USING MOSAIC

Windows™ and Mac®

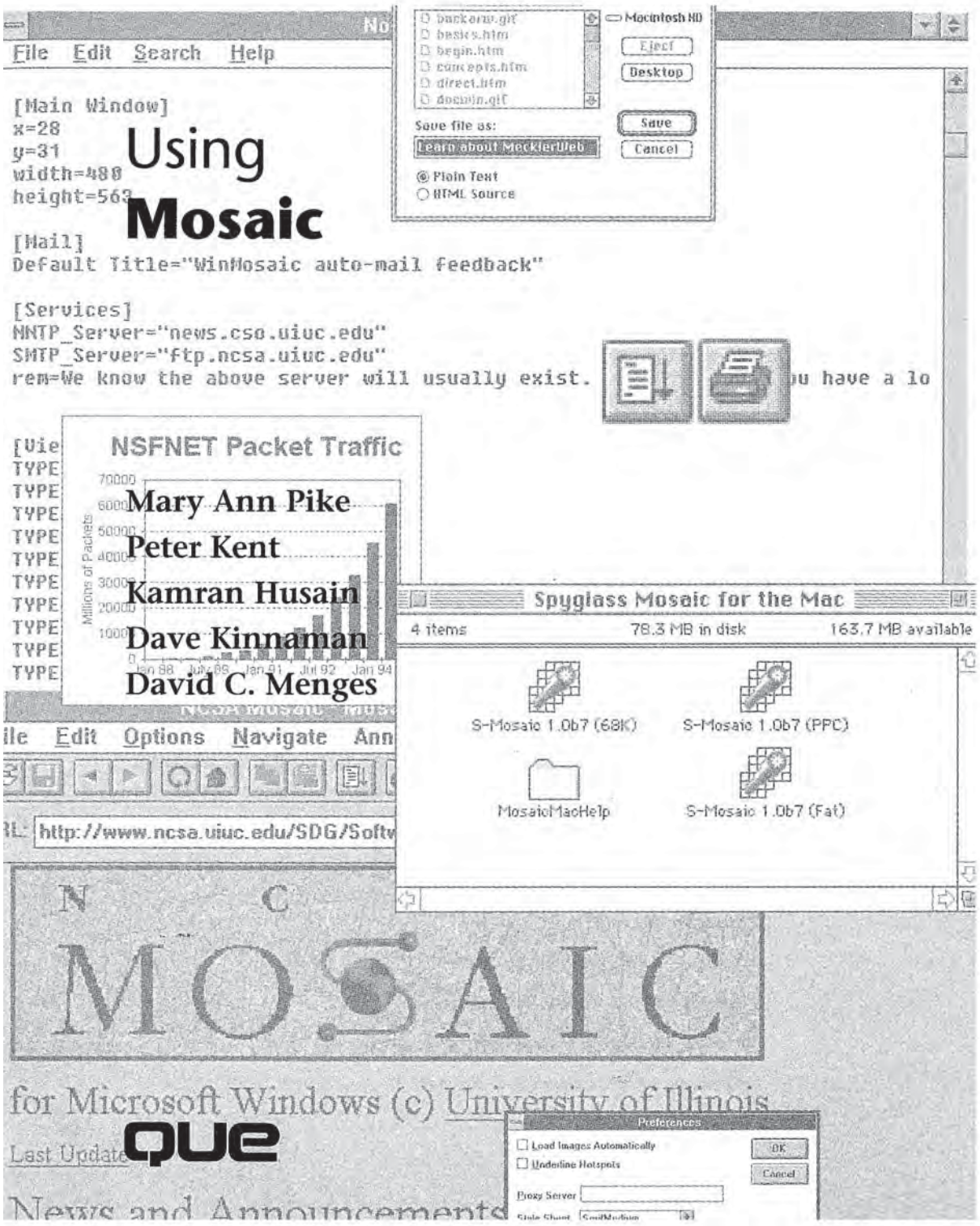
The Most Complete Mosaic Reference

Learn to use Mosaic with:

- World Wide Web
- Gopher
- FTP

Explore the Internet with Que!

que®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Using
Mosaic
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[Services]
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Eject
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Save file as:
Learn about MecklerWeb
Save
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NSFNET Packet Traffic
Millions of Packets
Jan 88 Jul 89 Jan 91 Jul 92 Jan 94
Mary Ann Pike
Peter Kent
Kamran Husain
Dave Kinnaman
David C. Menges
Spyglass Mosaic for the Mac
4 items
78.3 MB in disk
163.7 MB available
S-Mosaic 1.0b7 (68K)
S-Mosaic 1.0b7 (PPC)
MosaicMacHelp
S-Mosaic 1.0b7 (Fat)
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News and Announcements
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Load Images Automatically
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Proxy Server
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Using Mosaic

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About the Authors

Mary Ann Pike has a B.S. in electrical engineering and an M.A. in professional writing from Carnegie Mellon University. She has experience in software design and development, and is currently working as a technical writer at the Software Engineering Institute at Carnegie Mellon University.

Peter Kent is the author of *The Complete Idiot's Guide to the Internet* (Alpha Books).

Kamran Husain is an independent consultant with experience in UNIX systems programming, X Windows, Motif, Microsoft Windows and specializes in Real Time systems applications. He is a University of Texas at Austin alumni. Kamran offers training and consulting services through his company, MPS Inc., in the Houston area. He can be reached at mpsi@aol.com.

Dave Kinnaman in a systems analyst for a state agency in Austin, Texas. His work entails labor market and economic analysis to improve coordination and planning in education and training programs.

A strong believer in lifelong learning, Dave actually enjoys scholarship, and helping others to discover. His formal education includes degrees in biology, psychology, curriculum and instruction, and cognitive psychology. He is a member of the Austin Central Labor Council, (AFL-CIO), Self Help for the Hard of Hearing (SHHH), and a mass-media criticism group called the Council for Public Media.

David C. Menges is an Internet consultant in the Denver area. He joined the on-line community back in 1975, when it was based on UUCP. David gained his experience designing and maintaining LANs and WANs at Indiana University, Bell Labs, US West, and Colorado SuperNet. His current interests center around electronic storefronts.

Acknowledgments

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Contents at a Glance

Contents

Introduction

In the past 18 to 24 months, the Internet has exploded on the computer scene as a topic of national interest. What used to be a computer network reserved for a select few scientists, government workers, and educational institutions became available to corporations—large and small—and even individual users.

If you bought, or are considering buying, *Using Mosaic*, chances are you know what the Internet is and all of the powerful capabilities it promises to bring to your computer. (You can retrieve files, search for information, exchange e-mail, keep up to date on current events, and chat with other users anywhere in the world.)

Sure, that's what your friends and neighbors tell you anyway. But as you struggle for hours, then days, and even weeks and months to understand File Transfer Protocol (FTP), Gopher, Wide Area Information Search (WAIS), and other hideous Internet creations, you begin to wonder if there is any substance to those promises. Are you disillusioned with all of the hoops you had to jump through (with a computer tied to your back!) to get anything accomplished on the Net?

Don't feel alone. You aren't the only one who is disillusioned. In fact, a group of scientists realized that the Internet just wasn't providing what they needed either. They wanted an easy-to-use system that links documents and files all over the world. They wanted a system that ate FTP and Gophers for breakfast.

So, in their spare time, they created the World Wide Web. The Web is a powerful addition to the Internet that simplifies the way users interact with the Net. Documents of many types can be linked together in a common framework; hypertext links remove the need to understand arcane UNIX commands; and graphics, movies, and sound are as easily handled as text.

By itself, this did not create much of a stir outside the scientific and computing world. However, soon after the creation of the Web, a group of

researchers in Illinois created software to use the Web—Mosaic. Mosaic is powerful, easy to use, and makes the Web visual and fun.

What really grabbed the attention of a lot of computer users (over 2,000,000 in the first year) is that it's FREE!

Mosaic turns the Web, and the Internet, into something that any computer user can easily learn, be productive on, and master.

Mosaic features an easy-to-use point-and-click interface that, in Windows and on Macintosh, is familiar to users. Graphics and color make the documents come alive on-screen.

This introduction is the briefest of overviews of Mosaic and the Web. The Internet, the Web, and Mosaic are explored in more depth in the body of this book.

What This Book Is

This book is intended to provide a comprehensive reference and guide to using Mosaic. Both the Windows and Macintosh versions are covered fully.

While there are now several versions of Mosaic available (see chapters 10, "Other Versions of Mosaic for Windows," and 11, "Other Versions of Mosaic for Mac"), most of the commands and procedures in the book are essentially the same—regardless of the version you use. Chapters 10 and 11 are provided to point out any substantial differences. If you use the free version, a commercial version, Windows, or a Mac, this book has all the information you need.

Here is a brief glimpse at the contents of the book with short descriptions of each chapter:

- *Chapter 1, "What is the Internet?"* This chapter provides a brief history of the Internet and an overview of Internet services. It is assumed that you have at least some minimal exposure to the Internet—it is not a comprehensive guide to the Internet.
- *Chapter 2, "Introduction to the World Wide Web."* This chapter introduces you to the exciting world of the Web and tells you how to get more information about it. You see how computer programs, graphics, movies, netnews, and information of any kind can be transferred and found on the Web.

- *Chapter 3, "Getting Mosaic for Windows Running."* Mosaic is the primary focus of this book, so getting the software installed properly is important. This chapter shows you how to do this for Windows.
- *Chapter 4, "Getting Mosaic for Mac Running."* Mosaic is also a popular application on the Mac. This chapter walks you through installation on a Mac.
- *Chapter 5, "Navigating with Mosaic."* After you have Mosaic running, you'll want to start exploring. This chapter shows you how to open documents from anywhere on the Web.
- *Chapter 6, "Shortcuts to Favorite Places."* This chapter is one of the most useful in the book. If you want to save time on the Web, be more productive, and find resources faster, don't miss this chapter.
- *Chapter 7, "FTP with Mosaic."* Mosaic easily integrates the anonymous FTP standard into the Web. In this chapter, you see how easy it is to find and transfer a file with Mosaic.
- *Chapter 8, "Gopher with Mosaic."* Gopher is another old standard for finding and transferring files on the Internet. The Web includes access to all the Gopher sites in the world and this chapter makes it easy for you to use them on the Web.
- *Chapter 9, "Using Mosaic to Access Other Internet Services."* If you are familiar with the Internet, you probably know of Telnet, Usenet, and WAIS, although you may never have used them. Usenet is one of the most popular Internet services, and Mosaic incorporates access to this as well as other Internet services.
- *Chapter 10, "Other Versions of Mosaic for Windows."* As wildly popular as the free version of Mosaic is (over 2,000,000 copies were downloaded in less than a year), there are reasons to consider a commercial version. This chapter introduces some of these versions and gives you a quick tour of their features and how to use them.
- *Chapter 11, "Other Versions of Mosaic for Macintosh."* While there aren't many options for Mosaic on the Mac, the free version isn't the only one out there. This chapter takes a look at what else is available.
- *Chapter 12, "Other Ways to Access the World Wide Web."* This chapter provides you with some basic information about several other programs that access the World Wide Web.

- *Chapter 13, "Hot Home Pages."* If you want to find the most interesting, unique, or useful special sites, this chapter provides addresses and descriptions of the best of the best. (If you want to find even more sites, take a look at Que's *Using the World Wide Web*, a comprehensive listing of WWW sites arranged by category.)
- *Chapter 14, "Hot FTP and Gopher Sites."* Because Mosaic can be used to access FTP and Gopher archives, this chapter is included to help you find the most useful FTP and Gopher sites.

What This Book Is Not

This book is not an introduction to the Internet. If you go to your local bookstore, you can find dozens of such introductions. If you have no previous experience with the Internet, you really should read a book such as *Easy Internet, Using the Internet,* or *Internet Quickstart* (all from Que), *Internet Unleashed* (from SAMS Publishing), or *The Internet Starter Kit* (from Hayden Books).

If you have Mosaic, chances are you can get on the Internet, or already have been on the Internet, and are now ready to learn to use Mosaic.

Conventions Used in This Book

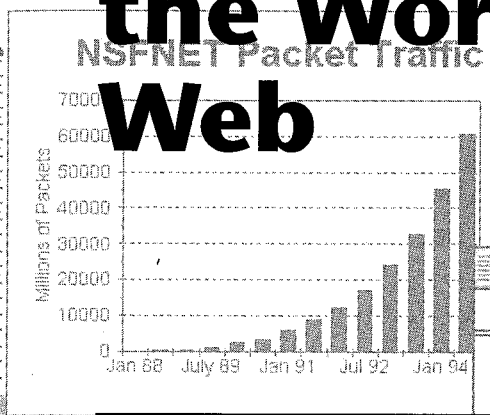
The conventions used in this book help you learn to use Web software quickly and easily, and help you easily locate Web resources.

The book uses several type enhancements to indicate special text. URL address of Web sites are set in **bold**. (Don't worry if you don't know what a URL is, they are explained in chapter 2, "Introduction to the World Wide Web.") Bold is also used for other electronic addresses mentioned, such as FTP sites, e-mail and others. Text that you need to type is set in special `computer type`.

Because this book covers both the Windows and Macintosh versions of Mosaic, we use a small icon in the margin (like the one beside this paragraph), to indicate procedures or features that are different in the Mac version. (Sometimes there are entire sections devoted to a Mac feature that is very different from Windows, but that isn't usually necessary.)

Part I

Introduction to the Internet and the World Wide Web



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concepts
direct.ht
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Macintosh HD

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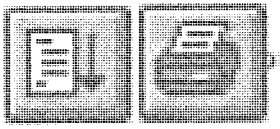

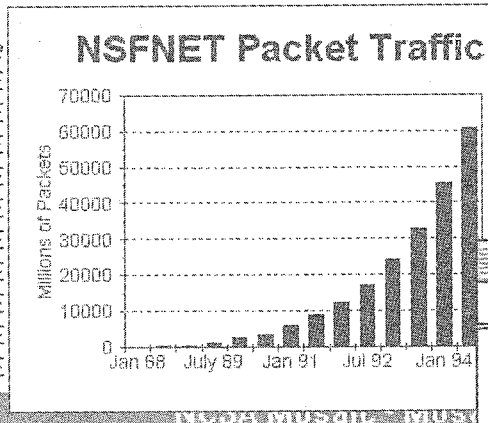

Spyglass Mosaic for the Mac

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MOSAIC

for Microsoft Windows (c) University of Illinois

Last Update

News and Announcements

Preferences

Load Images Automatically
Underline Hotspots
Proxy Server

OK

Chapter 1

What Is the Internet?

Today, the use of remote computer resources is commonplace. There are commercial on-line services, such as CompuServe and Prodigy; there are automatic teller machines that communicate with banks in other states; and there are companies with nationwide (or even worldwide) offices that transfer information between distant sites. What is common to all of these situations is that they involve accessing a *network*, communicating over long-distance lines (often phone lines) to allow remote computers and terminals to send information back and forth.

The Internet is the oldest long-distance network in the country, if not the world. Rather than limiting remote computing to terminals accessing a central computing site (as the on-line services of today do), the Internet provides a way for remote computer centers to communicate and share services and resources.

A number of different services have developed over the years to facilitate the sharing of information between the many sites on the network. Because the Internet was originally research-oriented, many of these services were hard to use and poorly documented. Now that the Internet is opening to commercial sites, new services are being developed that are easier to use. One of these new services is the *World Wide Web* (WWW), a hypermedia service provided by many Internet sites. *Mosaic* is a GUI (Graphical User Interface) application that gives you easy access to the WWW and many other Internet services. Mosaic lets you access the WWW and other Internet services by using your mouse to select items on your screen instead of having to type in text commands.

This chapter discusses the history and growth of the Internet, and some of the services that have developed over the years, including the following topics:

- A brief history of the Internet
- The culture of the Internet
- The growth of the Internet
- Internet services

A Brief History of the Internet

Almost as soon as computers were developed, the need to transfer information between machines became apparent. Initially, this was done by writing the information to an intermediate medium (such as magnetic tape or punched cards) and physically carrying that medium to the new machine.

In the early 1960s, scientists across the country began exploring ways of directly connecting remote computers and their users. In the mid- to late-60s, the United States government began to realize the impact computers would have on education and military research and development. So, the government decided to fund an experimental network that would allow remote research and development sites to exchange information. This network, funded by the U.S. Advanced Research Projects Agency, was christened the ARPANET.

The Development of the ARPANET

One of the main goals of the ARPANET research was to develop a network whose communications would not be seriously impaired if physical sections of the network were lost. Also, the network needed to allow the addition and removal of new nodes with minimal impact, and allow computers of many different types to communicate easily.

One of the major impacts of the ARPANET research, and the one that lead to today's Internet, was the development of the TCP/IP (Transmission Control Protocol/Internet Protocol) *network protocol*, the language that computers connected to the network use to talk to one another. During the 1970s, TCP/IP became the standard network protocol for the ARPANET. Also during this time, the government began encouraging the educational community to take

advantage of the ARPANET. The increasing number of users led to the development of many of the services available on the Internet today, including electronic mail (e-mail), file transfer, and remote login.

The Structure of the Internet

During the early 1980s, all the interconnected research networks were converted to the TCP/IP protocol, and the ARPANET became the backbone (the physical connection between the major sites) of the new Internet, which comprised all TCP/IP-based networks connected to the ARPANET.

When the Internet first came into existence in the early 1980s, there were only 213 registered *hosts* (computers that provided services) connected to the network. By February of 1986, there were 2,308 hosts. Today, the Internet is undergoing tremendous growth, with several million hosts connected worldwide.

Internet Administration

The Internet is not "owned" by anyone, in the usual sense of the word. The backbone in the U.S. is funded by the National Science Foundation (NSF). There are regional and international segments of the network that have their own funding and administration. But, any network connected to the Internet agrees to the decisions and standards set forth by the Internet Architecture Board (and anyone who is willing to help may participate in the process of devising and setting standards). The reports of the IAB are made public through the publication of Request for Comment (RFC) documents. Some of these RFCs document Internet standards, but many of them are meant to introduce new ideas and stimulate discussion about future developments on the Internet. Past and current RFCs can be found at the sites identified in chapter 14, "Hot FTP and Gopher Sites."

Tip
You can learn a lot about the Internet by reading the informational RFCs (also known as FYI documents). These documents do such things as discuss the culture of the Internet, give a glossary of Internet terms, and answer commonly asked questions about the Internet.

The NSF Manages the Internet Backbone

In the mid-1980s, the National Science Foundation (NSF) established a number of supercomputer centers around the country. To give universities and research centers remote access to these supercomputer centers, NSF funded a backbone network (NSFNET) that connected these supercomputer centers, and also provided funding for connections to the backbone for regional networks.

In the late 1980s, NSF awarded a contract to a single organization to be responsible for maintaining and upgrading the physical network and the network administration for the NSFNET. In the early 1990s, this organization

proposed allowing the Internet to carry commercial traffic. Initially, the NSF was opposed to the conveyance of commercial traffic on what was intended as an educational and research network. An agreement was reached that required the profits from commercial traffic to be used to improve the national and regional network infrastructure.

Current Internet Management Structure

NSF is in the process of awarding new agreements to various organizations for the management of the NSFNET. The administration of this latest manifestation of the NSFNET will be substantially different from the current version.

Network Traffic Conveyance Services. The NSF envisions the new configuration of the NSFNET as a number of networks connected to a new high-speed backbone. In this arrangement, regional networks would pay connection fees to use the high-speed backbone, and commercial and educational institutions who wanted to connect to the regional networks would pay network usage fees. Rather than the NSF directly funding the network, they would instead provide funds for NSF-sponsored research projects to pay for the projects' network usage fees. The NSF's goal is to remove itself from the direct funding of the NSFNET.

Network Information Services. In April of 1993, the NSF awarded three five-year cooperative agreements for the management of the Network Information Services. The recipients of these agreements together manage the InterNIC (Internet Network Information Center). They are responsible for providing information about getting connected to and using the Internet.

Network Solutions was chosen to provide the Internet registration services, including the assignment of IP addresses and registration of domain names. AT&T was chosen to maintain lists of FTP sites, lists of various types of servers available on the Internet, lists of white and yellow page directories, library catalogs, and data archives. AT&T will also offer database design, management, and maintenance services to groups for material available to the Internet community. General Atomics was selected to provide a Network Reference Desk (providing general information about the Internet) and educational services.

The National Information Infrastructure

Because the government recognized the importance of a national information infrastructure (NII), it began to set in place the funds for the development of the high-speed, cutting-edge communications network. This network

is a research project involving collaboration between government and industry, and is meant to encourage the continued expansion of network technology. By developing a stable, widely used network technology, the government hopes to encourage the commercial development of similar networking technology and services.

The development of the information infrastructure of the country could be as important to the educational climate and economy as the development of the automobile highway infrastructure was in the 1950s. Eventually, connections to the Information Superhighway should be as common as telephone connections are today. The Superhighway will provide access to retail merchants, information services (such as personalized newspapers and on-line magazines), commercial databases, public information (such as library holdings and government documents), and many other services.

Access to a common network will facilitate the concept of telecommuting (working at home, using the network to access information, have video conferences, and so on) and teleschooling (having students attend classes remotely using a two-way, live video conference, in addition to video broadcasts and on-line multimedia information and exercises). Companies are already beginning to take customer complaints and inquiries by e-mail and distribute marketing materials and product updates on-line. All financial transactions could take place on-line, with currency becoming almost unnecessary. Eventually, the Information Superhighway could completely change the structure of our society.

Some of these things are already available through commercial on-line services (such as CompuServe, Prodigy, and America Online), but the potential for information access through a common network like the Internet is almost unlimited. In addition to business and educational activities, social forums could allow interaction between millions of people around the world, allowing people to explore other cultures and exchange information about topics of common interest.

The Culture of the Internet

When researchers first began to explore the concept of a large-scale network, few envisioned the uses to which the network would be put or the eventual size of the network. The initial designers of the ARPANET imagined that it would facilitate cooperation between researchers by giving them access to

easy information exchange and remote processing. Most of those initial network developers were surprised when one of the most used network services turned out to be e-mail.

Before computer networks became so widespread, researchers depended on printed materials (journals, technical reports, letters, and so on), conferences, and face-to-face meetings to exchange information about their research. Researchers were very isolated, having infrequent contact with anyone but their close colleagues. Researchers in different parts of the country could be pursuing the same goal, with no way of knowing that their efforts were being duplicated, or sharing the information that might have allowed them to collaborate or compare results.

One of the main goals of the ARPANET was to allow researchers to exchange information in a much more timely and convenient manner. Through the file exchange facilities, reports and data could be easily transferred from one researcher to another within a matter of hours, if not minutes. Programs that were developed at one site could be shared with others who were doing similar work. The resources of a powerful computer could be made available to labs that were too small to be able to afford to purchase such a machine for themselves.

All of this has become a reality on the Internet. But the Internet has become something much more than this.

The Community Expands

Back in the early days of the ARPANET (even as late as 1981), the Internet community was so small that people literally knew almost everyone on the network. Most of the sites were either government or university research centers. If a researcher received a request for information from a colleague at another site, he or she generally would know the colleague (or know of him), and would be able to spend a few hours (or more) of his/her time answering the request.

With the growth of the Internet, this type of personal response has become more difficult. It can be compared with a small town suddenly acquiring a large industry and expanding to 25 times its original size. People in the small town all used to know each other and be on speaking terms with most of their neighbors. Their children went to the same schools and grew up together. In the big city, people keep their houses shut and only come out to drive to work or for other necessities. They don't have time to know their neighbors, except perhaps for one or two with whom they have something in common.

The Internet has become like this, in a way. There are so many people on the Internet now that it is difficult to know even the people in your own organization (if it is large), let alone others on the network. Perhaps people know a few dozen others who participate in a discussion newsgroup, or other researchers they have met at conferences or whose papers they have read in journals.

Even though this smallness has been lost, there is still a community of sorts on the Internet. Right now, access to the Internet is still relatively restricted. Compared to the hundreds of millions of people in the United States, the approximately 10 million or so that have Internet access is still a small number. Most use the Internet for its intended purpose: to exchange information or use remote computer resources unavailable to them locally. Usually this is done in a friendly and honest manner.

Cultural Pitfalls

One interesting thing about communicating over the Internet is that it removes many preconceived notions that you form about people when you meet them in person. When you communicate with individuals over the network, you don't know (unless they tell you) their age, race, height, weight, or even their gender sometimes. You don't know if they're the president of a company, or a high-school student. The only thing by which you have to judge them is their words.

For this reason, it's very important to choose carefully the words you use in your Internet communications. The Internet, for the most part, is a friendly, open community. Because there is little chance of any real retribution, some people make vicious attacks on others. These people quickly lose credibility in the community, though, and may find themselves in trouble if they do need to have dealings with someone they insulted or someone who was unimpressed by their abuse. Even though this is one of the few drawbacks of the Internet community, it is one that has grown as the number of users on the Internet has grown.

The Internet community has features that physical communities have, but on a much larger scale. Two people from different parts of the country may strike up a friendship that eventually leads to a romantic relationship, or even marriage. There are on-line, real-time conferences using services such as the Internet Relay Chat, that allow many people to converse in real-time about subjects they have in common. There are all types of people on the Internet: shy people, aggressive people, friendly people, and even abusive people. It is truly representative of society in general.

The Growth of the Internet

The growth of the Internet has been absolutely phenomenal, particularly over the last five years. The number of machines connected and amount of traffic carried has grown tremendously, and the type of organizations connected has changed.

Traffic Growth

The number of data packets that flowed through the NSFNET went from 152 million in July of 1988 to 60,587 million packets in July of 1994 (see fig. 1.1).

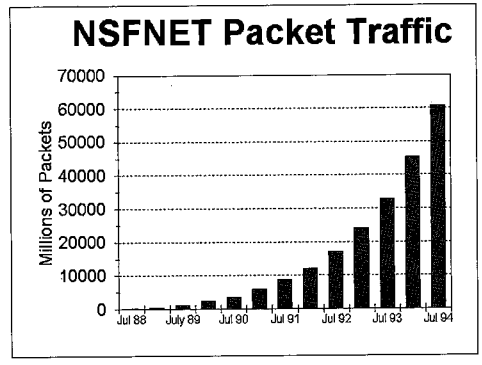


Fig. 1.1
Growth of NSFNET Packet Traffic from July 88 to July 94.

The byte traffic increased from 1,594 billion bytes of data in July of 1991 to around 12,764 billion bytes of data in July of 1994 (see fig. 1.2).

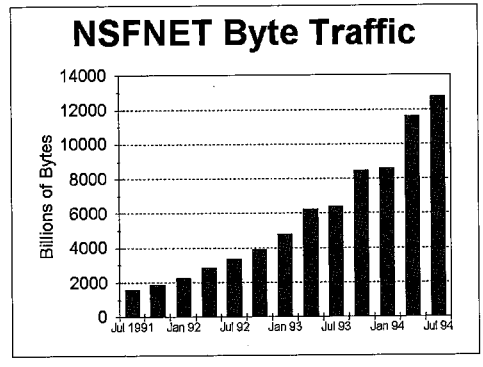


Fig 1.2
Growth of NSFNET Byte Traffic from July 91 through July 94.

Approximately 35 percent of the network traffic involves file exchange (FTP activity). Approximately 15 percent involves e-mail and Usenet traffic, although this has dropped considerably from a high of almost 30 percent four years ago. The interactive traffic (including Telnet) has remained almost constant, averaging about six percent of the traffic. Gopher traffic runs about four percent of the total, and the WWW traffic is at six percent and growing rapidly.

Host Growth

The number of hosts on the Internet has grown from 235 in May of 1982 to approximately 3.2 million hosts in July of 1994 (see fig. 1.3). The edu domain, which is for educational and research organizations, has the most hosts (about 850,000). The commercial domain now has almost as many hosts (about 775,000). (Domains are groupings of addresses explained later in this chapter in the section "What is a Host Name?")

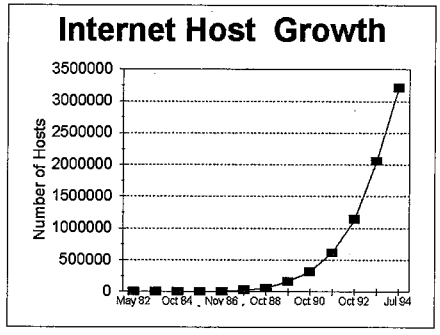


Fig. 1.3
Internet Host Growth from May of 82 to July of 94.

Internet Services

A number of different Internet services exist, and many of them can be accessed through Mosaic. This section familiarizes you with the common Internet services, and discusses host names and addresses (which you need to understand to use the services).

Internet Addresses

Internet *addresses* are the key to using the Internet. You use *mail addresses* to send messages to other Internet users, and you use *host addresses* (or *host names*) to retrieve files and connect to hosts that provide Internet services. This section discusses what makes up an Internet address.

What Is a Host Name?

All Internet sites are identified by a unique domain name (such as "bigcorp.com"). The *domain name* is made up of several pieces that identify the organization and the domain hierarchy to which it belongs. A host name contains the domain name in addition to a name identifying the particular host and any subdomain it may be associated with at its Internet site. This section describes the various parts of a host name.

Host names are found in e-mail addresses and also are used when connecting to Internet hosts to use Internet services (such as WWW) or retrieve files. A host name is made up of several words separated by periods. You can examine these words to find out information about the host. The host name **bigmachine.bigcorp.com** is used here to illustrate the parts of a host name. The rightmost word, for example, specifies the *domain* of the machine. In this case, the word **com** means that the machine belongs to a commercial entity—a company of some kind. Some other domains are **edu** for educational institutions, **mil** for military sites, and **gov** for sites that are part of the government. Also, each country that is connected to the Internet has a domain assigned to it; for example **fr** is the domain name for France.

Note

You can find a listing of country codes in several files on the Internet. These files can be retrieved by anonymous FTP or Gopher (these services are discussed later in this chapter). Two of the files you can look at for this information can be found at the address **nic.merit.edu** in the directory internet/connectivity. The files in this directory are nets.by.country and world.list.txt.

Working to the left in the host name, you come to the word **bigcorp**. This part of the host name defines the institution that owns the machine. When an institution connects to the Internet, they must register the name of their organization with the Internet registration services. In this case, the name **bigcorp.com** has been registered to a ficticious company called Big Corporation (this name can be used only for machines connected to Big Corporation's network). Examples of real-life institution names (including the domain name) are **ibm.com** for International Business Machines, **mit.edu** for the Massachusetts Institute of Technology, and **nasa.gov** for the National Aeronautics and Space Administration.

Any words to the left of the institution name are assigned within the institution. Small organizations usually have only a single word (specifying the

name of an individual machine at the organization) to the left of the institution name. Sometimes, the host name for large organizations has more words, which usually designate departments within the organization. For example, you may see a name such as **amachine.cs.mit.edu**, which indicates that the machine **amachine** is in the **cs** (probably Computer Science) department at MIT, an educational institution. With host names, the leftmost word is always the name of a machine.

What Is an IP Address?

Host names are used to access individual hosts on the Internet. The host name is really just a convenient way for people to refer to hosts. The host name represents the IP address (or host address) of the host, which is the address that Internet software needs to get information to or from the host. The *IP address* is a unique number assigned to identify a host on the Internet. This address is usually represented as four numbers between 1 and 254 separated by periods, for example, 192.58.107.230.

Most software translates automatically between the host name and the IP address so that you don't have to remember which numbers represent which machine.

File Transfers—Downloading with FTP

One of the first Internet services developed allowed users to move files from one place to another—the *file transfer protocol* (*FTP*) service. This service is designed to allow you to connect to a computer on the Internet (using an FTP program on your local machine), browse through the programs that are available on the computer, and retrieve files.

▶ See "FTP with Mosaic," p. 133

What Are Anonymous FTP Servers?

The FTP service is an example of a *client-server system*. In this kind of system, you use a program on your local computer (called a *client*) to talk to a program on a remote computer (called a *server*). In the case of FTP, the server on the remote computer is designed to let you download and upload files, but many other services are also available on the Internet. Some of these, such as Gopher and Archie, are discussed in the section "Archie, Gopher, and Other Information Retrieval Systems" later in this chapter.

To connect to a computer system using an FTP program, the system must be running an FTP server. This server must be set up by the administrators of the machine, and the administrators decide which files and information are made available on the FTP server.

Tip
It is common courtesy on the Internet to use your e-mail address as the password when logging in at an anonymous FTP site. Many FTP sites request you to do this when you connect to the site.

One common type of FTP server is an *anonymous* FTP server. This server allows you to connect and download files without having an account on the machine. If an FTP server is not anonymous, when you connect to the server you have to provide a user name and password, just as if you were logging into the machine. On an anonymous FTP server, you use the special user name "anonymous" when you connect. This "anonymous" user name lets you log in by providing any password you want.

Anonymous FTP servers are one of the major means of distributing software and information across the Internet. There is a large amount of software available on anonymous FTP servers, and this software is often provided free of charge. Software is available for many different types of computer systems, such as UNIX, IBM PC, and Macintosh systems.

Locating Files at FTP Sites

Tip
When you use Mosaic to access anonymous FTP sites, you do not actually need to log in to the site—Mosaic does it for you.

One of the most frustrating problems with the Internet is the difficulty of finding information such as FTP sites, host resources, sources of information, and so on. Imagine that you went into your local public library and found that rather than the books being arranged on shelves according to a book classification scheme, the books were simply in piles all over the floor. Rather than a central card catalog, there were notes placed on some of the piles stating what people had found in that pile. Well, this is how the Internet has been for most of its existence; there are many resources, but no way to easily locate them.

Most FTP sites do not have a listing of all of their available files. Sometimes, the only way to locate a file or find interesting files is to click on the folders to show the contents of the directories, and look through them.

Because the format of the file and directory names depends on the machine that is being used as the FTP server, what you see depends on the type of system to which you connect. If the server is running on a UNIX system, for example, the file names will appear with any combination of uppercase or lowercase letters, and can be of any length.

If, on the other hand, the system you connect to is a VMS system (from Digital Equipment Corporation), the file names will be only uppercase. Other systems, such as PCs and Macintoshes, display files and directory names in their standard formats.

On some machines (especially the very large archive sites), the site maintainers keep an index of available files with brief descriptions of what the files contain. This is very useful, and makes finding useful files much

easier. When you enter a directory, you should look for a file called INDEX (either in uppercase or lowercase). You should also look for a file called README (or perhaps readme, or read.me). These README files are generally descriptions of the contents of the directories, or information about the server system. You should always download the README files and read the contents—the files are put there for a reason.

If you have a question about an FTP server, or about the contents of the files there, you should send an e-mail message to the "postmaster" of the FTP machine. For example, if you connected to the machine **rs.internic.net**, you should send e-mail to the address **postmaster@rs.internic.net**. Some FTP servers have a different person to contact; in this case, the name of the contact person is displayed when you connect to the machine, or is in a README file in the first directory you see when you connect.

Locating Files Using Archie

Information retrieval systems are being explored as a way to locate information resources on the Internet. Even though a complete central list of all the resources on the Internet does not exist, the various information retrieval systems go a long way towards making a resource easy to find.

Archie was the first of the information retrieval systems developed on the Internet. The purpose of Archie is simple—to create a central index of files that are available on anonymous FTP sites around the Internet. To do this, the Archie servers periodically connect to anonymous FTP sites that agree to participate and download lists of all the files that are on these sites. These lists of files are merged into a database, which then can be searched by users.

To use Archie, you have to use the Mosaic Telnet protocol to connect to one of the Archie machines and search the database there. See chapter 9, "Using Mosaic to Access Other Internet Services," for more information on how to use Archie through Telnet.

When you have connected to one of the Archie database machines, you can search the database for a program or file. Because the database only knows the names of the files, you must know at least part of the file name for which you are looking. For example, if you are looking for a program that will compress files (make them smaller), you would search the database for the word "compress." The Archie program will return the location of all the files that are named "compress."

Now, this search only returned those files exactly named "compress," so it wouldn't return the location of a file named "uncompress" (which undoes

the work of the compress program). Archie, though, lets you search for a string of characters that is anywhere in the file name. If you tell the Archie program that you want to do a "substring" search, it looks for files that have your search string anywhere in the file name. Similarly, you can tell the Archie program to match the file name even if it has different capitalization than your search string.

The Archie server provides the machine name and location of the files that match the string for which you are searching. This allows you to use the FTP program to connect to the machine and download the file to your local machine. The main limitation of Archie is that you have to know at least something about the name of the file to search for it; if you don't have any idea what the file is called (for example, you want a program that searches for viruses on your machine and don't know that it is called scanv), you may have to try several searches using different strings before you find something that looks useful.

Another limitation of Archie is that not all sites on the Internet that have anonymous FTP participate in the Archie database. There may be a file that fits your specifications at a non-participating site, but Archie will not be able to find it because it is not in the database. Despite these limitations, however, Archie is a very useful tool for locating files to download through FTP.

Retrieving Information Using Gopher

▶ See "Gopher with Mosaic," p. 147

Gopher is another information distribution service within the Internet. Sites on the Internet that want to distribute information through the Gopher system set up and run Gopher servers that allow people with Gopher clients to display and download files and directories.

The functionality of Gopher is very similar to FTP, but the Gopher can connect you to other Internet services in addition to displaying and retrieving directories and files. Displaying or downloading a file is as easy as selecting an item from a menu. This ease of use, plus the ability to put descriptive titles on the menu items, makes Gopher a much easier method of browsing files than simply using FTP.

One of the big advantages of the Gopher system is that you can include menu items on a server that, when selected, move the user to other servers on other machines on the Internet. For example, one menu item on machine A's Gopher server may say "Connect to Machine B Gopher." When that menu item is selected, your Gopher client connects to machine B's Gopher server, just as if you had connected to it when you ran the Gopher client.

What is Gopherspace?

This ability to link Gopher sites together makes it very easy to examine the files available at one site then move to other interesting Gopher sites. All Gopher servers are interconnected at some point—this network of Gopher servers is known as Gopherspace. When a new Gopher site becomes available on the Internet, the administrators send a mail message to the maintainers of the Gopher software (at the University of Minnesota) to have their site included in the master list of all Gopher sites worldwide. Many organizations run Gopher servers; universities and colleges, companies, and government agencies all have information available through Gopher.

The Gopher maintainers run a Gopher site (located at the address **boombox.micro.umn.edu**) that lists all the known Gopher sites and lets you connect to them. This gives you a very good starting place to browse through all the Gopher sites and discover the wealth of information available on the Internet. Even though there are many interesting Gopher sites listed in chapter 14, "Hot FTP and Gopher Sites," the main Gopher site at **boombox.micro.umn.edu** is always the best place to begin exploring the information on Gopher.

Locating Files Using Veronica

With all the Gopher sites available, though, it may be hard to locate a site that carries the information and files you want. You probably want to search the Gopher sites for a document you want. A service, called Veronica, is available to do this.

Just as Archie is a service that allows you to search file names and directories on anonymous FTP servers, Veronica allows you to search menu items on Gopher servers. To use Veronica, you have to be connected to a Gopher server that gives you access to a Veronica server. The Veronica database is built by scanning the Gopher menus on servers around the world, and can be searched by selecting "Search Gopherspace using Veronica," which is found on the Gopher site **gopher.tc.umn.edu**.

Locating Documents Using WAIS

Whereas Gopher is a good system to use for exploring the files and systems available on the Internet, suppose you want to find all documents available on a particular subject? The WAIS (Wide Area Information Server) is a system that allows you to search for your subject through documents on servers all over the world. WAIS allows you to search a set of databases that have been indexed with keywords, and returns addresses where you can locate documents that would be of interest to you.

► See "Using WAIS to Search for Information," p. 173

The heart of the WAIS (pronounced "ways") system is the use of client software running on your local computer that lets you ask for information in a simple, English-like language. The client takes your question and sends it off to the WAIS server you select. The server takes your question and searches all the documents it knows about for the information you want. If it finds documents that match your question, it returns indexes to these documents, which you can then use to download the documents and display them on your local system.

One of the key features of the WAIS system is the ability of a WAIS server to have indexes which actually point to other WAIS servers. A central site on the Internet maintains indexes to all known WAIS servers on the Internet; you can use this central site as a starting point for your searches. For example, let's say you want to find out all the times that President Clinton mentioned the city of Atlanta, Georgia.

You can set your search database to be "directory-of-servers," which is located on the machine **quake.think.com**. As a quick example of how WAIS works, using this database, you search for "president clinton," and it returns (among others) a database resource marked "clinton-speeches." You now can use this database to search for "atlanta georgia." This search returns some number of documents, and the first ones are the ones that best match your question. These speeches, when retrieved, are the ones which mention Atlanta, Georgia.

Connecting to Host Resources Using Telnet

▶ See "Using the Telnet Protocol from Mosaic," p. 165

Just as a computer system can run an FTP server to allow you to transfer files, a computer on the Internet can run other servers to let you do other things when you connect. There is a wide variety of these services (also called *host resources*) on the Internet, and they provide everything from information about agriculture to space research. Some of these host resources are similar to bulletin board systems, which you may be familiar with. But instead of dialing into one of these systems using a telephone line and modem, you can connect to these systems over the Internet using a program called Telnet.

Telnet is a method used to connect two computers together; it provides a terminal connection to the remote machine. This connection allows you to type commands to the remote machine, just as if you had a terminal hooked right into it. You are probably already familiar with the idea of a terminal program; if you have a modem connected to a personal computer that you use to dial into computer systems, you use a terminal program to talk to the modem and remote system.

Just as you use a local FTP program to connect to an FTP server on another machine on the Internet, you use a Telnet program on your local machine to talk to the Telnet server on another machine anywhere on the Internet. The main difference between FTP and Telnet is that when you connect to the remote machine with FTP, the FTP server only lets you do things connected with transferring files. When you connect to a machine using Telnet, what you see really depends on what the host resource provides. You may see a bulletin board menu system, or a simple command line interface, or you may just receive some output without typing anything. It all depends on what the resource expects.

World Wide Web (WWW)

The World Wide Web (WWW) is one of the newest Internet services. In the late 1980s, CERN (the European Laboratory for Particle Physics) began experimenting with a service that would allow anyone to easily access and display documents that were stored anywhere on the Internet. To do this, they developed a standard format for the documents that allowed them to be easily displayed by any type of display device, and allowed links to other documents to be placed in documents.

▶ See "Introduction to the World Wide Web," p. 31

Although the WWW service was initially developed for the CERN researchers to use, after the service was made public it became tremendously popular. A number of different client applications (the ones that actually display the documents on-screen) were developed to read WWW documents. One of the most popular of these clients is Mosaic, the topic of this book. Not only does Mosiac provide quick graphical access to WWW documents, but it also lets you use the same GUI to interface to other Internet services.

The remaining chapters in this book tell you how to install and use Mosaic, and where to find some interesting collections of WWW documents.

Electronic Mail (E-Mail)

E-mail was one of the first Internet services developed. Although the original intent of having a network connecting physically remote sites was to allow the exchange of files and remote use of computing resources, the designers of the network discovered that one of the most popular services involved personal communications (e-mail). Today, e-mail is an important service on any computer network, not just the Internet.

E-mail involves sending a message from one computer account to another. There are many different e-mail standards, which can make it difficult to write an application that has a general e-mail interface. At this time, Mosaic

does not support an e-mail protocol, although it may at some time in the future. (A few other WWW clients—mostly UNIX based—currently support an e-mail protocol.)

Internet Relay Chat (IRC)

Internet Relay Chat is a service that was developed in the late 1980s, originally as a replacement for the UNIX talk program. IRC allows multiple people to "talk" simultaneously (by typing, of course) about a particular topic. Like many other Internet services, IRC is a client/server application. People who want to talk together must be running an IRC client, and they must connect to an IRC server. After they are on the server, they select the *channel* on which they want to talk (channels often are named for the topic they discuss, if they restrict themselves to a particular topic).

At this time, Mosaic does not directly support the IRC protocol. To learn more about IRC, use FTP or Gopher to retrieve the IRC Primer, a basic IRC user's manual. It is available in plain text, PostScript, and LaTeX from **cs-ftp.bu.edu:/irc/support**. There are also IRC tutorials avaliable via anonymous FTP from **cs-ftp.bu.edu:/irc/support/tutorial**. For answers to a number of questions about IRC, read the FAQ, available for FTP from either of the following two sites: **cs-ftp.bu.edu:/irc/support/alt-irc-faq** or **ftp.kei.com:/pub/irc/alt-irc-faq**.

Internet News Groups (Usenet)

▶ See "Using Mosaic to Access Usenet News Groups," p. 169

Internet *newsgroups* are on-line discussions (via posted messages) on thousands of different topics. In addition to the mechanics of reading and posting to newsgroups, you should be aware of some of the social aspects of participating in newsgroup discussions.

What Is Usenet?

Usenet (which is short for users' network) is made up of all the machines that receive network newsgroups, which are computer discussion groups or forums. The network news (commonly referred to as *netnews*) is the mechanism that sends the individual messages (called *articles*) from your local computer to all the computers that participate in Usenet.

While you don't have to understand the exact details of how Usenet works, a broad outline will help you to understand what makes Usenet a very powerful means for reaching lots of people. The basic idea with Usenet is that when you post an article on your local computer, the article is stored on your computers' disk, and then the article is sent to other computers that have agreed

to exchange netnews articles with your computer. These machines, in turn, send your article to other machines, who send it to others; this continues until your article has reached every computer that participates in Usenet. Because each machine can send articles to many other machines, your article can reach the majority of Usenet computers in a few hours.

A news article is very similar to an e-mail message. It has some information at the top of the article in the *header* lines and the content of the article in the *message body*. Just as in an e-mail message, the header lines give information to the netnews software that allows it to put the article in the right newsgroup or groups (an article can appear in more than one group at the same time—this is called *cross-posting* the article) and to identify the sender of the article.

The message body of the article contains the information that the sender of the article wrote. In many cases, the article ends with a *signature*; this is often a witty comment or some information about the author. Many news readers allow you to set up a file that contains your signature; the contents of this file are automatically tacked onto the end of each article you post. See the section, "Usenet Etiquette," later in this chapter for more information about these signature files.

To give you a better idea of what a netnews article looks like, see the example article in figure 1.4. In this example, the first line (starting with the word `Newsgroups:`) indicates which newsgroup the article is posted in. The line starting with `From:` gives the author of the article, while the line starting with `Subject:` gives the topic of the article. The rest of the header lines (everything up to and including the line `Lines:`) give additional information about the article. The message body is after the first blank line. Everything after the line of dashes is the users' signature.

```
Newsgroups: comp.sys.mac.hardware
Path: bigcorp.com!tgp
From: tgp@bigcorp.com (Tod Pike)
Subject: Re: recent prices
Message-ID: <1993Nov30.134422.4009@bigcorp.com>
Sender: netnews@bigcorp.com (Netnews)
Date: Tue, 30 Nov 1993 13:44:22 EST
Lines: 10
Recent prices should be posted to this news group soon - keep
an eye out!
             Tod Pike
---------------------------------------------------------------
To reach me send mail to tgp@bigcorp.com
Disclaimer: I don't speak for the boss!
```

Fig. 1.4
An example Usenet article.

Newsgroups and Topics

The information carried by Usenet is divided into *newsgroups*, which are areas of discussion that can be compared to bulletin boards (the cork kind) with messages tacked all over them. Each newsgroup is devoted to a particular topic, although the discussion in these groups can be far-reaching. There is a newsgroup for almost every topic you can imagine—many large Usenet sites carry well over 5,000 newsgroups!

To get an idea of how discussion happens in newsgroups, you might think of Usenet as a large building, and each newsgroup is a room in that building. Each room has a name on the door, and a brief description of the topic of discussion in that room. In some of these rooms, you can find a small number of people politely discussing a serious topic. You can come in, ask a question, and join in the discussion.

In other rooms, you may find a loud, raucous group of people discussing a heated topic. Each person is shouting out his or her opinion loudly, with little regard for the shouting from the people around them. You try to enter the conversation, but you either find that your opinions are ignored or you are insulted. Both of these conditions happen everyday (sometimes in the same newsgroup at different times!) on Usenet.

How Newsgroups Are Organized

Newsgroups are named in a *hierarchical* manner. The name of a newsgroup is made up of several words separated by periods. In the name, the words on the left side of the name are the most general—they specify the hierarchy that the newsgroup belongs in. As you move along the name to the right, the words become more and more specific about the topics that are discussed in the group. For example, a valid newsgroup name is **comp.sys.mac.hardware**. The first word, "comp," gives the hierarchy; groups under "comp" are for discussions about computers. The next word, "sys," indicates that we are talking about computer systems, as opposed to languages or editors. The next word, "mac," tells us that we are talking about Macintosh computer systems. The final word, "hardware," lets us know that the group talks about hardware issues relating to Macintosh computer systems.

The left-most word in the group name defines the so-called *top level hierarchies*. In the current scheme of Usenet, there are seven top level hierarchies. These hierarchies are listed in table 1.1, with a description of the topics included in them.

Table 1.1 Major Usenet Newsgroup Hierarchies

Name	Description
comp	Computer related topics
rec	Recreational topics
sci	Related to sciences
soc	Social issues
news	Topics of interest to people who run Usenet sites
talk	Conversational topics, often controversial
misc	Miscellaneous topics, not covered elsewhere

In addition to these hierarchies, there are a few other hierarchies. Most of these were created in response to a specific need or to discuss a topic that is of limited interest. The system that you use to read netnews may not have any of these, but most of the major Internet service providers carry these hierarchies. Some of these alternative hierarchies are listed in table 1.2.

Table 1.2 Other Usenet Newsgroup Hierarchies

Name	Description
alt	A hierarchy with relaxed rules for creation of groups
vmsnet	Devoted to Systems running the VMS operating system from Digital Equipment Corporation
bionet	Devoted to biological sciences
k12	Devoted to education in grades kindergarten through 12

The Culture of Usenet

Because Usenet reaches a large number of people (current estimates are that more than a million people read netnews), you should be prepared for somewhat of a culture shock when you begin reading netnews. Usenet reaches people in all 50 states and in many countries around the world. Quite a few of the people reading netnews don't speak English as a native language; certainly many will have a different cultural background than you. So an article

you post may seem reasonable and understandable to you, but others may completely misunderstand it. This section tries to give you an idea of the culture of Usenet and what to expect when you read and post news articles.

Going back to the analogy of a newsgroup as a room with people in it, you can imagine stepping into a group of people and trying to understand their culture. You probably spend a few minutes listening to the conversation and trying to understand the basic rules of the group—how the people interact, what information has been covered before you joined, and how you should enter into the conversation.

In a similar way, when you decide to read a newsgroup, reading the group for a while—a few weeks, if you can—is a good idea before you post an article to the group. In this way, you can determine the tone and character of the group, what topics have been discussed recently (topics that probably won't be welcome if brought up again), and what topics are now being discussed. You might want to try to discover who the "regulars" in the group are—those people who post regularly and are generally respected by the people in the group. In some cases, sending an e-mail message to one of these regular posters to ask about the culture of the group is a good idea; a person who has been participating in a group for a while can give you a good history of the group and some pointers on working effectively with the people in the group.

Many groups maintain a list of frequently asked questions (called a *FAQ*, pronounced "fak"), which is posted periodically for the newsgroup (generally once a month). You might want to read a newsgroup long enough to see the FAQ and look through it before you make your first post, or you can send e-mail to one of the regular posters asking if they know if there is a FAQ and how to get a copy of it. This way, you may have some of your questions answered without having to waste network resources on information that is already available. The FAQ may also give you ideas of what topics would be good ones to discuss in the newsgroup.

As a general rule, newsgroups in the comp and sci hierarchies tend to be oriented toward "serious" topics; emphasis is more likely to be placed on discussing facts rather than opinions, and the group participants are likely to be tolerant of new posters. On the other hand, groups in the soc, rec, and news hierarchies tend to be oriented toward people's opinions on topics and are more likely to be argumentative. People often listen to the opinions of a newcomer, but be prepared to receive other people's opinions in turn.

Finally, groups in the talk and misc hierarchies definitely lean toward being argumentative. Many groups are devoted to discussing topics that generate

strong opinions, and you should be ready to defend your position if you post to one of these groups. Remember, politeness and accuracy will gain you more respect than responding in kind to other people's attacks.

Usenet Etiquette

One important thing to remember when communicating via Usenet is that the only thing other people see from you are the words you type. If you are trying to be witty or sarcastic, the reader of your words can't see the expressions on your face or hear the tone of your voice. Remembering this fact, and accurately expressing your feelings when writing, can avoid many misunderstandings.

Note

The etiquette of communicating in Usenet newsgroups is discussed here to give you an idea of how to interpret what you read. At this time, you cannot post to newsgroups using Mosaic. Of course, if you have some other news reading/posting mechanism at your site, you can use that to post and these etiquette comments apply to these posts as well.

You can use a number of common ways to express emotions in your articles. You can emphasize what you are saying by typing in uppercase—for example, THAT IS NOT TRUE! This is considered "shouting," so you shouldn't use uppercase in a normal post. You also can provide emphasis by using asterisks around your text, such as *do this step first*. You also can express emotions by using small text symbols called *emoticons*. The most basic of these is the *smiley*, typed by using **:-)**. (If you turn your head sideways, you see that :-) is a smiling face.) The smiley is used to indicate humor or sarcasm. Many variations of smileys exist, and you will certainly run into them when reading news.

When you compose your article, make sure that your post is worded carefully to avoid misunderstandings. Make sure that your intent is clear; remember that some of the people reading your post may not be native speakers of English. If you use slang or local expressions, people outside your community (or country) might not understand you.

When you read an article, it's a good idea to read the entire article before responding to it. Reading a few other peoples' replies before responding is also a good idea; other people may have made the same point you want to make, and you should avoid duplicating what other people have said. In any case, if you read an article that makes you want to respond angrily, it's a good idea to wait a few hours before replying, so that you can calm down first.

Some news readers allow you to quote text from the article to which you are responding. You may want to quote only the parts of the original text that are pertinent to your response for clarity, and delete the rest of the material to avoid wasting network resources. Also, if a person is requesting information that might not be of general interest to the group, you should respond with e-mail to the author of the post, if possible, rather than posting your reply to the entire newsgroup.

Another thing to keep in mind when posting is that the way you format the article can make it easier to read. These are some of the guidelines you might want to follow:

- Try to keep the `Subject:` line of your article relatively short, but informative.
- Don't use anything but text characters. Control characters do odd things to different types of displays.
- Keep your line lengths under 80 characters, which is the maximum line length of some displays, and put a return at the end of each line.
- Break up your text into medium size paragraphs with blank lines between them. This is much easier to read than long, solid blocks of text.

One of the best ways to avoid problems when posting to Usenet is to remember that many people read news; someone you know, such as your boss, friend, or future spouse, quite possibly may read something you post. A good rule of thumb is never post something that you wouldn't want your mother to read!

From Here...

To learn more about using the WWW and Mosaic, refer to these chapters:

- Chapter 2, "Introduction to the World Wide Web," gives you background information about the WWW.
- Chapter 3, "Getting Mosaic for Windows Running," tells you how to set up Mosaic for Windows.
- Chapter 4, "Getting Mosaic for Mac Running," tells you how to set up Mosaic on your Macintosh.
- Chapter 5, "Navigating with Mosaic," tells you how to use Mosaic to find and view documents on the WWW.

Chapter 2

Introduction to the World Wide Web (WWW)

The World Wide Web (WWW or W3) is one of the newest Internet services. It allows you to explore Internet sites that have set up WWW servers to give access to hypermedia documents provided at those sites. Not only does it provide quick graphical access to hypermedia documents, but it also allows you to use the same GUI to interface to other Internet services.

In this chapter, you learn the following:

- History of the WWW
- Important WWW concepts
- How to access the WWW

History of the WWW

The history of the WWW is fairly short. In 1989, some researchers at CERN (the European Laboratory for Particle Physics) wanted to develop a better way to give widely dispersed research groups access to shared information. Because research was conducted between distant sites, performing any simple activity (reading a document or viewing an image) often required first finding the location of the desired item, making a remote connection to the machine where it resided, then retrieving it to a local machine. Each activity required

running a number of different applications (such as Telnet, FTP, and an image viewer). What the researchers wanted was a system that would allow them quick access to all types of information with a common interface, removing the need to execute many steps to achieve the final goal.

Over the course of a year, the proposal for this project was refined, and work began on the implementation. By the end of 1990, the researchers at CERN had a text-mode (non-graphical) browser and a graphical browser for the NeXT computer. During 1991, the WWW was released for general usage at CERN. Initially, access was restricted to hypertext and Usenet news articles. As the project advanced, interfaces to other Internet services were added (WAIS, anonymous FTP, Telnet, and Gopher).

During 1992, CERN began publicizing the WWW project. People saw what a great idea this was, and began creating their own WWW servers to make their information available to the Internet. A few people also began working on WWW clients, designing easy-to-use interfaces to the WWW. By the end of 1993, browsers had been developed for many different computer systems, including X Windows, Apple Macintosh, and PC/Windows. By the summer of 1994, WWW had become one of the most popular ways to access Internet resources.

Important WWW Concepts

Like the word "Internet," which seems to imply a well-defined entity (which, of course, it isn't), "World Wide Web" seems to imply a fixed (or at least defined) set of sites that you can go to for information. In reality, the WWW is constantly changing as Internet sites add or delete access to information. Learning about some of the basic concepts of the WWW will help you to understand the nature of the Web.

Browsers

To access the WWW, it is necessary that you run a WWW *browser* on your computer. A browser is an application that knows how to interpret and display documents that it finds on the WWW. Documents on the WWW are *hypertext* documents (see the next section, "Hypertext (and Hypermedia)" for more information about hypertext). Hypertext documents are not plain text. They contain commands that structure the text by item (different headings, body paragraphs, and so on). This allows your browser to format each text type to best display it on-screen.

For example, if you connect to the Internet using a simple VT-100 compatible terminal, you have to run a text-based WWW browser like Lynx. This browser would format any documents that you receive so that they can be displayed in the fonts available on a terminal, and would let you move between keywords in the document using the arrow keys.

If you have a more sophisticated terminal like an X terminal, you can use a graphics-based browser like the X version of Mosaic. If you are running on a PC or Macintosh, you can use the PC or Macintosh version of the Mosaic browser, or one of the other WWW browsers that have been developed for these computers. These browsers are GUI applications that take advantage of the graphic abilities of these terminals and computers, allowing you to use different sizes, fonts, and formatting for different text types.

In addition to displaying nicely formatted text, browsers can also give you the ability to access documents that contain other media besides text. For example, if you have a sound card in your PC, or a *driver* (a program that controls a piece of hardware) for your PC speaker, you can hear sound clips that are included in WWW documents. Some other media that can be accessed in WWW documents are still pictures and animations. The section "Multimedia Viewers" in chapter 3 discusses drivers that you can install on your PC to access other media.

Not only can you access different media in WWW documents, but some browsers can be set up so that appropriate applications will be started to display a document of a particular type. For example, if a WWW document contains a reference to a document that is in Microsoft Word for Windows format, you can set up your browser so that it automatically starts up Word for Windows to display that document when it is retrieved.

Some browsers also give you access to other Internet services. With Mosaic, for example, you can access anonymous FTP servers, Gopher servers, WAIS servers, and Usenet news servers. You also can do remote logins using the Telnet protocol. Using these Internet services from Mosaic is discussed in more detail in Part III, "Advanced Mosaic Features."

Hypertext (and Hypermedia)

When you use the WWW, the documents that you find will be *hypertext* documents. Hypertext is text that contains links to other text. This allows you to quickly access other related text from the text you are currently reading. The linked text might be within the document that you are currently reading, or it might be somewhere halfway around the world.

In addition to text, many of the documents you retrieve may contain pictures, graphs, sounds, or even animations. Documents that contain more than just text are called *hypermedia* documents, because they contain multiple media.

HTML

When you retrieve a document from the WWW, the text that you read on-screen is nicely formatted text. To do this, the documents that you read on the WWW cannot be plain text, or even text with specific formatting information in it (because the person who places a document on a WWW server doesn't know what type of computer or terminal is being used by the person reading the document).

To assure that everyone sees documents displayed correctly on-screen, it was necessary to come up with a way to describe documents so that they are displayed in whatever was the best format for the viewing terminal or computer. The solution to this problem turned out to be HTML.

HTML (hypertext markup language) is used when writing a document that is to be displayed through the WWW. *HTML* is a fairly simple set of commands that describes how a document is structured. This type of markup language allows you to define the parts of the document, but not the formatting, so the browser that you run when reading the document can format it to best suit your display.

HTML commands are inserted around blocks of text in a document to describe what the text is. So, for example, within a document you have text that is marked as the various heading levels, simple paragraphs, page headings and footers, bulleted items, and so on. There are also commands that let you import other media (images, sounds, animations), and commands that let you specify the links to other documents (or text within the same document). Your browser gets the document and interprets the HTML commands, formatting each structure in the document (headings, bullets, plain paragraphs, and so on) in a way that looks best on your display. Figures 2.1a and 2.1b show the HTML code for a Mosaic help file and the corresponding file displayed in Mosaic for Windows.

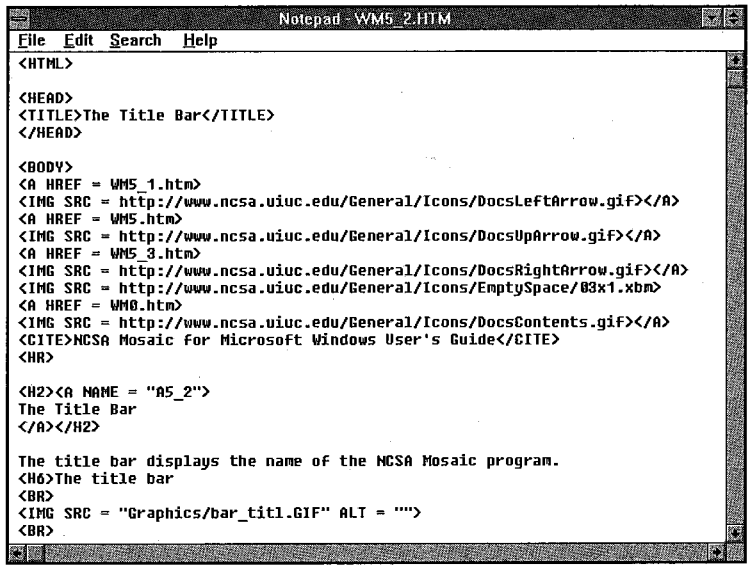


Fig. 2.1a
The HTML code for a help file from Mosaic for Windows.

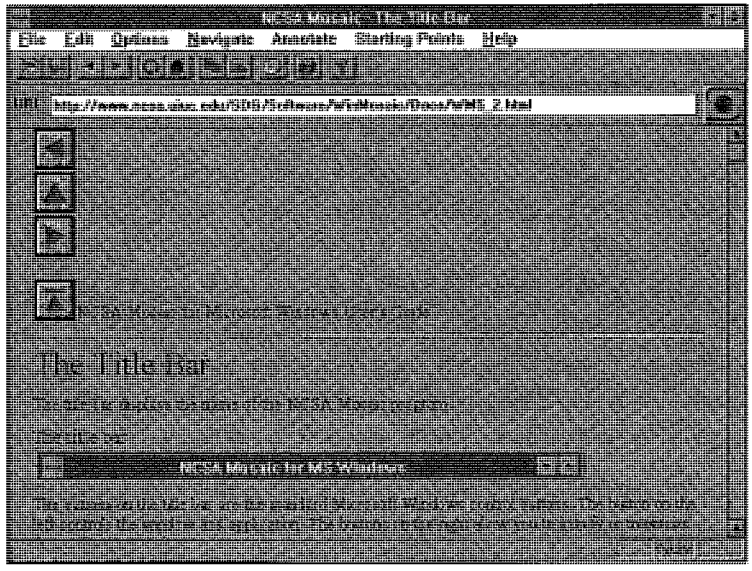


Fig. 2.1b
The same help file as it is displayed by Mosaic.

Note

HTML is an easy format to learn. If you want to learn about it and create your own Web documents, see *Using the World Wide Web* from Que. (This book also contains extensive categorized listings of good Web sites.)

There are also several on-line documents to help you learn HTML. "A Beginner's Guide to HTML" can be found at:

http://www.ncsa.uiuc.edu/demoweb/html-primer.html

This document also can be accessed from the Other Documents menu under the default Starting Points menu that is distributed with Mosaic. The "HTML Quick Reference" is found at:

http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLQuickRef.html

This document also can be accessed from the World Wide Web Info menu under the default Starting Points menu.

Links

One of the defining features of any hypertext documents are *links* (also known as *hyperlinks*). Links are simply references to other documents. But they aren't just stated references like "see page 2-3 for more information." They are actual live links, where you can activate the link and cause the thing it references to appear on your screen. When someone writes a hypertext document, he or she can insert links to other documents that have information relevant to the text in the document.

WWW documents are all hypertext documents. Besides document description commands, HTML contains commands that allow links in a document. Many of them are hypermedia documents, containing links to pictures, sounds, or animations, in addition to document links.

There are two parts to a hypertext link. One part is the reference to the related item (a document, picture, movie, or sound). In the case of the WWW, the item being referenced could be within the current document, or it could be anywhere on the Internet.

The second part of a hypertext link is the *anchor*. The author of a document can define the anchor to be a word, a group of words, a picture or any area of the reader's display. The reader may activate the anchor by pointing to it and clicking with a mouse (for a graphical-based browser) or by selecting it with arrow keys and pressing Enter (for a text-based browser).

The anchor is indicated in different ways depending on the type of display you are using. If it is a color display, anchor words may be a special color, and anchor graphics may be surrounded by a colored box. If you have a black-and-white display, anchor words may be underlined, and anchor graphics may have a border drawn around them. On a simple terminal, anchor words may be in reverse video (and, of course, there would be no graphics). See figures 2.2 and 2.3 for some examples of anchors on different types of displays.

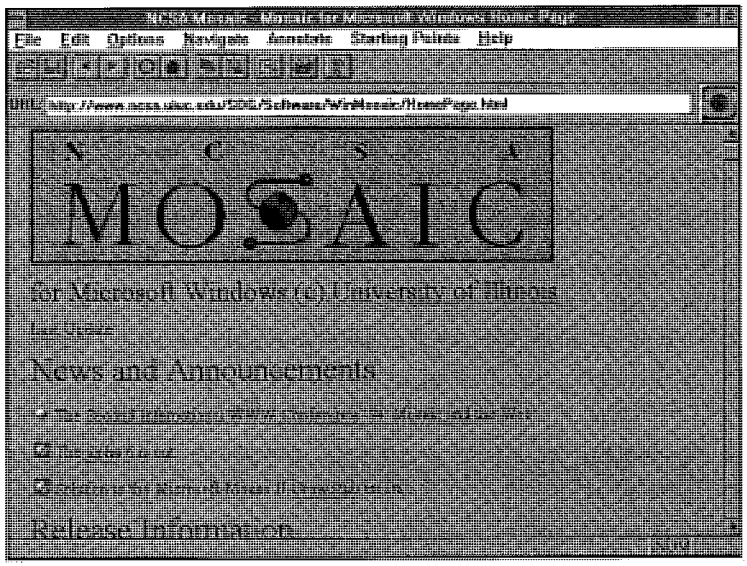


Fig. 2.2
An example of hypertext anchors in Mosaic.

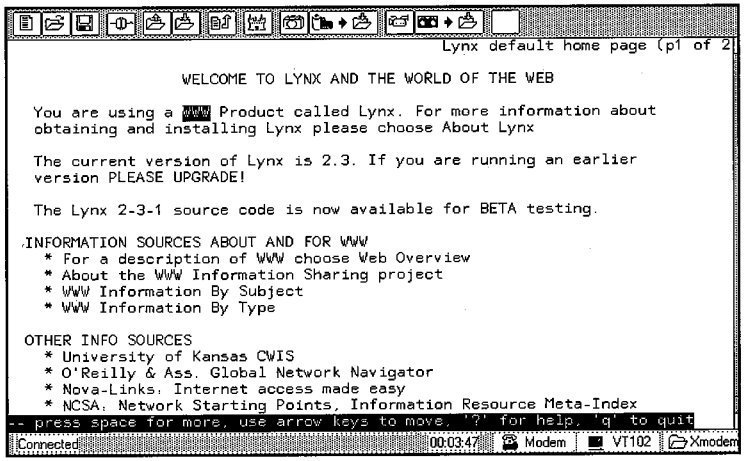


Fig. 2.3
An example of hypertext anchors in a text-based WWW interface (Lynx). The anchor words are in reverse video.

Tip
One way of identifying an anchor on a graphical WWW interface is to watch the cursor. Your cursor may change to another shape when it passes over an anchor. For example, the cursor changes to a pointing hand in Mosaic.

When you activate the anchor, your browser fetches the item referenced by the anchor. This may involve reading a document from your local disk, or going out on the Internet and requesting that a document be sent from a distant computer to yours. The reference indicates what type of item is being retrieved (HTML document, sound file, and so on) and your browser tries to present the material to you in the appropriate format.

URLs

One of the goals of the World Wide Web project was to have a standard way of referencing an item, no matter what the item's type (a document, sound file, and so on). To achieve this goal, a Uniform Resource Locator (URL) was developed.

A *URL* is a complete description of an item, containing the location of the item that you want to retrieve. The location of the item can range from a file on your local disk to a file on an Internet site halfway around the world.

Tip
If you do not have the correct driver for the type of item that is retrieved (a driver for sound files, for example), the item is still retrieved by your browser. Only after the item is retrieved do you get an error saying that the driver could not be found.

A URL reference can be set up to be *absolute* or *relative*. An absolute reference contains the complete address of the document that is being referenced, including the host name, directory path, and file name. A relative reference assumes that the previous machine and directory path are being used, and just the file name (or possibly a subdirectory and file name) are specified.

Note

If you save a document to your local disk, you should check to see if the references in the document are absolute or relative. If the document references other documents with relative addresses, you will not be able to view those documents unless you copy them to your local disk and set them up with the same directory structure as they had at the original site. Absolute references will always work unless your Internet connection fails or the referenced documents are moved.

The URL is not limited to describing the location of WWW files. Many browsers (including Mosaic) can access a number of different Internet services, including anonymous FTP, Gopher, WAIS, Usenet news, and Telnet. (Part III, "Advanced Mosaic Features" explains how to use Mosaic to access these other services.)

A typical URL looks like this:

http://bigcorp.com/doc/progexample.html

Note

Don't try to connect to this site. It is a fictitious URL.

The initial item in the URL (the part that ends with a colon) is the *protocol* that is being used to retrieve the item. A protocol is a set of instructions that defines how to use that particular Internet service. In this example, the protocol is HTTP, the HyperText Transfer Protocol developed for the WWW project. The two slashes after the colon indicate that what follows is a valid Internet host address. In this URL, you want to find a file on that machine, so what follows after the host name is a UNIX-style path for the file that you want to retrieve.

So, the URL in the example tells Mosaic (or any other WWW browser) to retrieve the file progexample.html from the /doc directory on the Internet host bigcorp.com, using the HTTP protocol.

Other protocols that the Web can use to retrieve documents are:

Protocol	Use
gopher	Starts a Gopher session
ftp	Starts an FTP session
file	Gets a file on your local disk if followed by ///cl; or, equivalent to ftp if followed by //. Any local disk may be specified, and it must be followed by the bar character rather than a colon, because the colon has a special significance in a URL
wais	Accesses a WAIS server
news	Reads Usenet newsgroups
telnet	Starts a Telnet session

Tip

Even if you are retrieving files from a server that is running on a PC, you must use a slash (/) to indicate a subdirectory, not a backslash.

HTTP

Another of the goals of the WWW project was to have documents that were easy to retrieve, no matter where they resided. After it was decided to use hypertext as the standard format for WWW documents, a protocol that allowed these hypertext documents to be retrieved quickly was developed. This protocol is HTTP, the HyperText Transport Protocol. *HTTP* is a fairly simple

communications protocol, that takes advantage of the fact that the documents it retrieves contain information about future links the user may reference (unlike FTP or Gopher, where information about the next possible links must be transmitted via the protocol).

Although it is not necessary to know anything about the HTTP protocol to view documents on the WWW, if you are interested, you can find a copy of the IETF http specification at the URL **http://info.cern.ch/hypertext/WWW/Protocols/HTTP/HTTP2.html**. This is the standard specification of the HTML protocol that has been developed and accepted by the Internet community.

Home Pages

Each person who uses the WWW can set up their own *home page*, where they can set up links to sites that they use frequently. Home pages can also be developed for groups who use the same resources. For example, a project administrator may want to set up a home page that gives links to all project-related items that exist.

Note

Many people refer to the primary welcome page of a site as the home page for that site. This is not really a home page, because it is for general use and is not a page that organizes information related to a single topic.

Clients and Servers

Two terms heard frequently when the WWW is discussed are *client* and *server*. A WWW client is an account on an Internet site that requests a document from the WWW. The WWW servers are the collections of WWW documents at different sites on the Internet.

Client software is a program (like Mosaic) that you use to view WWW documents. *Server software* is a program that manages a particular collection of WWW documents on an Internet host.

Learning More about WWW

The WWW, like the Internet, changes constantly. New servers become available, old ones go away. Eventually, new protocols for accessing new Internet services will be available. New browsers will be written and old ones will get new features. There is so much information changing so rapidly that

anything in hard print (like this book) will become out of date quickly. (Only somewhat out of date, though! Most of the information will be current.)

There are a number of ways that you can find out more information about what is current on the WWW. This section gives you pointers to some of the most useful sources of information.

Usenet Newsgroups

If you have access to Usenet newsgroups, there are several of them that are directly related to the WWW.

comp.infosystems.www.users

This newsgroup is a general purpose one where users of WWW clients can ask questions about how to set up and use their client software, how to find and install drivers for other media (movies, sound), where on the WWW they can find information on a topic, and any other user-oriented questions.

comp.infosystems.www.providers

This newsgroup is for topics related to setting up a WWW server. Appropriate topics for this group include questions about how to get a server running, how to design the WWW documents that will be on your server, questions about security of WWW sites, and other questions related to setting up a WWW server on the Internet.

comp.infosystems.www.misc

This newsgroup is for topics not discussed in the other WWW groups; for example, discussions on the future of the web, new technologies that might impact both Web servers and clients, government use and regulation of the WWW, and so on.

Electronic Mailing Lists

There are several electronic mailing lists that are dedicated to the WWW. To subscribe to one of these groups, send electronic mail to the address **listserv@info.cern.ch** with the line `subscribe <mailing list name> <your name>`. (Insert the name of the mailing list you want to join in place of `<mailing list name>` and your first and last name in place of `<your name>`.)

www-announce

This mailing list discusses the current state of the WWW, new software available for the WWW (clients, server, HTML editors, and so on), introduction of commercial services available through the web, and anything else anyone wants to offer to other WWW users.

Tip

These mailing lists tend to be of a more technical or administrative nature (the newsgroups are the place to ask questions about how to do something or where to find something on the WWW).

www-html
This mailing list is a technical discussion of the design and extension of the HTML language.

www-talk
This mailing list is for technical discussions among people who are interested in the design of WWW software.

WWW Interactive Talk

WWW Interactive Talk (WIT, for short) is a new type of discussion group that has been formed for the WWW. In some ways it is similar to Usenet newsgroups. The creators of this forum, however, have tried to overcome some of the limitations of the Usenet groups by structuring the discussion of a particular topic. Each topic is presented on a form that shows the topic and proposals for discussion about the topic. Under the proposals there are arguments for and against each proposal.

Note

The designers of WIT hope that this format allows readers to see if the topic has been adequately discussed before they submit their own comments. As a comparison, often in Usenet newsgroups a point will be made over and over again because readers respond before they see if someone else has already brought up the same point.

This is a new and somewhat experimental discussion format. Currently, there is a WIT discussion area set up at **http://info.cern.ch/wit/hypertext/WWW**. This area is not limited to WWW discussions (any topic can be introduced), but it is a place where you are likely to find some people to talk to you about the WWW.

The WWW Itself

Of course, one of the best places to find information about the WWW is on the WWW itself! Here are a few URLs that will take you places where you can find out more about the WWW and what can be found on it.

Note

When you view a document on the WWW, you are actually retrieving it from a computer somewhere on the Internet. When you do this, you are making demands on the Internet host that is providing the information, and also on the network itself. Please try to keep your document viewing to things that are really of interest to you so that you don't make unnecessary demands on the network or individual Internet hosts.

World Wide Web Initiative
http://info.cern.ch/hypertext/WWW/TheProject.html

This URL takes you to *World Wide Web Initiative*. This document gives you pointers to WWW information to be found at CERN, the people who started it all. Some of the information you can find here includes: information about available client and server software; lists of WWW servers grouped by subject, by country, and by service; technical information about the WWW; and other background information.

NCSA Mosaic Demo Document
http://www.ncsa.uiuc.edu/demoweb/demo.html

Follow this URL to the *NCSA Mosaic Demo Document*. This document gives a brief description of Mosaic. Its main attraction, however, is a large list of interesting documents that can be found on the WWW.

InterNIC
http://www.internic.net

This URL takes you to the welcome page for the InterNIC, the main Internet Network Information Center. One of the resources offered by this project is the InfoGuide, a resource intended to help people locate information on specific topics. To access the InfoGuide, click the `Information Services` anchor. There are links from this document to many different lists of Internet resources. Many of these resources are in WWW format, or are accessible by one of the other Internet services that Mosaic can handle (FTP, Gopher, and so on).

Entering the World-Wide Web: A Guide to Cyberspace
http://www.eit.com/web/www.guide

This URL takes you to the document *Entering the World-Wide Web: A Guide to Cyberspace.* This document gives you a good overview of the World Wide Web, and points you to some interesting information repositories on the WWW.

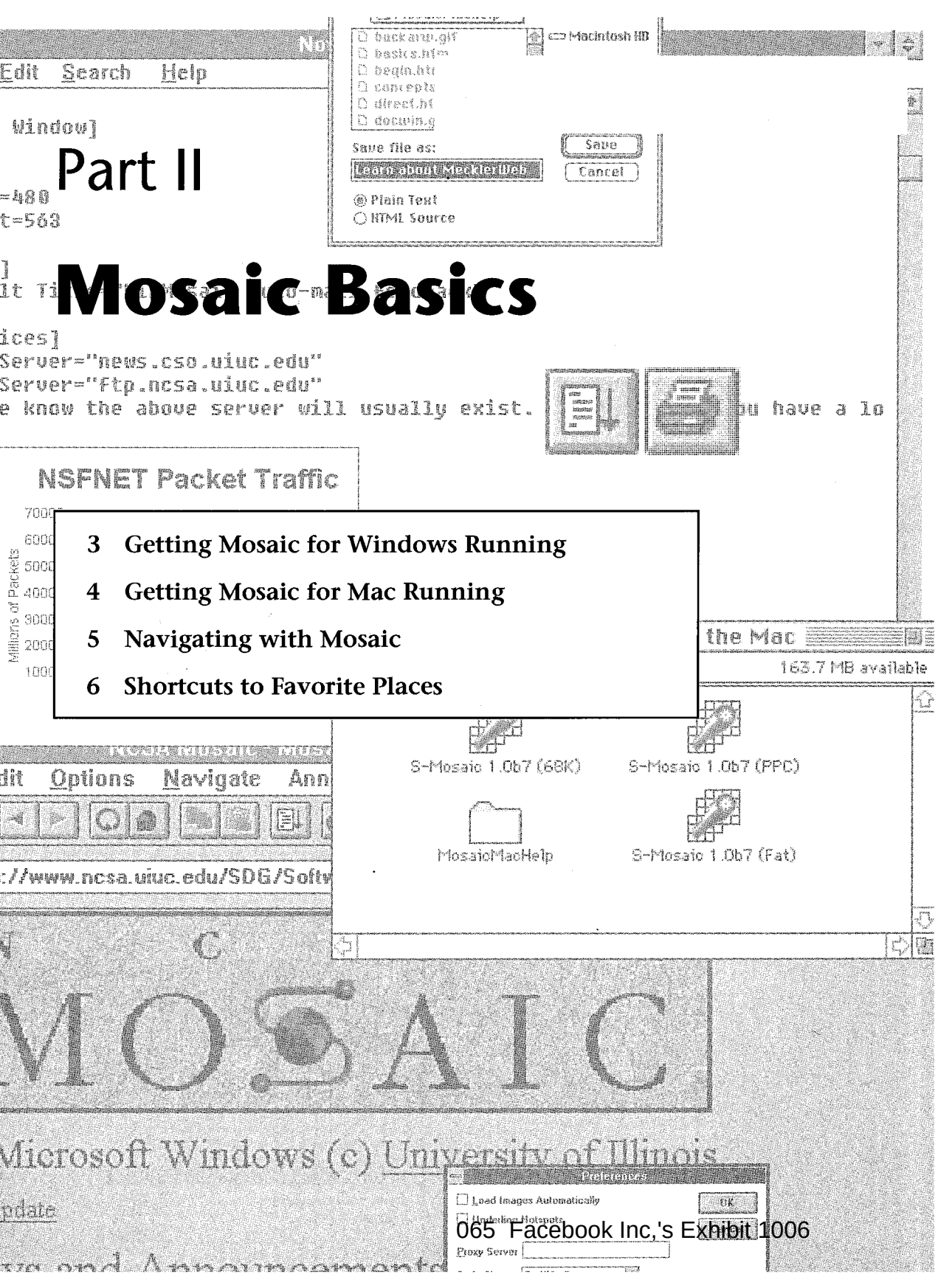
From Here...

To learn more about using the WWW, refer to these chapters:

- Chapter 3, "Getting Mosaic for Windows Running," tells you how to set up Mosaic on your PC.
- Chapter 4, "Getting Mosaic for Mac Running," tells you how to set up Mosaic on your Macintosh.
- Chapter 5, "Navigating with Mosaic," tells you how to use Mosaic to find and view documents on the WWW.

Part II

Mosaic Basics



File Edit Search Help

```
[Main Window]
x=28
y=31
width=480
height=563

[Mail]
Default Title="WinMosaic auto-mail feedback"

[Services]
NNTP_Server="news.cso.uiuc.edu"
SMTP_Server="ftp.ncsa.uiuc.edu"
rem=We know the above server will usually exist.
```

Macintosh HD

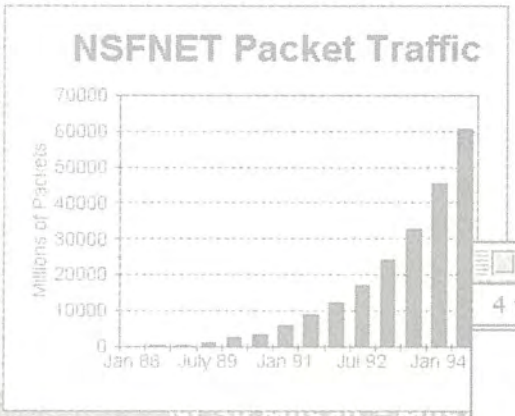
Save file as: Learn about MecklerWeb

Save

Cancel

Plain Text

HTML Source



Spyglass Mosaic for the Mac

4 items 78.3 MB in disk 163.7 MB avai

S-Mosaic 1.0b7 (68K)

S-Mosaic 1.0b7 (PPC)

MosaicMacHelp

S-Mosaic 1.0b7 (Fat)

File Edit Options Navigate Ann

URL: http://www.ncsa.uiuc.edu/SDG/Softw

NCSA MOSAIC

for Microsoft Windows (c) University of Illinois

Last Update

News and Announcements

Preferences

Load Images Automatically

OK

Proxy Server

Chapter 3

Getting Mosaic for Windows Running

Before you can try Mosaic for Windows on your personal computer, you will have to obtain the software and set it up on your computer. Depending on how your system is set up, getting Mosaic for Windows to run can be as easy as just loading the software. If your system is not already connected to the Internet, however, getting Mosaic for Windows running will require you to do some extra work.

In this chapter, you learn the following:

- Whether your computer system can run Mosaic for Windows, and what additional hardware and software you might need
- Where to get a copy of Mosaic for Windows, and any additional software you might need to run it
- How to set up Mosaic for Windows on your system
- How to set up viewer programs for images, sounds, movies, and other files
- What the Mosaic for Windows interface looks like and how you interact with it

After you read this chapter, you should be able to set up and run Mosaic for Windows on your system.

Can Your Computer System Run Mosaic for Windows?

Before you can get Mosaic for Windows running on your personal computer, you must make sure that your computer system is capable of running the software. While this might seem fairly basic, it is disappointing (not to mention annoying) to spend quite a few hours getting software and setting it up only to discover that your system does not have enough memory to run Mosaic for Windows, or that the software runs so slowly that you cannot effectively use it.

This section outlines what type of hardware and software you must have on your computer to run Mosaic for Windows.

Basic System Requirements

First of all, your computer system must be capable of running Microsoft Windows version 3.1 or later. If you do not already have Windows 3.1, you will have to purchase and install this software before you can run Mosaic.

In addition, Mosaic for Windows requires at least 4M of main memory and an Intel 80386 processor. This means that most older systems (80286 systems, for example) are not able to run Mosaic for Windows, and many newer systems may need additional memory to run Mosaic properly.

The basic Mosaic for Windows configuration requires around 5M of disk space for the Mosaic software and documentation, and the Win32s libraries. Besides this basic disk space requirement, Mosaic requires some disk space to hold temporary files while it is running, and you need disk space for any documents you want to store locally, and for any viewers that you need to display movies, image files, sound files, and so on.

If your system has a minimal configuration to run Mosaic for Windows, you can add additional hardware capacity to make Mosaic more effective and pleasant to use. A fast 80486 or Pentium system runs Mosaic much better than a slower 80386-based system. Adding more memory to a system also greatly improves the performance of Mosaic (and the rest of the system for that matter).

Network Requirements

In addition to these system requirements, Mosaic for Windows requires a direct connection to the Internet, either through an Ethernet card in your system, or through some kind of modem connection. The best configuration

is with an Ethernet card which is directly connected to a local network—this provides the best Mosaic performance and requires the least additional software.

If your system does not have a direct Ethernet connection, you will have to get an account from an Internet provider to connect to the Internet. You have to obtain software that enables your system to run the "Serial Line Internet Protocol" (SL/IP) or "Point to Point Protocol" (PPP). This software allows you to connect to the Internet through a modem on your system. There are a number of different options available for obtaining the software you can use to connect to your Internet account. Some service providers will supply you with the software as part of your account start-up. You also can buy a book (such as *Easy Internet* from Que) that comes with the basic connection software, or, you can buy commercially available connection software (such as Netmanage Chameleon). There are also a few shareware programs that you can use (such as Trumpet) to connect to your Internet account.

Other Software Requirements

In addition to the basic system and network requirements, other software may be required to either set up Mosaic or enhance its capabilities. Because Mosaic for Windows comes packaged as a ZIP file, you need some software to unpack these archives. PKZIP is the software usually used for this, and it can be found on many Internet FTP sites. See Chapter 14, "Hot FTP and Gopher Sites," for more information about good FTP sites to find this software.

After Mosaic is running on your system, you may want to extend its capabilities by adding software to handle more types of documents. Mosaic for Windows comes with software which lets you display some types of images, but you may want to get software to process sound files, animation files, and additional picture formats. Obtaining and setting up these additional programs is discussed in more detail later in this chapter.

Where to Get Mosaic for Windows and Associated Software

One of the best features of Mosaic for Windows is that the basic software is free for anyone to use. The software, which is written and maintained at the National Center for Supercomputer Applications (NCSA) at the University of Illinois, is available through anonymous FTP. This section discusses exactly

how to get this software and any additional software you will need to run Mosaic for Windows.

Obtaining Network Software

If your system has an Ethernet card that allows you to be directly connected to a local network, the card vendor should have provided all the software necessary for your system to use the TCP/IP protocol suite that is required by Mosaic for Windows. You may have to consult your local network administrator to get information that is required by the Ethernet software (such as your host name and number), but this network configuration is beyond the scope of this book. If the Ethernet software is running on your system (that is, you can run FTP and Telnet), then Mosaic for Windows should work correctly.

Mosaic for Windows uses the WinSock (Windows Socket) standard for talking to the network. Your Ethernet card vendor should have provided a version of the WinSock libraries for your system. If they have not, contact the vendor to determine what WinSock library is suitable for use with their Ethernet software.

If you want to get a publicly available version of the SL/IP software, there are several places where you can find it. If you have an Internet connection, you can get Netmanage's Chameleon Sampler (also included with the book *Easy Internet,* published by Que), through anonymous FTP to the machine **ftp.netmanage.com** in the directory /pub/demos/sampler. You can also get a shareware version of the SL/IP software called Trumpet Software International WinSock via anonymous FTP to the machine **ftp.ncsa.uiuc.edu**. The file you want to retrieve is /Web/Mosaic/Windows/sockets/winsock.zip.

Both of these shareware (or demo) versions of SL/IP come with the WinSock libraries that Mosaic for Windows requires.

After you have obtained the software for running SL/IP (or PPP) on your computer system, you have to configure the software for your network. You have to set up your SL/IP software with the proper phone number for your Internet provider, and might have to set up your host name and address and other network information. Read the installation instructions that came with your SL/IP software carefully. You may have to contact your Internet provider for some of the information that is needed by the software.

Where to Get the Basic Mosaic Software

The basic Mosaic for Windows software is available through anonymous FTP at the machine **ftp.ncsa.uiuc.edu**. On this machine are versions of Mosaic for several different machine types, but you are interested in the Mosaic software for PC machines running Windows. The latest version of Mosaic for Windows (as of the writing of this book) is version 2.0a7 which, although fairly stable, is still under development.

Note

The "a" in this version number indicates that this is an "alpha" version. Alpha versions are the early testing, pre-release versions of software. Be aware that these versions still have bugs or features that don't work.

Besides the actual Mosaic software, Mosaic for Windows version 2.0 requires the Windows 32-bit extension software which is available in the same FTP directory as the Mosaic software itself. If you are already running a 32-bit version of Windows (such as Windows NT), you do not need this software to run Mosaic for Windows. These two packages make up the basic Mosaic for Windows software.

Tip

When you download Mosaic, be sure to see if there is a more recent version. If there is, it may run better and have fewer problems.

If you have a terminal (command line) interface to FTP, you can retrieve the Mosaic and Win32a software as shown in the example that follows. After connecting to the FTP server **ftp.ncsa.uiuc.edu**, use the command **cd** to move to the directory /Web/Mosaic/Windows. Then use the **binary** command to tell the FTP program that you will be retrieving binary files (ZIP format files in this case). Finally, retrieve the Mosaic and Win32s software. Note that some of the system messages that you would see when you connect to the FTP site have been deleted in this example (indicated by . . .) to save space.

This example retrieves the Mosaic for Windows software and the Win32s software from the site **ftp.ncsa.uiuc.edu.** (The text you have to enter is indicated in boldface type.)

```
% ftp ftp.ncsa.uiuc.edu
Connected to zaphod.ncsa.uiuc.edu.
220 zaphod FTP server (Version 6.23 Thu Apr 8 06:37:40 CDT 1993)
ready.
Name (ftp.ncsa.uiuc.edu:tgp): anonymous
331 Guest login ok, send e-mail address as password.
Password: *********
```

```
230-
230-Welcome to NCSA's anonymous FTP server! I hope you find what
you are
230-  looking for. For questions regarding NCSA software tools,
please e-mail
230-  softdev@ncsa.uiuc.edu.
...
230 Guest login ok, access restrictions apply.
ftp> cd /Web/Mosaic/Windows
250 CWD command successful.
ftp> binary
200 Type set to I.
ftp> get wmos20a7.zip
200 PORT command successful.
150 Opening BINARY mode data connection for wmosA6r1.zip (292878
bytes).
226 Transfer complete.
local: wmosA6r1.zip remote: wmosA6r1.zip
292878 bytes received in 3.8 seconds (76 Kbytes/s)
ftp> get win32s.zip
200 PORT command successful.
150 Opening BINARY mode data connection for win32s.zip (1130854
bytes).
226 Transfer complete.
local: win32s.zip remote: win32s.zip
1130854 bytes received in 12 seconds (93 Kbytes/s)
ftp> bye
221 Goodbye.
```

If you have a Windows-based FTP program such as Netmanage's Chameleon FTP (a sampler of Chameleon including FTP comes with the book *Easy Internet* from Que) or the shareware WS-FTP, the procedure is similar to this (shown for WS-FTP, the procedure varies slightly in other FTP programs):

1. Connect to your Internet provider.
2. Start the FTP program.
3. Click Connect and enter the address of the site you are using. Enter **anonymous** as the User ID and your e-mail address as the password (see fig. 3.1).
4. Navigate to the directory you need by double-clicking the directory name in the host window on the upper right (see fig. 3.2).
5. When you are at the correct directory, select the file to transfer from the lower left of the host window, and click the left arrow to transfer it (see fig. 3.3).

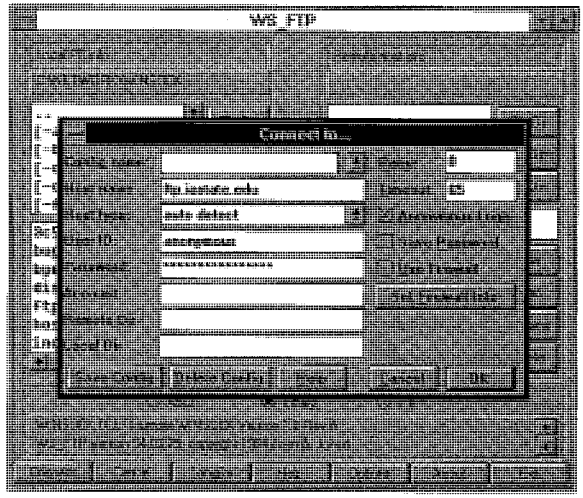


Fig. 3.1
Entering the address and user information in WS-FTP.

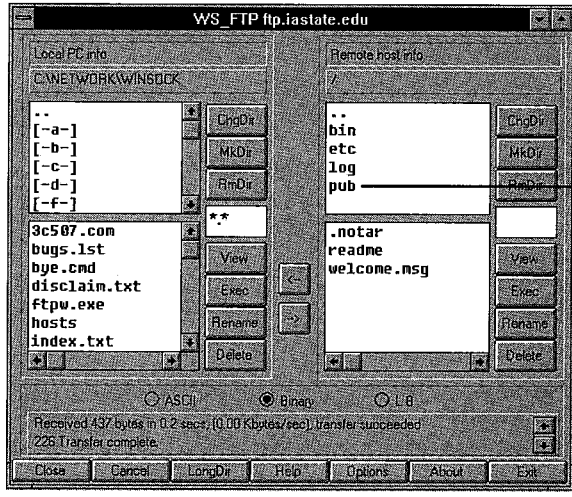


Fig. 3.2
After you are connected to the site, navigate the directories.

Note

The transferred file is saved in the directory in the Local PC Window on the left of the screen. To change this directory, click the desired directory.

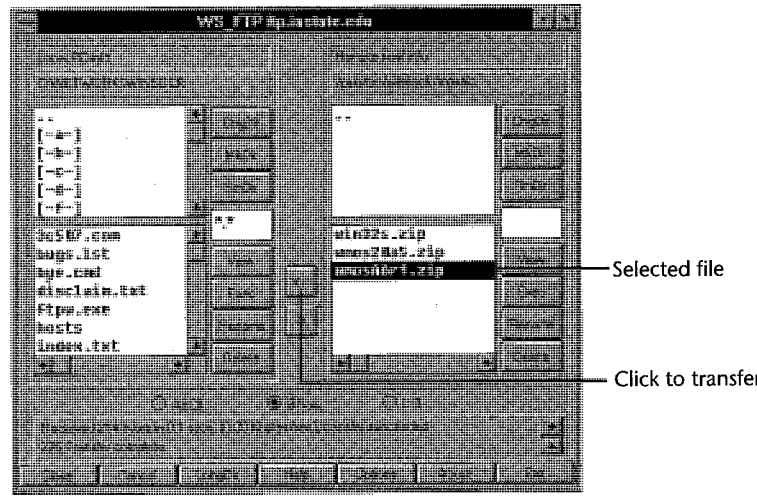


Fig. 3.3
Click the left arrow to transfer the file to your local hard drive.

6. After transferring all the files you need, click Close, then Exit, to close your FTP connection and exit FTP.

There is one problem you may encounter in obtaining the Mosaic and Win32s software. Because this software is so popular, the NCSA site is often very busy. There are limits to the number of users that can connect to it at once; at busy times, you may not be able to connect. If this happens, be patient and try again. If you still can't get connected, don't despair. Many other FTP sites have copies of the Mosaic and Win32s ZIP files. The following table lists a few alternate anonymous FTP sites and the directories in which to look for the software.

Table 3.1 Alternate FTP Sites for Mosaic and Win32

Site Address	Directory
nic.switch.ch	/mirror/Mosaic/Windows
ftp.iastate.edu	/pub/pc/winsock/mosaic
ftp.cac.psu.edu	/pub/access/test

Another thing to keep in mind when looking for this software is that just as you move files around on your computer, the system administrators of the FTP sites may occasionally move files or rename directories. If you can't find the files you are looking for, look in another directory. They may be somewhere else.

Obtaining Auxiliary Software for Mosaic

Besides the standard software necessary to run Mosaic for Windows, there is some additional software which you may need to either set up Mosaic or allow Mosaic to handle certain documents.

PKZIP

First of all, because Mosaic for Windows and its accessories are packed in ZIP file format, you will need a copy of PKZIP to unpack these files. PKZIP is available through anonymous FTP at the same site you found Mosaic (**ftp.ncsa.uiuc.edu**) in the directory /PC/Windows/Contrib. Retrieve the file PKZ204G.EXE from this directory. (Make sure that the version of PKZIP that you get is 2.04 or later.)

Note

If you unpack the PKZ204G file in a directory that is found in the PATH statement of your AUTOEXEC.BAT file (like the DOS directory), you can just enter the commands **pkzip** and **pkunzip** anytime you are at the DOS prompt. Alternatively, you can unpack the file in any directory that you want and add that directory to the PATH statement of your AUTOEXEC.BAT file.

After you have retrieved the file, you have to run it to unpack it. Either enter the command **pkz204g** at the DOS prompt, or open the File menu and choose Run.

Table 3.2 lists alternative sites where you can find the PKZIP software.

Table 3.2 Alternate FTP Sites for PKZIP

Site Address	Directory
oak.oakland.edu	/pub/msdos/zip
ftp.cica.indiana.edu	/pub/pc/starter
ftp.uu.net	/systems/ibmpc/msdos/simtel/zip

Multimedia Viewers

While Mosaic for Windows displays normal Web documents, you may want to obtain additional software to allow Mosaic to handle things such as pictures, sounds, and animations (movies). This additional software is available