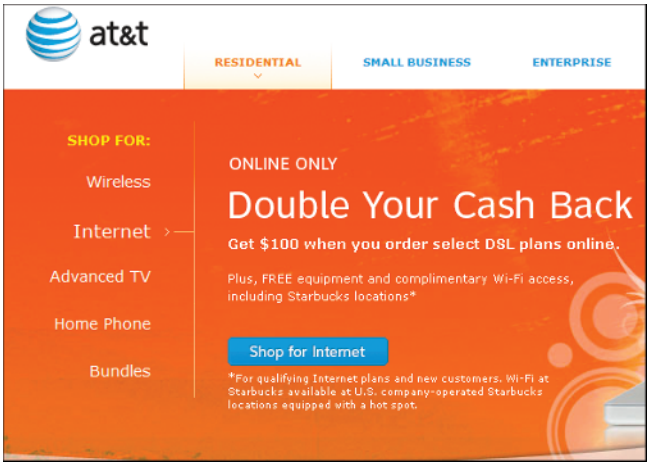
You may have a local area network (LAN) where you live or work, so you know that you can use a LAN to work with shared resources on other computers. The Internet is also a network, but on a much vaster scale. The Internet is a worldwide network that enables you to view and share information on other computers around the world.

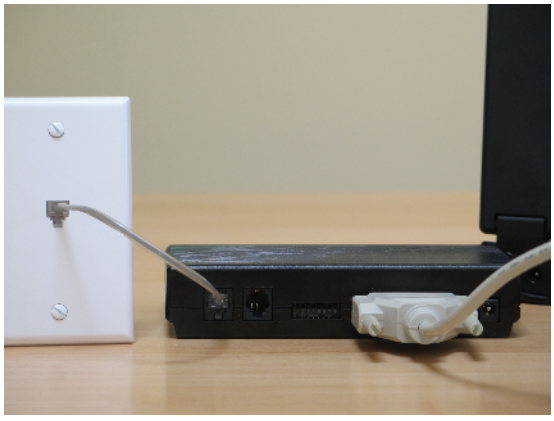
Backbone

Most Internet data travels along a collection of telephone lines and fiber-optic cables that span the world. This collection of lines and cables makes up the so-called *backbone* of the Internet. Data travels along this backbone at nearly the speed of light, so you can usually access data on the other side of the world in seconds.

Internet Service Provider

In the same way that you need an account with the phone company to make or receive calls, and an account with the cable company to view cable TV, you also need an account to access the Internet. In this case, you set up the account with an Internet service provider (ISP), which is a company that has direct access to the Internet backbone. You use a modem to access an ISP, which then connects you to the Internet.





Dial-Up Access

Dial-up Internet access uses a dial-up modem and a telephone line to connect to the Internet. Although dial-up accounts are inexpensive, they are also very slow. You learn more about this and other types of Internet connection in Chapter 2.

Broadband Access

Broadband Internet access uses a high-speed modem to connect to the Internet. The connection is made through a digital subscriber line (DSL) telephone service, television cable hookup, or satellite dish. Broadband accounts are extremely fast, although they are slightly more expensive than dial-up accounts.

Understanding Internet Services

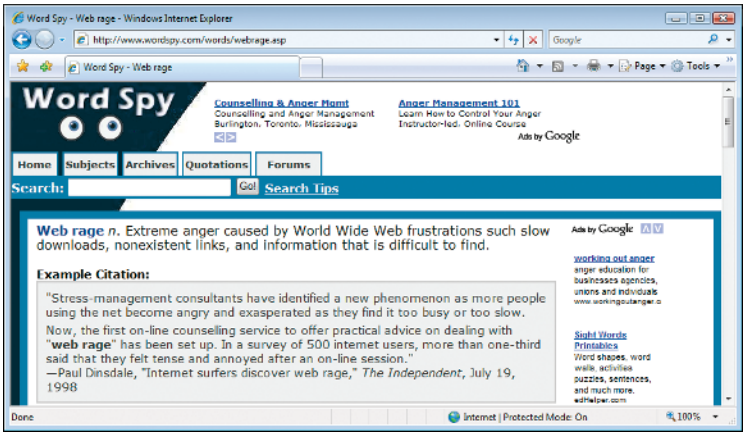
People always talk about *the* Internet, as though it was a single system. That is fine, because it simplifies things. However, you should know that the Internet is actually a collection of several different systems, each of which operates slightly differently.

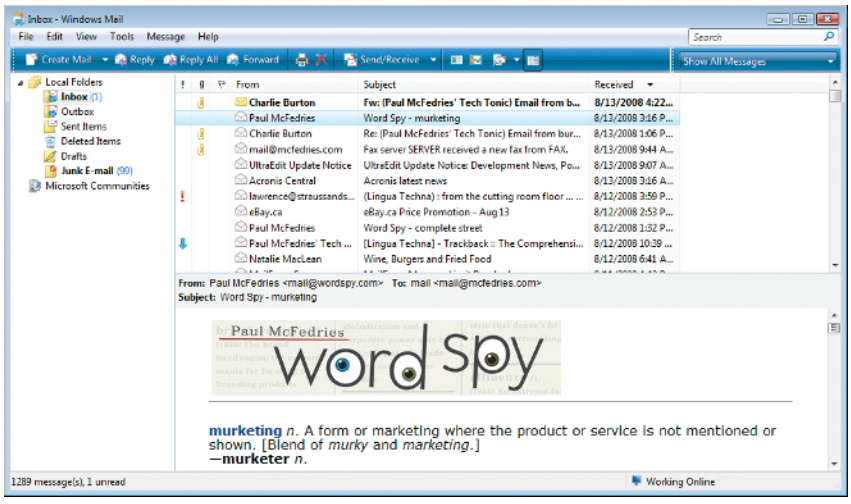
Each of these systems is called a *service*, and there are four main services that you will use when you are connected to the Internet: the World Wide Web, e-mail, instant messaging, and media.

There are dozens of other services associated with the Internet, but most are too obscure, too technical, or too outdated to worry about.

The World Wide Web

The World Wide Web is an interlinked collection of data. It is divided into separate *pages*, where each page has information on a specific topic. Most pages have at least one *link* that you can click to take you to a related page. There are billions of Web pages that cover millions of topics. For more information about the Web, see Chapter 3.



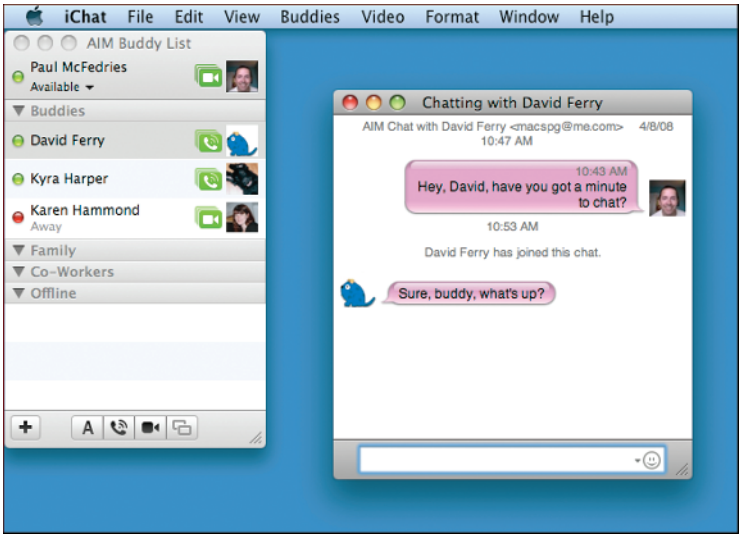


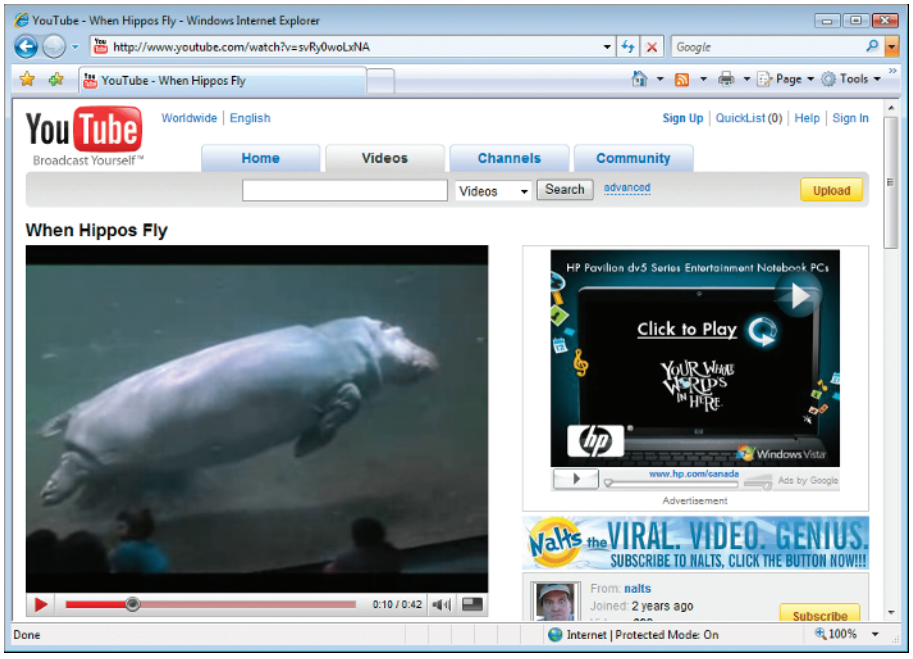
E-mail

You can use electronic mail — most often abbreviated as e-mail — to exchange messages. Your ISP or another company supplies you with an e-mail account, and you use that account to send and receive messages with other Internet users. Unlike postal mail messages which can take days to be delivered and require postage, e-mail messages are usually delivered within minutes and you do not pay an extra charge to send them. For more information about e-mail, see Chapter 10.

Instant Messaging

You can use instant messaging to send and receive messages. Like e-mail, these are typed messages, but instant messages are exchanged immediately. That is, when you are connected to another person through an instant messaging system, each sent message appears within seconds, so instant messaging is very similar to a conversation. For more information about sending and receiving instant messages, see Chapter 12.





Media

You can use the Internet to play songs and listen to radio stations. You can also run animations, view movie trailers, watch videos, and access many other types of media. The Internet has a few separate media services, but you mostly access media through other services, particularly the World Wide Web. For more information about Internet media, see Chapter 7.

Learn How the Internet Works

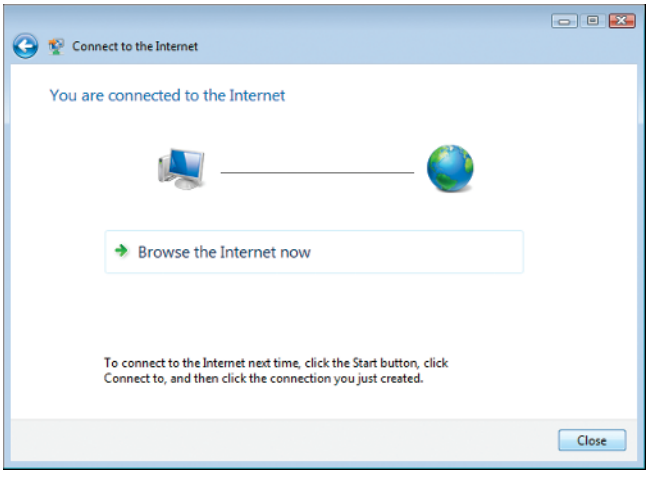
To drive a car, you do not need to know how the engine works or understand the principle of internal combustion, but you do need to know the basics of driving so that you can use your vehicle to get to your destination.

The Internet is similar. That is, you do not need to know how the Internet's backbone equipment works or understand the principles of networking, but it does help to know the basics of how data is transferred to get the information you need.

Specifically, you should understand how data gets from Internet sites to your computer.

ISP Connection

Although the Internet is used in many different ways, by far the most common use is for individuals such as you to retrieve data from a remote site. Before you can do this, you must connect your computer to your ISP, which then gives you access to the entire Internet. Data is then transferred over this connection, which might be a phone line, TV cable, or satellite link. For more information on connecting to the Internet, see Chapter 2.

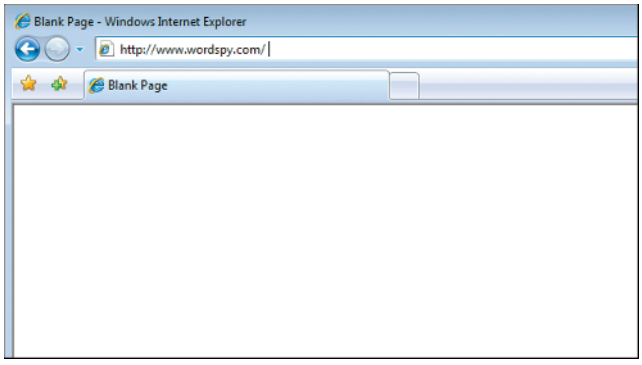


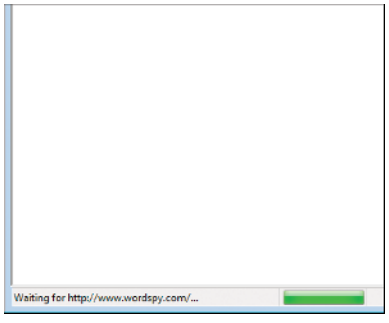
Internet Servers

Almost all the Internet's data is stored on special computers called *servers*. A server's job is to store data, and different servers are configured for different Internet services. For example, a Web server stores World Wide Web data, an incoming e-mail server stores e-mail messages sent to you, and an outgoing e-mail server ensures that messages you send get routed to the correct recipient.

Data Request

When you require data from the Internet, you first open a program designed to work with that data, such as a Web browser, an e-mail program, or instant messaging software. You then use that program to specify the data you want. For example, in your Web browser you might enter the address of a Web page, or in your e-mail program you might run the command to check for new incoming messages. The program then contacts the appropriate server and sends the server a request for the data.



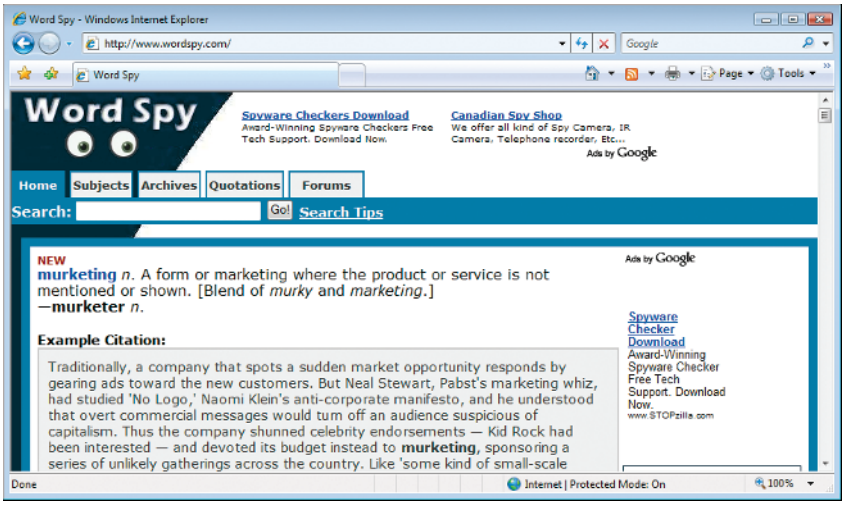


Data Transmission

When an Internet server receives a request for data, it first checks to see if that data exists. If not, the server replies with an error code. For example, if you used your Web browser to request an unknown Web page, the server returns an error code that corresponds to the "File Not Found" error. Otherwise, the server breaks up the data into separate pieces called *packets*, and those packets are sent to your computer.

Data Display

The program you are using — such as a Web browser or e-mail program — waits for the server to respond and then displays the results. If you sent an invalid request, the program displays the error message. For example, if the Web browser receives a "File Not Found" error, it displays that error to you. Otherwise, the program gathers the data packets and, when they are all received, it reassembles the packets and then displays the data.



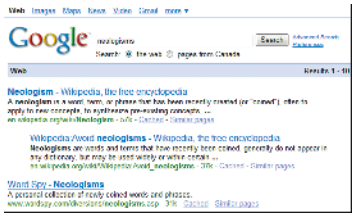
Discover What You Can Do on the Internet

More than a billion people have access to the Internet, the Web is home to tens of billions of pages, and over one hundred billion e-mail messages are sent each day. With numbers like these, the question is not "What can you do on the Internet," but rather "What can you *not* do on the Internet."

That is, almost anything you can do in the real world has an equivalent in the online world. This includes reading news, researching topics, communicating with other people, making friends, sharing information, buying and selling goods and services, playing games, and listening to or watching media.

Stay Informed

The Web is home to many sites that enable you to read the latest news. For example, most print sources such as newspapers and magazines have Web sites. Also, a number of magazines exist only online, and there are more recent innovations such as Web logs and news feeds, which you will learn about in Chapter 13.

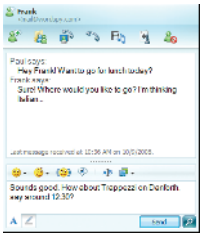


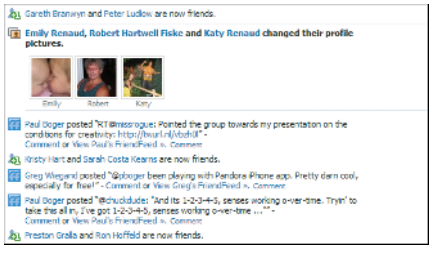
Do Research

You can use the Web's vast resources to research just about any topic you can think of. The Web has information that can help you with a school project, your family history, or a presentation at work. You can search for the data that you need, as described in Chapter 5, or go to specific research sites.

Communicate with Others

You can use various Internet services to communicate with friends, family, colleagues, and clients that you do not often see face to face. You can send e-mail messages and instant messages, you can participate in online forums and discussion groups, and you can even talk to another person using a microphone, your computer's speakers, and even a Web camera.





Socialize with Others

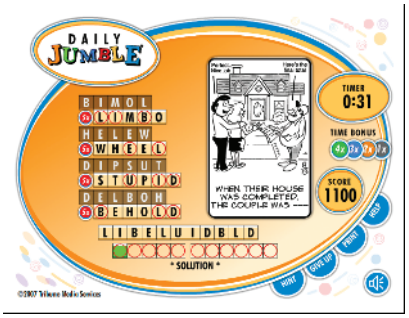
The Web offers many opportunities to socialize, whether you are looking for a friend or a date, or you just want some good conversation. The various social networking sites are excellent places to make friends, and you learn all about them in Chapter 8.

Share Information

You can also use the Web to create and share information. For example, you can create your own Web site by building Web pages and then publishing them on the Web, as described in Chapter 6. You can also share photos as detailed in Chapter 7, and create your own Web log as described in Chapter 13.

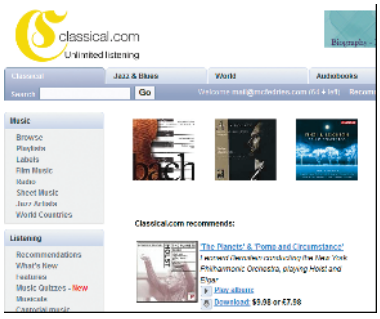
Buy and Sell

E-commerce — the online buying and selling of goods and services — is a big part of the Web. You can use Web-based stores to purchase books, theater tickets, and even cars. There are also many sites that enable you to sell or auction your products or household items. See Chapter 9 for more details on Internet-based buying and selling.



Play Games

You can use the Internet to play many different types of online games. You can solve a puzzle, fly a plane, race a car, go on an adventure, play football or baseball, battle aliens, plan a city, play backgammon or checkers, or deal poker.

Play Media

You can use the Internet to play digital media, including music tracks, audio files, radio stations, video files, animations, and movies. You can either copy or purchase the media and store it on your computer, or you can play media directly from a site.