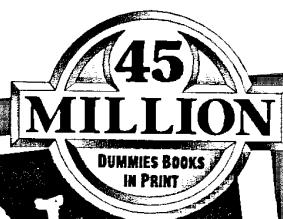


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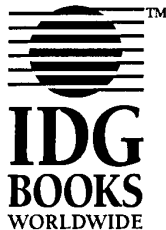
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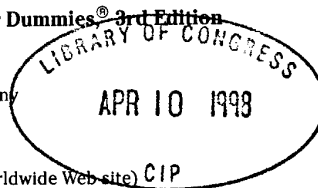
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About the Authors

Jason Coombs (jason@science.org) and **Ted Coombs** (tedc@science.org) lead an independent research and development laboratory called science.org (located on the Web at www.science.org/). Together, they've cowritten six books about computer technology, including three in the ...*For Dummies* series published by IDG Books WorldWide, Inc. (www.dummies.com/) and numerous magazine articles. They live and work near the Pacific Ocean in Encinitas, California, where they surf, scuba dive, and ocean kayak with the local dolphins. (And yes, in case you're wondering, they're father and son. Ted Coombs is the father and Jason is the son.)

David and Rhonda Crowder were selling hypertext systems in the days when you had to explain to people what the word *hypertext* meant. They have been involved in the online community for over a decade, when David was SysOp for the FidoNet BBS, Taliesin's Dream. They created the award-winning LinkFinder (<http://www.linkfinder.com/>) and NetWelcome (<http://www.netwelcome.com/>) sites. LinkFinder holds a four-star rating from *NetGuide* magazine, and NetWelcome is the recipient of several awards, including *NetGuide*'s Gold Site Award. David founded three Internet mailing lists that are now owned and run by Ziff-Davis. David and Rhonda have coauthored three other computer books. They live with their cats in Miami, Florida.

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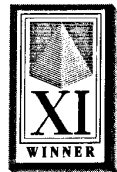
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Dedication

For Olga Samper

— David and Rhonda Crowder

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— David and Rhonda Crowder

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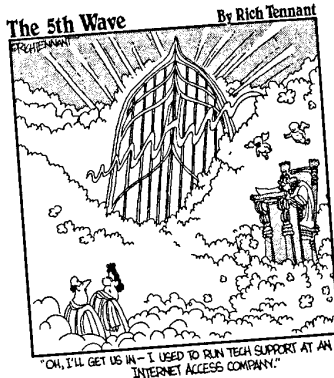
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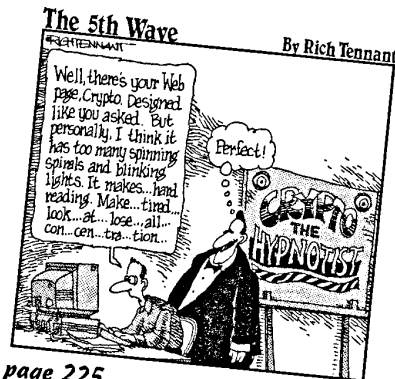
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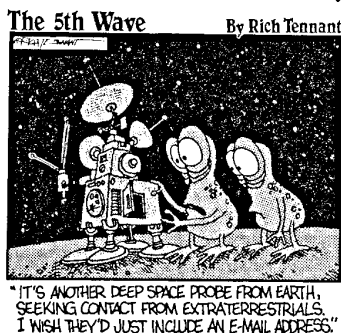
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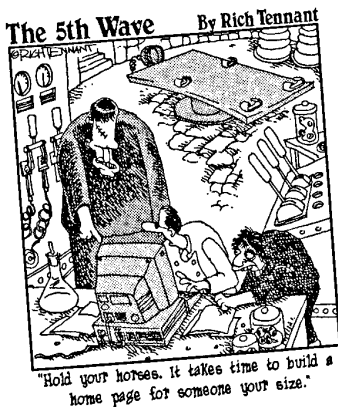
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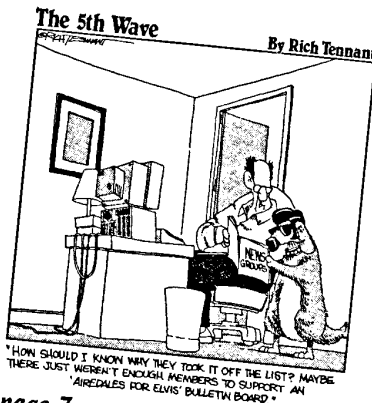
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Introduction

.....

This book shows you everything you need to know to set up your own Internet site. Whatever kind of site you want, from running an FTP server out of your office to utilizing virtual Web servers clear across the world, you'll find clear and simple directions here on how to do it.

Should You Read This Internet Book?

Setting Up An Internet Site For Dummies, 3rd Edition, is the ideal book for anyone who wants to create a permanent Internet presence for personal or business purposes. Whether you're an experienced (or travel-weary) Internet navigator or just beginning to explore what the Internet can do for you, this book can serve as a valuable guide.

Above all, this book is for people who believe that providing interactive resources and doing business on the Internet should be simple, effective, and fun — not technical, time-consuming, and dull. Buy this book if you want to do something with the Internet. We designed this book to meet the needs of the following three types of readers:

- ✓ People who already use the Internet and want to turn it into a more useful tool
- ✓ Anyone who wants to provide information on the Internet for a business or for personal goals
- ✓ Experienced Web publishers who want to get the most out of the World Wide Web

In this book, we assume that you're a relatively experienced computer user. We make no attempt to explain files, icons, mouse actions, or any other basic computer concept. If you're new to computers, you need to pick up some basic training before this book makes much sense to you. For that basic training, check out one of the *Windows For Dummies* books by Andy Rathbone or *The Internet For Dummies*, 5th Edition, by John Levine, Carol Baroudi, and Margaret Levine Young (both by IDG Books Worldwide, Inc.).

How to Use This Book

If you've ever used a ...*For Dummies* book before, you'll feel right at home here. That's because the clever folks at IDG have standardized things to make life easier for you. When there's a line of program code, it appears in a monospaced type, like this:

```
rm .vacation.msg
```

Anything that appears in code font should be typed letter for letter. Stuff in code in *italics* is a placeholder, and you should substitute a value for it. For example, in the following line of code:

```
mv TextFile .vacation.msg
```

you would type **mv** and **.vacation.msg**, but substitute the name of your text file for *TextFile*.

The instructions in a numbered list are in bold print. If there's anything in those instructions that you need to type, it stands out because it isn't bold, like this:

2. Type howdydoodo in the File text box.

And just to cover all the bases, placeholders are in italics in numbered lists, too. For example:

3. Type **htpasswd -c** *pathname* *username*.

In this example, you would type **htpasswd -c** but when you came to *pathname*, you'd replace it with the name of the password file. Likewise, you'd replace *username* with the name the user will use.

Then there's the bit about arrows and underlined keys. For instance, you'll find sentences such as "In the Pegasus program, choose Tools⇨Mail filtering rules⇨Edit new mail filtering rules." The arrows show the flow of the menus as you choose them. In this example, when you click the Tools menu, one of the choices you get is Mail filtering rules. When you click that choice, one of the choices on the new menu that pops up is Edit new mail filtering rules. Note that we underline the hot keys you can use to select menu commands from the keyboard, so if you don't feel like giving your mouse a workout, you can limber up your fingers and press the keys instead.

URLs are listed like this:

```
http://netwinsite.com/dnews.htm
```

All the URLs in this book are accurate at the time of this writing. Because the Internet is a dynamic medium, however, a few may be inaccessible when you try them.



Be sure to visit the ...*For Dummies* home page at www.dummies.com and click the Really Useful Extras link in the Contents at a Glance column. The Really Useful Extras page contains links to all the Web sites mentioned in the book, so you won't even have to type them yourself.

Organization of This Book

We did organize this book — we promise. In fact, we organized the book well enough to divide its text into parts, chapters, sections, paragraphs . . . just to keep everything from spilling out all over the place. The following sections describe the five parts in this book.

Part I: Laying the Foundation of an Internet Site

Anyone who builds a physical structure knows that it needs a solid foundation. Setting up an Internet site is no different. The better your foundation, the more effective your site. Part I guides you away from weak materials and toward those that make your Internet site strong and vibrant.

This part also presents the basic concepts you need to understand as you prepare to follow the instructions in this book. As a provider of Internet resources, you need to know some things that the average Internet user doesn't. This part also walks you through the first steps that everyone needs to take in setting up an Internet site: getting a domain name and establishing a presence on the Internet.

Part II: Publishing Information on the Internet

The World Wide Web has become a popular electronic-publishing medium. Chapters 5 and 6 give you the lowdown on Web publishing. The Internet offers many other efficient and useful means of providing information, such as Internet newsgroups. Chapter 7 covers what you need to publish information by setting up your own news server.

Part III: Setting Up Basic Internet Services

Part III shows you how to set up the most important basic resources. As you discover throughout this book, good software tools turn your Internet site into something special. The tools that this part covers include File Transfer Protocol (FTP), e-mail service, and mailing lists.

Part IV: Site Builder Skills for Today's Internet

Life on the Internet is what you make of it. Every site developer should know how to obtain publicity for an Internet site and create a secure environment in which to conduct electronic commerce. Part IV gives you the basic skills that everyone who runs an Internet site needs.

Part V: The Part of Tens

You know you have a ...*For Dummies* book when you get to The Part of Tens. And, if you're like us, it's the first part you read (except for the cartoons). Dive into ten technology add-ons, ten things your Web site can't live without, ten tools for Web development, and lots of other decimal lists.

Icons Used in This Book

This book has icons in the margins — okay, we admit they're not as fascinating as James Dean or Marilyn Monroe, but you should pay attention to these icons because they guide you to specific points that can enhance your Internet site, lessen your workload, and keep you out of trouble.



If you see this icon, you find in the accompanying text information about the software or hardware you need to accomplish the tasks we describe in this book. If you have the right stuff, you face no limits to what you can accomplish.



This icon suggests ways in which you can use the technology described in this book to start an Internet business. The Internet is an evolving landscape of opportunity. New products and services that use Internet technology or help other users are always emerging. Many such businesses exist only on the Internet, having no real-world business location.



This icon points out the hidden wisdom of Internet veterans. Next to this icon, you find insights and war stories from the electronic frontier so that you can benefit from the experience of others.



Watch out — the Information Superhighway is still under construction, and it has a few potholes. This icon points them out to help you avoid trouble.



Sometimes we forget things, so we use this icon to point out important things you want to remember. You probably don't forget things, but humor us if you see this icon.



Most of the technical stuff in this book appears in a simple, readable, entertaining format right in the main text. This icon points out *really* technical things that require a college education to even think about. You can read this stuff, or you can skip it — without hurting our feelings.



We use this icon to mark items contained in the *Setting Up An Internet Site For Dummies* CD-ROM.

About the CD-ROM

We put together a CD-ROM full of the programs you need to set up and maintain an Internet site. Some of the programs included on the *Setting Up An Internet Site For Dummies* CD-ROM are shareware, so after you set up your site and start using the software, you need to send license fees to the authors of that software.

Other programs on the CD-ROM are demo versions of software that we find useful. Try these programs to determine which ones give you the options you need to create a compelling, useful Internet site. If you find that some demos are just what you need, contact the creators of the software to discover how you can purchase production versions of the software.

Finally, still other programs on the CD-ROM are freeware, which means you just plug 'em in and enjoy. Still, it's nice to drop the developers a note saying how much you like their software. You just might make their day.

6

Setting Up An Internet Site For Dummies, 3rd Edition

Chapter 2

Internetworking

.....

In This Chapter

- ▶ Understanding networks
 - ▶ Comparing site options
 - ▶ Creating your own computer network
-



Don't skip this chapter! You may be thinking that this chapter is not for you because you have only one PC sitting on your desk, not a network. Not true. A *network* is simply one computer connected to another, and the Internet is a big network of computers. Therefore, setting up an Internet site means setting up your computer, no matter what kind it is, as part of the network. Even if you have only one computer initially, if you turn that one computer into the foundation of an Internet site, you need to know about networking.

Internetworking Is for Everyone

The Internet is just a large computer network that, aside from its size, is no different than a network you'd have in your office or possibly at home. As with all networks, on the Internet you can do more than just send and receive information. Any computer on the Internet can share resources with other computers via the network. Here are some of the resources that users commonly share across a network:

- ✓ Printers
- ✓ Disk drives and files
- ✓ Modems
- ✓ Backup tape or cartridge devices (such as Iomega Jaz or Zip drives)
- ✓ Company databases

One of the main reasons people started connecting personal computers with networks was to share printers. In a network, all the computers in an office can use the same printer. The time and money that network-printer sharing save, more than pays for the cost of the network.

Only recently, however, did people become aware that their networks were capable of doing much more than just sharing printers. Networks can also be used to share disk drives, company databases, modems, backup tapes, and (most recently) a single dedicated connection to the Internet.

A computer that provides resources (such as a database or a printer) to other computers over a network is said to be providing a network *service* and is often referred to as a *server*. The computers that use the services of a server are called *clients*. The idea that clients and servers work together to accomplish things that neither could do alone is an important technical feature of computer use on the Internet. This approach to computer networking has proven to be so valuable that it has been given a special technical term: *client/server computing*.



All the shared devices or software services that server computers provide on a network must have unique names so that client computers can refer to them without ambiguity. A variety of methods are used to give unique names to network services, but the one that has gained the most popularity is the now-common *URL* (Uniform Resource Locator) for identifying services on the Internet.

If you build a computer network of your own and connect it to the Internet, every machine and every device on your network can provide services. At the same time, each computer can also be a client, using the services that are available on the network. Your computer systems may not be powerful supercomputers, but that doesn't matter much on the Internet. Even personal computers can provide sophisticated services, ranging from running Web server software and providing Web pages to clients all the way up to serving the commerce infrastructure of a business.

Which Way to Go?

You can follow one of four basic approaches to establish an Internet site:

- ✓ Build your own Internet site from scratch
- ✓ Use an ISP
- ✓ Lease a virtual server
- ✓ Lease a dedicated server

Each approach has its own benefits and drawbacks. If you're a real do-it-yourself type with very deep pockets, go with option one. The other three all give you various levels of compromise between the freedom (and drudgery) of true hands-on operation and the deeply fulfilling task of finding out how to cope with bureaucracy.

Connecting with your inner gadget freak

Setting up your own Internet site has distinct advantages. For one, the only way to have complete control of the technology that your Internet site uses is to set up everything yourself. If anything goes wrong with your Internet site's hardware or software, you can experience the joy of dropping everything else you're doing and fixing the problem yourself. If you want to use a new hardware or software technology, you can personally discover the irony of the word *compatible*.

If you're going to take this route, you need a high-speed Internet connection. This type of connection costs a lot more than the low-speed dial-up telephone line that Internet users generally use for Internet access. But, as a site builder, your purpose on the Internet is different than that of a user. Your site provides resources for other people to use (many people, we hope), and requires dedicated, high-speed Internet access to accommodate all your users around the clock. Of course, you and everyone in your organization have dedicated high-speed Internet access as well. Therefore, it is both a drawback because it costs more and a benefit because you and all the other members of your company can surf the Net at high speed.

Running your own dedicated connection to the Internet enables you to experiment with new and interesting technologies. Ultimately, you must decide whether your plans for your Internet site justify the expense for a dedicated connection. If the price of a dedicated connection falls (as we think that it must over the next few years), this decision is easier to make. Several industries are working to give everyone, everywhere a dedicated Internet connection known as an *Internet dial tone*. They recognize how important it is for anyone to be able to use data-communications technology with the same freedom and flexibility that people now use the telephone.

Why own when you can rent?

There's an alternative method for setting up an Internet site: renting services from an Internet service provider. Creating a Web site by using a Web-publishing service provider is always less expensive than setting up an Internet site and running your own Web server software. If you don't build

your Web site yourself, you may sacrifice the freedom to choose the technology that you could use to build the site. Unless you have some really strange requirements, however, any of the major Web server software products will do just fine, and you can bet the farm that any ISP worth its salt is using one of them.

The real kicker here is that even if you build your own site on your own turf with your own gear and software, you'll have to go through an ISP anyway. That dedicated high-speed connection that you're paying a fortune for doesn't run out through your wall and disappear. It's connected to the Internet, right? Guess where? An ISP. Don't let 'em fool you even if they call themselves by some other fancy name. (Even ISPs have ISPs that provide *their* connections.)

ISPs can provide you with everything you can do on your own, from Web presence to anonymous FTP directories. They can, but they may not want to. The reason for this is that two types of ISPs exist. You can call them *incoming* ISPs and *outgoing* ISPs.

Your typical ISP — the one you use for your personal connection from home and your private e-mail account, the one whose system you run your Web browser through — is an outgoing ISP. That is, the ISP's income depends on local users dialing up and surfing the Web, sending e-mail, and so on. Each person uses a very small amount of the ISP's resources. It takes at least a thousand users for outgoing ISPs to break even. Although they do provide their users with space for Web sites and other needs, and are even willing to accept a commercial site on their equipment (for an extra fee), *they do not want your site to be a success*. This is not because they are evil trolls who are out to get you; it's because a successful site brings a lot of incoming traffic that ties up lots more resources than a casual user does. The result for the ISP is either higher costs or degraded service, and they don't want to deal with either.

Most ISPs also limit the types of programs you can run on their machines or require that you submit the program to their own staff for approval — for good reason. If you create a program that has bugs and ultimately crashes, it could disable an ISP's entire machine, interrupting Internet service for many people. It is also possible that an improperly written program could cause a serious security problem, allowing unscrupulous people to gain control of their system. Although the ISPs have good and justifiable reasons for these limitations, they can be devastatingly restrictive to your site-building effort. For example, if you are developing or modifying a CGI program (see Chapter 10) using Windows, but your site is on a machine using UNIX, you'll want to test the program on the UNIX box, doubtlessly tweaking and nudging it several times before you're finally satisfied with it. If you have to submit the program for approval every time you make a minor change and then wait until one of the ISP's programmers looks it over — and you may have to pay for each analysis, too — it'll take forever to do the simplest thing.



Make sure to verify that you have the capability to run programs using the Common Gateway Interface (CGI) — it's called *CGI access* — before you sign on with an ISP. Without it, your site will be extremely limited. Thousands of free or low cost CGI programs are available that can add lots of functionality to your site. You can also develop your own and sell them to other site builders.

The best of both worlds

The other type of ISP, the *incoming* variety, doesn't operate in the same way as the outgoing kind. They don't have any local users; all they do is support sites. They understand that this means lots of incoming traffic, but they don't mind because it's what they do for a living. Because they don't have to cater to the needs of local dial-up traffic, they want to help you win.

Usually, the incoming ISP offers *virtual servers*, which are functionally identical to having your own computer system with a dedicated connection. The servers are called *virtual* because they use software that fools the Internet into thinking that a single computer is several different ones. This lets the ISP put many different sites on one system, which saves everybody money. Your site, however, is separate from all the others on their system, just as if it were on a separate, dedicated computer. You have a unique domain name (see Chapter 3). You can set up and run whatever programs you want, and twiddle and tweak them to your heart's desire. The ISP usually even helps you out for free, unless you want something complicated. Then, of course, as with any other ISP, you have to pay for the work.

Virtual servers come in a variety of sizes and prices. In addition to the Web server, they include e-mail boxes, autoresponders, and (usually) mailing list software (see Chapter 8), as well as FTP servers. Some ISPs give you a small number of e-mail boxes to start with and then charge you more for extra mailboxes; others have an unlimited number of mailboxes. You can start out small and cheap and get more storage space as you need it. Some ISPs offer virtual servers with as small as 5MB (megabytes) of storage space, which is plenty for a simple Web site. Increasing your storage space usually costs only about a half a buck to a buck extra per megabyte a month. Chapter 4 goes into more detail on using virtual servers.

Because virtual servers share a high-speed line, they have one problem: They can comfortably handle only about 30,000 visitors per day to your site. If you need to handle more than that, look into a dedicated server. A dedicated server is an entire computer that has nothing but your site on it. Unlike virtual servers, it has its own dedicated high-speed line, which it does not share with any other sites, so that it can handle just about any load you can throw at it.

Both virtual and dedicated servers are rented on a monthly basis, and while you have full control over them, the ISP takes care of all the drudgery, such as maintenance and backups, thus freeing you for more creative work. The ISP also bears the responsibility and expense of upgrading the equipment and software as new technological developments affect the Internet.

You can administer a virtual or dedicated server anywhere in the world, regardless of where you are located. All you need is local Internet access.

If you'd like to actually own the equipment, some ISPs offer a *co-location service*, in which you buy a computer that you want to connect to the Internet and then locate it physically at the office of the ISP. The ISP can usually get the equipment for you at a substantial discount, so make sure that you discuss this with them before purchasing it on your own. With this type of service, the computer has a dedicated and fast Internet connection at a low monthly rate, and you own and control the computer. The only drawbacks are that someone has to drive to the remote site to perform maintenance or fix a hardware failure, and you are responsible for your own upgrades. Also, unlike the virtual server option, you must deal with a local ISP.

Linking Computers

The Internet is just a large network of computer networks. Anyone can build a computer network easily and quickly without spending a great deal of money. The most popular type of local computer network today is the *Ethernet* network. Installing an Ethernet network involves installing an Ethernet adapter in each computer that's part of your Internet site (see Appendix B) as well as connecting all your computers with network cable so that they can communicate by using the Ethernet protocol.

Building a computer network — even a small one in your home — opens new doors. Many products just plug into your Ethernet network and go to work for you. Printers, data-storage devices, CD-ROM jukeboxes, modems, fax systems, Internet servers, and many other products don't require you to open your computer to install new hardware; instead, you just plug the equipment into the network and start using it. After your network is connected to the Internet, you can even use the equipment from a remote location.



To take advantage of this exciting new area of technology (and to set up your own Internet site), prepare each of your computers to work on a network as described in Appendix B and then use the following guidelines to link the computers in a typical Ethernet network:

- ✓ You need a piece of hardware called a *network hub*, which you can buy at most computer stores. You need to purchase a network hub that matches the network adapters you installed. If you installed network adapters that have transfer rates (throughput) of 10 Mbps (megabits per second), you need a 10 Mbps hub. Some network adapters (called *Fast Ethernet adapters*) and hubs also operate at speeds of 100 Mbps, but they cost more than the 10 Mbps versions. You'll need to decide whether speed or economy is your most important factor.
- ✓ You need to purchase network cabling. The most commonly used type of cabling for Ethernet networks is *unshielded twisted-pair (UTP) cable*, or twisted-pair cable for short. The official designation is *10baseT* and *100baseT* for 10 Mbps and 100 Mbps networks, respectively. Twisted-pair cable comes in different thicknesses, or *categories*. The most popular thickness is Category 5 (usually called Cat 5). Some adapters and hubs use an alternative type of cabling known as *thin coaxial*. Some network adapters enable you to use either type of cabling, but 10baseT and now 100baseT are by far the most common. Basically, unless you have to connect dozens of computers or have to connect computers on opposite sides of major sports stadiums, go with twisted-pair cable.
- ✓ Connect the cables from the network adapter in each computer to the network hub.

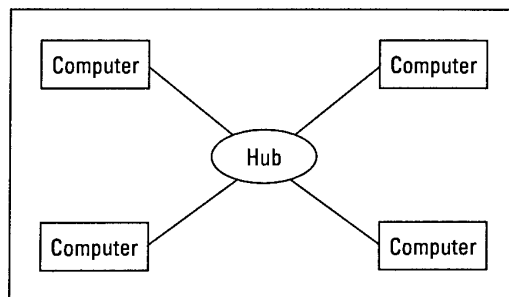


Figure 2-1:
A typical
Ethernet
network.

A feature of most hubs is a status light above each connector. If the connection is made to a computer with a network adapter and the computer is turned on, the status light glows. This feature helps you troubleshoot network problems. If the light is not glowing, you can look for a problem with the physical connection between the network hub and the network adapter. If this connection is okay, the network adapter's connection with the computer may be a problem (the card may not be seated correctly in the card slot), or the network adapter may be defective.

If you create networks that have considerable distance between the computers and the hub, refer to your hub's manual for the maximum distance possible between computer and hub. If you need to exceed that distance, you can purchase an additional piece of hardware known as a *network repeater*. A network repeater simply amplifies the signal it receives from a computer and passes that signal farther down the network.

For more detail on using networks, refer to *Networking For Dummies*, 3rd Edition, by Doug Lowe (published by IDG Books Worldwide, Inc.).

Chapter 3

What's in a Name?

In This Chapter

- ▶ Introducing the Internet domain name system
 - ▶ Applying for a domain name of your own
 - ▶ Maintaining your domain name
 - ▶ Setting up your own DNS server
-

One of the first things a child learns is her name — and then she bestows names on everything important to her. Favorite toys have names. Pets have names. And now, computers have names, too. In this chapter, you find out why giving your Internet site a name (called a *domain name*) is important and how to apply for one.

Every computer connected to the Internet has a unique numerical address, called the *IP address*. This addressing scheme enables computers to easily identify and communicate with each other. But we're not computers, and humans prefer names to numbers. You can give a name, such as Buzz or InfoDroid or Walnut, to any computer connected to a network. Your computer's name is known as its *host name*.

Network software, such as a Web browser, enables a user to identify a computer by using the computer's name instead of its IP address. For instance, *dummies.com* is the host name for the computer at IP address 206.80.51.139. Each computer still has an IP address that another computer must use to communicate with it via the network, but people don't need to worry about translating computer names into IP addresses.

The Domain Name System in a Nutshell

Just as a king and queen manage a royal domain, a network server that keeps track of all the host names and IP addresses for a network also is said to manage a domain. A network domain may consist of a single network or several networks within an organization. And, just as in those days of old when each ruler's domain had a name, each network domain has its own name, which is known, naturally enough, as a *domain name*.

You refer to an individual computer by its host name. You refer to an entire network by its domain name. To refer to an individual computer within a domain, you use its host name followed by its domain name; that combination is called its fully-qualified domain name. (Call it the FQDN if you want to amaze your friends with your network savvy.)

Suppose, for example, that you name a computer Bruin and that your domain name is `football.com`. The fully-qualified domain name of the host computer, therefore, would appear as follows:

```
bruin.football.com
```

In the early days of the Internet (at the time called *ArpaNet*), special text files called *host files* tracked all computer host names. Any computer connected to the Internet needed a host file that listed every other computer on the network by name. In the 1970s, only a few hundred computers were connected to the Internet, so maintaining a host file wasn't a huge chore. As the number of computers connected to the Internet began to grow rapidly, however, the problems inherent in using the host file system for keeping track of host names quickly became evident. A new system was devised, known as the *domain name system*, or *DNS*.

DNS is a method of managing domain names on the Internet. DNS groups hosts into a *hierarchy of authority* (which is actually a hierarchy of responsibility, as you find in most corporations), enabling the distribution of addresses and host information to special name databases around the globe. The software that computers use to manage these databases, which map IP addresses to domain names, is known as a *name server*.

Computers all across the Internet employ name servers, although not every computer has such a program installed. Computers contact name servers while looking up domain names. The name servers, which distribute domain-name information among themselves, direct the request for information to the name server designated as responsible for keeping track of a particular domain name-IP address.

The domain name hierarchy begins with a *root domain*. In Figure 3-1, the root domain appears at the top of the hierarchy tree. Similar to the root directory of a file system (much like the one on your hard drive), the root domain appears in the hierarchy represented as a backslash. Domains that appear directly beneath the root domain are known as *top-level domains*. The top-level domains include the COM, EDU, NET, MIL, GOV, ORG, and two-letter country domains, such as US. An organization known as the *InterNIC* (Internet Network Information Center) is responsible for managing the root domain and several of the top-level domains. *Domain registries* manage the other top-level domains. Table 3-1 lists the major top-level domains, including a few country domains. More than 250 different country domains currently exist.

Figure 3-1:
The domain
hierarchy
for ebola.
science.org.

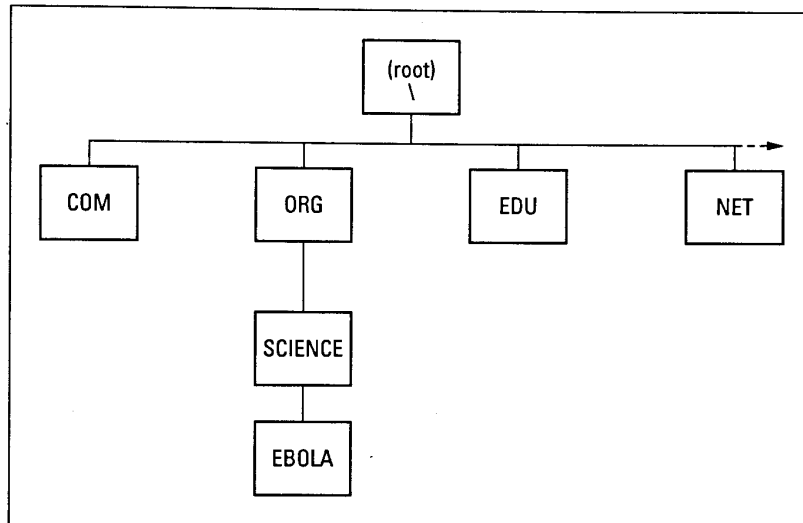


Table 3-1 Some Top-Level Domains and Their Descriptions

<i>Top-Level Domain</i>	<i>Description</i>
COM	Commercial organizations
EDU	Educational institutions
ORG	Nonprofit organizations
MIL	Military agencies for the United States
GOV	Government agencies for the United States
NET	Networks that provide Internet access or other services
AU	Australia
CA	Canada
IL	Israel
IN	India
US	United States
CA.US	California, United States (Labels exist for all 50 states.)



Don't confuse the two-letter country code domain for Canada with the second-level domain for the state of California. Telling them apart is easy. The US country code (US) domain name always follows the letters CA if the latter stand for California.

Domain registries are responsible for knowing where the primary name servers are for all domains within a top-level domain. (Registrars are the people who manage these registries.) Primary name servers are sometimes called *authoritative name servers* because these servers have the authority and responsibility for mapping host names to IP addresses for every computer within a particular domain. If a computer on the network needs to know what the IP address is for a host in a domain, that computer may contact the primary name server for the domain to ask for the address. If the primary name server were the only computer in the world that could answer such a query, however, significant bottlenecks and lots of unnecessary network traffic would result whenever one computer wanted to communicate with another.

Instead, every name server around the world automatically keeps a copy of the host name and IP address information it obtains from another name server. So if the primary name server for a domain stops functioning for a while, many Internet users don't even notice the interruption. Additionally, each domain has an official *secondary name server* that maintains complete copies of the database from the primary server. If you add a new domain to a top-level domain, the domain registry for that top-level domain adds an entry to its database for the primary name server and for all the secondary name servers for the new domain.

Remember that computers know how to deliver information only to IP addresses — not to domain names. For example, `Aardvark.com` contacts the local name server and asks it to provide the IP address associated with `Zebra.com`. If the local name server knows that information, the server immediately responds by providing the IP address. If the local name server can't resolve the name `Zebra.com` to an IP address, it must find the name server that can resolve the domain name. This process is a little like playing the card game Fish. One player asks another for a certain card. If the player has the requested card, he or she hands the card over to the requesting player; if not, the player says, "Go fish!" The player then starts searching for the necessary card.

The local name server then contacts a different name server, one that knows about a greater number of domains. If that name server doesn't know the answer, it bumps the request up to the next level until, finally, the primary name server is consulted if necessary. The primary name server is the ultimate authority for a domain and can normally map the domain name to the IP address for any host within the domain. If the local name server contacts the primary name server and the latter can't provide an IP address for a host name, the local server considers that answer *authoritative* and the host name invalid. After receiving an authoritative answer that a host does not exist, the local name server no longer attempts to contact other name servers.

In other words, the authoritative primary name server has the last word. Either it returns an IP address after another name server asks about a host in its domain, or it indicates that the host does not exist. Because the primary server has the last word, network software knows that asking any other name servers about the host is pointless. If the primary name server can return a valid address, the IP address passes back through the name servers until it finally returns to Aardvark.com, which uses the IP address to communicate with Zebra.com.

The top-level domain COM contains many domains, such as Zebra.com, which in turn can contain many other domains, called *subdomains*. Zebra.com may be the network server of an office in Africa, for example, which may include a subdomain such as Corporate.Zebra.com, whereas the Zebra.com marketing department in New York may use something such as Marketing.Zebra.com. Each of these example subdomains can contain many hosts, including President.Corporate.Zebra.com to identify the president's computer in Africa.

Registering Your Own Domain Name

Every domain name in the entire world is unique. Some domain names may be similar to one another, but no two domain names are identical. The first step on the road to having your own domain name is to find the registrar who manages the registry that will contain your domain name. (You find more information on this point in the following section.) The InterNIC (at <http://rs.internic.net>) is the primary registrar. You can find contact information for all other registrars on this site.

The next step is the fun one: coming up with a domain name. In choosing a domain name, you should search the registrar's database to determine whether the domain name you want is already in use. Most registrars provide a mechanism for searching their databases, and some even have a Web query form like the one InterNIC provides at <http://www.rs.internic.net/cgi-bin/whois>.



Work up several variations on your domain name before you get started. That way, if the one you want most is taken, you have something to fall back on. You probably won't have too much trouble if you want a domain name like schnittzelfrugel.com, but if you're going to base your domain name on some common and obvious term such as *money* or *net* or *web*, you'll have to struggle to come up with anything that isn't already in use.

Choosing a domain registry

The InterNIC manages the COM, EDU, ORG, GOV, and NET top-level domains. The InterNIC thus keeps track of any information about these domains (all that end with .com, .edu, .org, .gov, and .net), including contact information and primary and secondary (backup) name servers. Oddly, however, InterNIC and other domain registries aren't responsible for knowing a domain's IP addresses. Instead, the domain registry keeps track of the name servers and the people responsible for knowing the IP addresses that a domain uses. Knowing this fact, you can better understand that one of the steps in applying for a domain name is setting up primary and secondary name servers for the new domain. If you're using someone else's service, such as an ISP or virtual server provider, the name servers will already be in place and you can get the necessary information from them. Otherwise, you'll have to set up the name servers yourself. You then need to provide the IP address of each name server for your new domain at the time you apply to a domain registry. This procedure may seem a little confusing. Suppose that your administrative assistant is the only one who knows the phone number that someone can reach you on at any one time. The admin assistant becomes like your name server. Anyone who wants to contact you by phone first must contact your admin assistant to retrieve the phone number where you are. As you change numbers, your admin assistant (who keeps track of these things) gives out a new phone number. So anyone who wants to contact you needs to keep track only of your admin assistant's phone number. The admin assistant is then responsible for keeping track of the individual whereabouts of the people for whom the assistant is responsible.

Before you can begin the process of choosing and obtaining a domain name, you need to know where to register, as well as what rules the registrar may have for creating and registering domain names. Each country has its own domain registrar. Table 3-2, later in this chapter, lists some countries, their country codes, and contact information.

To determine which organization you need to contact to register a domain name, consider the following points:

- ✓ If you're in the United States and you want a domain name that ends in COM, EDU, ORG, GOV, or NET, contact InterNIC directly.
- ✓ If you're in the United States and want a domain name that ends with US, you need to contact the .US Domain Registry.
- ✓ If you're outside the United States, you need to contact the registry for your country. In this chapter, we provide registration information for Canada and many other countries.
- ✓ If you're a U.S. military organization, contact the Department of Defense.

In this chapter, we mainly offer details on registering a domain name with the InterNIC. The InterNIC has the responsibility of managing the root domain and the NET, COM, EDU, ORG, and GOV top-level domains. You generally find, however, that most registrars in the world require similar information and require its submission using a template similar to the InterNIC's template. Fees and regulations vary with each registrar. Contact the registrars directly for more information. (We include contact information in Table 3-2.)

You can search the InterNIC database by using the *Whois utility*. To access a Whois utility, you can telnet to `rs.internic.net` and use the Whois utility on that site as follows:

1. In Windows 95 or Windows NT, choose Start⇨Run.

The Run dialog box appears.

2. In the Open text box, type telnet.

3. Click OK.

The telnet program window then appears.

4. Choose Connect⇨Remote System.

The Connect dialog box appears.

5. In the Host Name text box, type rs.internic.net.

6. Click the Connect button.

You get a UNIX prompt that looks like this:

```
InterNIC >.
```

Domain levels

You can register only secondary-level domain names, such as *mysite.com* with the InterNIC. The registrar doesn't create new top-level domains, such as COM or EDU, for you. That's the job of the *Internet Engineering Task Force* (IETF). Many new top-level domains are currently under consideration. One of the interesting top-level domains in the works is

NUM, for using phone numbers as domain names (for example, 6195551212.NUM). For more information on proposals to the IETF for new top-level domains, you can contact the IETF Web site at the following URL:

<http://www.ietf.org/>

Whether you connect to the InterNIC by using telnet or you have access to a UNIX machine connected to the Internet, use the built-in Whois utility by typing the following command:

```
whois mydomain.com
```

Follow the command, **whois**, with the name of the domain name that interests you. This name could be the domain name you're interested in registering or any domain name about which you'd like more information. We use this tool to contact people who manage other domains. Most recently, we used it to track down someone sending malicious e-mail. If you're using telnet, you can now close the telnet window by choosing **Connect→Exit** from the telnet menu bar.

If you'd rather do it the easy way, you can always use the World Wide Web Whois utility provided by InterNIC at the following address:

```
http://rs.internic.net/cgi-bin/whois
```

The Whois Web page has a single field in which you enter the domain name you want to register. If Whois finds a match for a domain name, the display tells you that information. If no one has that name currently registered, the Whois program returns a NO MATCH message. A search on `toymouse.com`, for example, returns the following message:

```
No match for "TOYMOUSE.COM".
```

If you want to see a tutorial on using the InterNIC Whois Web interface, you can access it at

```
http://rs.internic.net/tools/whois.html
```

Note: Not finding a match in the InterNIC domain database is not a guarantee that your desired domain name is available. A certain name may not appear for several reasons. Perhaps the name is already applied for but not yet activated. Or the name may be in dispute and therefore removed from the database until the dispute is settled.

Becoming a domain contact

Only official contacts may change or remove a domain name. The InterNIC is cautious about enabling just anyone to request domain name changes. For this reason, the registry has devised a foolproof security system, known as *Guardian*. You're not required to use Guardian to apply for and maintain your domain name, but for security reasons, we highly recommend that you do. The upcoming section "The InterNIC Guardian" describes how to use Guardian for registering yourself as a contact.

Each domain has the following three kinds of contacts:

- ✓ **Administrative contact.** The administrative contact is the official representative of an organization. These contacts don't need to have technical knowledge; they just must be able to answer questions about the organization's use of the domain name.
- ✓ **Billing contact.** Quite simply, the billing contact gets the bill. Registering domain names with the InterNIC involves paying an annual registration fee. The billing contact is responsible for seeing that the fees are paid.
- ✓ **Technical contact.** The technical contact is usually the person who manages the primary name server for your domain. Often, this contact is actually your Internet service provider. If your organization runs its own name server, however, whoever manages this software is probably the technical contact.

If you are the person in charge, pay the bills, and manage your company name server, you can be any or all three of these contacts.

You and your NIC handle

The InterNIC gives contacts a special identification number, known as an *NIC handle*. This situation is a little like that of CB radio, where everyone has a handle. ("This is the Boll Weevil. What's your 20, good buddy?") Unfortunately, NIC handles aren't quite as fanciful and fun as CB handles.

The InterNIC assigns you an NIC handle that consists of your first and last initials and a sequential number. The sequential number follows the last person to register as a contact who had your initials. If you do a Whois search on the name Coombs, for example, you see that Ted Coombs has an NIC handle of TC150. That means that Ted was the 150th person with the initials TC to get a handle. Jason Coombs, on the other hand, has an NIC handle of JC, because Jason was the first JC in the InterNIC database and therefore doesn't have a sequential number.

Registering as a contact

You can register as a contact in two ways. The simplest way, but also the least secure, is to add contact information into your application for a domain name. Registering in this fashion doesn't enable you to register your domain name in a secure fashion or to secure your entry from changes by unauthorized and devious people. A much safer choice is to register yourself as a contact before registering your domain name.

To apply as a contact or to modify existing contact information, you simply fill out a request, which you format by using a contact registration template that InterNIC provides. The simplest way is to use the Web form at

```
http://rs.internic.net/itts/handle
```

If you don't have Web access, you can download a copy of the template from the following site:

```
ftp://rs.internic.net/templates/contact-template.txt
```

If you use the FTP and e-mail approach, you must make the request in ASCII text format. In other words, you can't submit a request in Microsoft Word format or in WordPerfect format. However, most word-processing programs, including the two we just mentioned, can save files in text (TXT) format.

If you want to refer to an already completed sample template, you can download it from the following URL:

```
ftp://rs.internic.net/templates/contact-template-examples.txt
```



If you want your contact information to remain private, you can make this request during your contact registration. The last question on the contact registration template asks whether you want your information publicly accessible.

The InterNIC offers an additional security feature to protect your domain record from accidental or nefarious changes as part of the contact registration. One question you should answer Yes to is the one that asks whether you want to receive notification of all change requests made to your domain record. This feature may keep you from scratching your head one day, wondering why the Whois lookup for your domain shows someone else's name on it.

After you complete the request, answering all the questions in the template, you must secure it in one of the ways described in the section "The InterNIC Guardian" later in this chapter. Then you can e-mail your request to the InterNIC registrar. The registrar's e-mail address is as follows:

```
hostmaster@internic.net
```

Applying to InterNIC

The instructions we offer for registering a domain name are specific to InterNIC. If you register with any other domain registry, you need to contact that registrar for more information about its registration procedures. With the exception of the Guardian security system, most domain registries use the same application template and similar application procedures.

Registering a domain name is quite simple. Prepare your application; secure it by using one of the procedures discussed in the section “The InterNIC Guardian” later in this chapter; e-mail your application — and wait. You receive notification by e-mail after your domain name is registered. This process usually takes a few days.



Registering a domain name does not give you any legal right to that name. To guarantee your right to a domain name, you must trademark the name. At the same time you perform your search to find out whether a domain name is available, you also should try to determine whether the name is trademarked. If you apply for a particular domain name, you must certify that, to the best of your knowledge, the name you want to register isn't trademarked by another person or company. If you violate someone's trademark, you could be in for an expensive legal battle. Check out <http://www.micropat.com/> for a Web-searchable trademark database.

Preparing your application

Preparing your application for a domain name is similar to registering as a contact. You must follow the registration template exactly. Of course, you can use the online form at the InterNIC Web site, and your completed registration request is e-mailed back to you, formatted correctly.

Follow these steps to prepare your application:

- 1. Make sure that you've arranged for both a primary and secondary name server.**

The InterNIC requires that you (or your service provider) have both name servers configured at the time you submit your application. If you are using an ISP or a virtual server, check with the server administrator to find out the IP addresses of the name servers.

- 2. Register the administrative, billing, and technical contacts.**

See the section “Becoming a domain contact” earlier in this chapter for details.

3. Choose a domain name.

See the section "Registering Your Own Domain Name" earlier in this chapter. Make sure that you first check the registry's Whois database to ensure that the domain name you want is available.

4. Create a text file and import the empty template or access the Web registration form.

You can open the template in a text editor such as Notepad or WordPad. Make changes and save the template as an ASCII text file. The alternative to this procedure is to use the Web form on the InterNIC site. You get the correctly formatted text file through e-mail. To use the Web form, go to the following URL:

<http://rs.internic.net/cgi-bin/domain>



Simply filling in the Web registration form doesn't complete your application for a domain name. InterNIC e-mails a completed and correctly formatted application to you. You *must* e-mail this application back to InterNIC to complete your registration process. Otherwise, you could wait forever, believing that the wheels of progress turn slowly, when actually you need to take the next step.

The InterNIC Guardian

To keep your domain name record safe from unscrupulous people or even accidental changes, InterNIC uses a system by which it accepts applications and updates only from an authenticated contact. The default method for determining whether a modification is legitimate is to simply make sure that the request comes from the e-mail address of either the technical contact or administrative contact. Guardian contact authentication gives you two more options to ensure that only authorized representatives can make changes to a company's domain record. It also enables you to specify that you should be contacted if anyone attempts to modify your domain record. To update your contact information and utilize the Guardian system, fill out the form at

<http://rs.internic.net/fts/handle>

The Guardian system consists of the following three contact authentication methods, also called *authorization schemes*:

- ✓ **Mail-from.** InterNIC checks the From field of any e-mail message sent to the registry against the From field of the e-mail message that contains the contact registration form. Be warned, however, that altering the contents of a From field is possible in many e-mail client programs, enabling others to pretend that they are you by doing so. This authorization scheme is the least secure and is also the default scheme used if you request no other scheme.

- ✓ **Crypt-password.** This authorization scheme employs a password that you encrypt by using the UNIX crypt program. (The InterNIC Web site provides a Web interface for the crypt program.) You supply your password whenever you send correspondence to InterNIC requesting changes to a domain record. This password is the one you submitted as part of the contact registration process.
- ✓ **PGP.** Pretty Good Privacy is a program that enables you to digitally sign any correspondence sent to InterNIC by using public-key cryptography. This scheme affords the highest degree of security and is the one we recommend.

Choose which authorization scheme you want to use by entering a choice in the AUTH-SCHEME field of any templates you submit to InterNIC.



Make sure that you remember what authorization scheme you request as part of your contact registration. This scheme is the one the InterNIC expects you to use in any future correspondence. Not using the scheme you originally selected results in the InterNIC ignoring your correspondence — and may even cause the InterNIC to send a warning message to the domain contacts, telling them that someone has tried to send correspondence using an incorrect authorization scheme. (If InterNIC doesn't send such a warning, it should.)

Paying for Your Domain Name

No such thing as a free lunch? Well, the same goes for free domain names. You must pay \$50 per year to maintain a domain name with InterNIC. At the time you first register a domain name, the registry bills you for two years — \$100. You don't need to pay right at the time you register, however; InterNIC generously bills you or your billing contact within a few months, and the bill is due 30 days after the invoice date. After two years, the invoice comes annually, either by postal mail or e-mail, whichever you chose when you first registered.

InterNIC accepts several payment methods. If you want to use a credit card, you can use your MasterCard, Visa, American Express, Diners Club/Carte Blanche, or Discover/NOVUS. You can pay also by check or money order. And now, you can even use First Virtual's Virtual PIN to pay your InterNIC fees. Some people feel more comfortable using a First Virtual PIN instead of entering their credit card number. For a small fee of \$2 a year, you can maintain a First Virtual account. You can apply for your First Virtual PIN at the following URL:

<http://rs.internic.net/cgi-bin/fv/apply>

If you're a school (with an EDU label) or a government agency (with a GOV label), InterNIC picks up the tab. (The plan is that, at some time in the future, government agencies will pay their own way.) Military agencies (MIL) register by using a different service, and the U.S. Department of Defense pays all fees. If you are going to be registering tons and tons of domain names, you can set up a debit account with InterNIC.



If you're curious about the anniversary date for your domain name, you can find this information by performing a Whois search on the domain name. Remember that you receive your bill every year around the domain's anniversary. What an anniversary present!

Where does the money go?

You may be happy to know that a full 30 percent of the money you send to InterNIC goes toward building the intellectual infrastructure of the Internet. InterNIC uses the other 70 percent to support its network services. This money goes to cover the cost of staffing, hardware, software, and all normal overhead. The U.S. National Science Foundation (NSF) controls the amount of money that InterNIC can charge. Back when the NSF operated the InterNIC, domain-name registration was free. The NSF isn't in the business of operating public data networks, however, so the foundation contracted out the duties of running InterNIC to a private company, Network Services.

What happens if you don't pay

If problems arise — as they often do — make sure that you contact InterNIC as soon as possible. You're better off starting a dialog instead of ignoring the problem and letting your domain name expire. The registry's rules are stringent. You must have your payment in no later than midnight of the due date. (You find the due date on your invoice.) If you don't make that date, all contacts receive a 15-day deactivation notice, sent by e-mail and also by regular mail to the domain name user. Many times, however, the user of the domain name is not the contact person. This situation occurs mainly if Internet service providers register the domain names for their customers. If you receive one of these notices, you have 15 days to get your payment to the InterNIC. If you miss this date, the registry removes your domain name from its database.

Even if InterNIC deactivates your domain name, you haven't lost the name yet. You have an additional 60 days to get your money to InterNIC to reactivate your domain name. After 60 days, the registry returns your (former) domain name to the pool of available domain names for someone else to snatch up.

Accessing your account information

What good would having a computer connected to the Internet be if you couldn't check the status of your InterNIC account online? Doing so is simple enough. Contact the InterNIC's Web-tracking system by using the tracking number found in your latest correspondence from the registry.

You can find the Web-based tracking system at the following URL:

`http://rs.internic.net/cgi-bin/finger`

If you have trouble using the Web form, don't know your tracking number, or need additional information not found online, you may send an e-mail requesting additional information to `mailto:billing@internic.net`.

Sending in your payment

When paying your InterNIC invoice, send your payment to the following address:

Network Solutions, Inc.
P.O. Box 17305
Baltimore, MD 21297-0525
USA

If you're making a payment that's not from an invoice, you need to use a different P.O. box number and zip code, as follows:

Network Solutions, Inc.
P.O. Box 17304
Baltimore, MD 21297-0524
USA

If you're paying by credit card, you can save the stamp and just call the phone number on your invoice. The phone number works 24 hours a day, 7 days a week. It's automated, and unlike most such systems, it's easy to use and well designed. You just follow the instructions and punch in the requested information on your telephone keypad. When you're finished, you'll receive an approval code. Make sure to write that code down! It's your only proof that you paid your bill if anything goes wrong. We've never known anything to go wrong, but it's a good idea to cover your *sitzfleisch* just in case.

Making Changes to Your Domain

Things change. That's both the nature of life and, possibly, of your Internet domain name or company information. You need to update your domain name record with the InterNIC whenever you change name servers, corporate information, or contact information. (You may wonder why you'd ever want to change name servers. Because Internet service providers run most name servers, you're likely to need to change name servers if you ever change Internet service providers.)



To minimize your amount of downtime in making such server changes, coordinate the change in your name server carefully between your existing name service provider and the new name service provider.

You're unlikely to need to change information very often, but if you do, you must make all changes to your domain name record by using a template similar to the one you use to register your domain name.

Registering a US domain

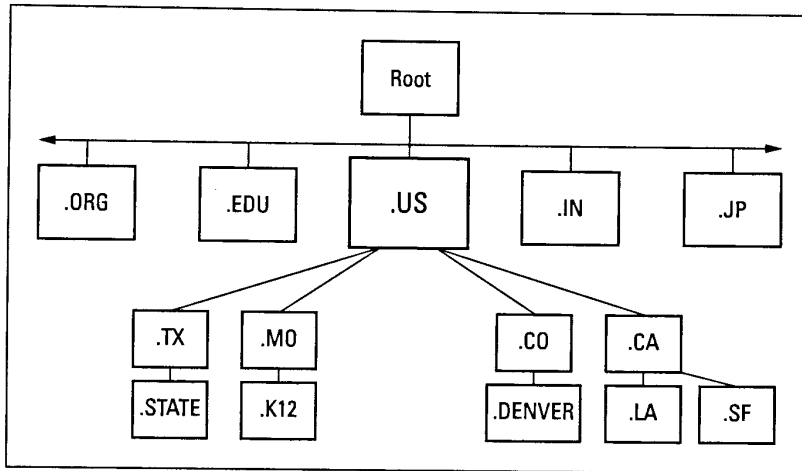
The .US Domain Registry administers the .US Domain Registration Services at the Information Sciences Institute of the University of Southern California (USC), under the Internet Assigned Numbers Authority (IANA). You can find its Web site at the following URL:

<http://www.isi.edu/in-notes/usdnr/>

The US domain is a top-level domain the same as that of any other country domain in the InterNIC registry. Using the US domain is a little different than using a COM or an ORG domain. The US domain uses second- and third-level domains. The last row of Table 3-1, earlier in this chapter, shows an example of a second-level domain that the US domain uses. Second-level domains consist primarily of two-letter state labels, such as TX for Texas or CA for California. In addition to states, the second-level domain can be FED, STATE, K12, LIB, CC, TEC, GEN, DST, COG, MUS, ISA, and NSN. Figure 3-2 illustrates part of the US domain hierarchy.

The third-level domain specifies a specific locality. IBM, for example, maintains offices all across the United States. You can easily determine which office uses which domain name by its second- and third-level domains. IBM.Armonk.NY.US, for example, could be the domain name for the IBM Armonk, New York, office. The locality can also be the name of a county or a city. If a domain name uses a county name, a fourth-level domain label, CO, precedes the county name. The label CI precedes city names. CO.SanDiego.CA.US is an example of a possible county domain name.

Figure 3-2:
The US
domain is a
top-level
domain with
several
domain
levels
beneath it.



All domain names must be unique, because every domain name eventually points to a single IP address. Every computer connected to the Internet has at least one unique IP address.

Applying for a US domain name

You can request a template for applying for a US domain by sending an e-mail request to the US Domain Registrar at the following address: `us-domain@isi.edu`. You're likely also to be applying for a domain name within a specific locality, also known as a *delegated branch*. You need to look up the delegated branch contact information by pointing your Web browser to the following URL:

<http://www.isi.edu/in-notes/us-domain-delegated.txt>

This Web page contains contact information for every single delegated branch in existence. If you apply for a location that's not currently delegated, you can fill in the Web page form found at the following address:

<http://www.isi.edu/cgi-bin/usdomreg/template.pl>

You can also find a text version of the template on the US domain's home page.

Currently, the US domain administrator charges no fee for delegating a locality or other branch of the US domain at that level.

Paying for a US domain name

The delegated branch managers determine the amount of the registration fee. Most of them currently do not charge for this service. If the branch in which you're interested does charge, the fee is usually nominal. Regulations don't prohibit a branch manager from charging a fee — requiring only that the fee is fair and applies equally to all customers.

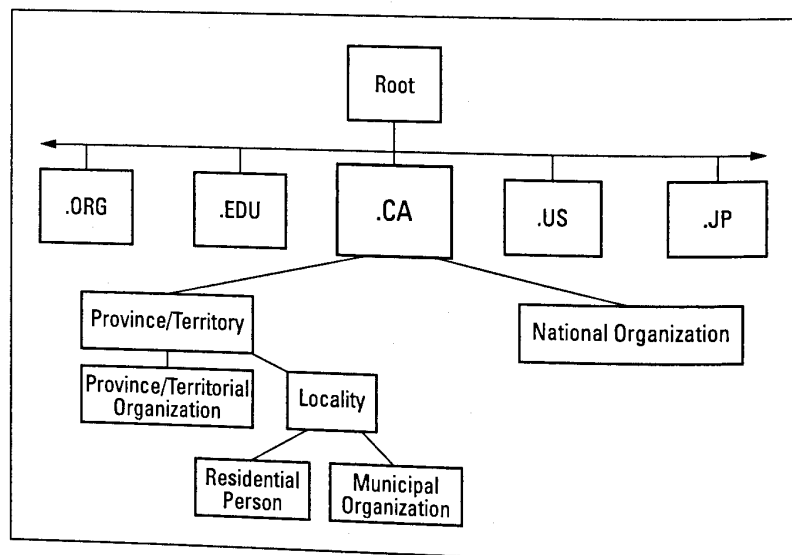
If you apply for a locality-level domain, you may be relieved to know that the US domain registrar does not currently charge a fee for its services.

Registering a Canadian domain name

CA is the two-letter country code for Canada. The .CA Domain Committee and the University of British Columbia administer the CA domain. The process for applying for a domain name in Canada is a little different than applying through the InterNIC or the US domain registrar.

The structure of the CA domain is similar to the that of US domain. Figure 3-3 shows the CA domain as a top-level domain, with all the other domain levels beneath it.

Figure 3-3:
Canada's
CA domain
structure is
similar to
that of the
US domain.



Applying for a CA domain name

When applying for a CA domain name, make sure that the domain name you want to register is available. The .CA Domain Registrar maintains a list of domain names in Gopherspace. (Gopher is an Internet information-publishing system similar to the WWW.) Contact the following URL in your Web browser to search the list of domain names already in use:

```
gopher://nstrn.ns.ca:7006/7
```

In applying for a Canadian domain name, you work with a member of the domain committee who helps you with your application. The committee member then checks the application by submitting it to the following URL:

```
mailto:ca-domain-checker@relay.cdnnet.ca
```

A syntax checker looks for errors in the application. After the application is error free, it's sent along to the committee for approval.

The committee takes about a week to either approve or deny an application and may contact the applicant for further information. On approval of the application, the registry registers the domain name and the committee notifies the applicant.

The application template is located at the following URL:

```
http://www.canet.ca/canet/templates/ca-  
domain.application.template
```

The template appears with sample registration information. You simply replace the sample information with your own. Complete instructions for completing this template are online at the following URL:

```
http://www.cdnnet.ca/
```

Contacting the .CA Domain Registrar

For information regarding an application for a Canadian domain name, you can contact the .CA Domain Registrar at the following postal or e-mail address or the listed phone or fax number:

Department of Computer Science
University of British Columbia
Vancouver, BC, Canada V6T 1Z4
Tel: +1 604-822-6724
Fax: +1 604-822-5485
E-mail: ca-registrar@cdnnet.ca

Registering domain names around the world

In most countries of the world, domain registrars are available to accept your domain name registration. Some smaller countries work directly through the InterNIC or one of the larger European domain registrars.

RIPE (Réseaux IP Européens) is a European organization dedicated to the administration and technical coordination necessary for a European IP network. The organization's home page URL is as follows:

<http://www.ripe.net/>

The RIPE Network Coordination Centre has utilities for searching the RIPE domain name database. The organization offers a Web-based Whois utility as well as an interface to WAIS (Wide Area Information Service). The RIPE Network Coordination Centre does not register domain names. You must apply with the particular country's domain registrar. Table 3-2 lists contact information for many of the countries of the world.

Table 3-2 Domain Registrar Contact Information	
Country	Contact Information
AT — AUSTRIA	mailto:domain-admin@univie.ac.at
BE — BELGIUM	http://www.dns.be
BG — BULGARIA	http://www.digsys.bg/bg-nic/
CZ — CZECH REPUBLIC	mailto:ors@eunet.cz
DK — DENMARK	http://www.nic.dk/
FO — FAROE ISLANDS	http://www.nic.fo/
FR — FRANCE	http://www.nic.fr/
GA — GABON	mailto:dfk@ripe.net
DE — GERMANY	mailto:dolderer@nic.de
GR — GREECE	mailto:pr@forthnet.gr
GL — GREENLAND	http://www.nic.gl/
HU — HUNGARY	mailto:hostmaster@nic.hu
IS — ICELAND	mailto:hjons@isnet.is
IE — IRELAND	mailto:hostmaster@ucd.ie
IL — ISRAEL	http://www.isoc.org.il/

Country	Contact Information
IT — ITALY	http://www.nis.garr.it/netdoc/TLD-RA/
JO — JORDAN	http://www.nic.gov.jo/
LV — LATVIA	http://www.nic.lv
LI — LIECHTENSTEIN	mailto:huber@switch.ch
LT — LITHUANIA	mailto:daiva@sc-uni.ktu.lt
LU — LUXEMBOURG	http://www.dns.lu/
MD — MOLDOVA	mailto:domain-admin@roearn.ici.ro
MC — MONACO	mailto:noc@rain.fr
NL — NETHERLANDS	mailto:hostmaster@cw.nl
NO — NORWAY	mailto:hostmaster@uninett.no
PL — POLAND	http://www.nask.pl/
PT — PORTUGAL	http://ww.dns.pt/dns/
RO — ROMANIA	http://www.rnc.ro/
RU — RUSSIAN FEDERATION	http://www.ripn.net/
SM — SAN MARINO	mailto:lvianello@intelcom.sm
SK — SLOVAKIA (Slovak Republic)	http://www.eunet.sk/sk-nic/
ES — SPAIN	http://www.nic.es/whois
SE — SWEDEN	mailto:ber@sunet.se
CH — SWITZERLAND	mailto:schneider@switch.ch
TN — TUNISIA	mailto:hostmaster@Tunisia.EU.net
TR — TURKEY	mailto:hostmaster@knidos. cc.metu.edu.tr
YU — YUGOSLAVIA	http://ubbg.etf.bg.ac.yu/yu-tld/

Setting Up a DNS Server

As we mention in the section “The Domain Name System in a Nutshell” earlier in the chapter, most organizations depend on their Internet service providers to maintain a DNS server and provide domain name service to the organization. Some advantages to running your own DNS server do exist, however. The two main reasons to do so are for greater flexibility and lower cost.

If you are not going to set up your own complete, independent network with high-speed lines, routers and the like, you can skip this section.

Running your own DNS server enables you to maintain complete control over your domain names. This situation is known as *managing your domain name space* or, more commonly, as *managing a zone*. When you're ready to register a domain name, you can quickly add the domain name to your DNS server (which you must do before registration). This way, you can avoid the hassle and wait of having your ISP add a domain name to its own DNS server. But with a halfway decent ISP, the wait shouldn't be over 24 hours. Unless you're routinely in a tremendous hurry, this is fast enough.

Most ISPs charge a monthly fee for managing a domain name (even though the word *managing* is a bit of an overstatement). The ISP performs no additional work on a monthly basis to maintain a domain name in its DNS database; once the name is in there, it's in there. The only time they have to do anything about it is if you change to another ISP. Ironically, this is the one time they won't charge you. Many ISPs charge per domain name. If your organization maintains several domain names, monthly fees can become costly. Maintaining your own DNS server enables you to avoid any additional charges beyond possible annual fees to a domain name registrar such as the InterNIC.

What is a DNS server?

The first section of this chapter, "The Domain Name System in a Nutshell," gives you a detailed overview of what a domain name is and how name servers work to map domain names to IP addresses. The heart of the DNS service is the *DNS server*, or simply the *name server*.

Name servers are specialized databases of zone information. Name server databases contain records, known as *resource records*, that specify many different types of domain information. Table 3-3 lists most currently used resource record types and a brief description of each one.

Table 3-3 Resource Record Types	
Record Type	Description
AA host	Address.
AFSDB	Special name service specifier for the Andrew File System.
CNAME	Canonical name for an alias.
HINFO	Text string specifying the operating system and CPU type for a particular domain name.

Record Type	Description
ISDN	Direct dial-in ISDN number for a given domain name.
MB	Mailbox domain name.
MG	Member of a mail group.
MINFO	Domain name specifying a mailbox responsible for a mailing list and a mailbox responsible for receiving error messages.
MR	Domain name that specifies the new name of a renamed mailbox.
MX	Domain name of a host serving as a mail exchange.
NS	Domain name of the authoritative name server.
NULL	Null resource record. (Nothing is in this record.)
PTR	Pointer domain name. PTR points to some domain name within the domain name space.
RP	Domain name that specifies the mailbox of a responsible person. You can also query related TXT records by specifying the domain containing the TXT resource records.
RT	Intermediate domain names to reach a host, with an integer specifying the priority.
SOA	Start of Authority record, which is a complex record specifying the server name of the data source for this zone, the mailbox of the person responsible for the zone, the version number of this copy of the zone information, the refresh rate, retry rate, expiration date, and the minimum Time to Live (TTL).
TXT	Text comment.
WKS	Address of a Well-Known Service.
X.25	PSDN (Public Switched Data Network) address.

Other databases share the information of a zone database. This sharing of information is what makes the DNS system distributed. One DNS server shares its zone information with every other DNS server. The capability of a DNS server to query another's zone database determines the method the databases and servers use in sharing this information. You can see from Table 3-3 that a DNS server's database can contain all types of information, including other name servers, names of persons responsible for the databases, mail exchangers, and, of course, the IP addresses of hosts within the server's domain space (zone).

Configuring a DNS server

If you use Windows NT Server, you can access a DNS server that's already installed in your operating system. To do so, click the Start button and choose **Programs**⇨**Administrative Tools (Common)**⇨**DNS Manager** from the menus that appear. This sequence starts the Domain Name Service Manager (DNS Manager), as shown in Figure 3-4.

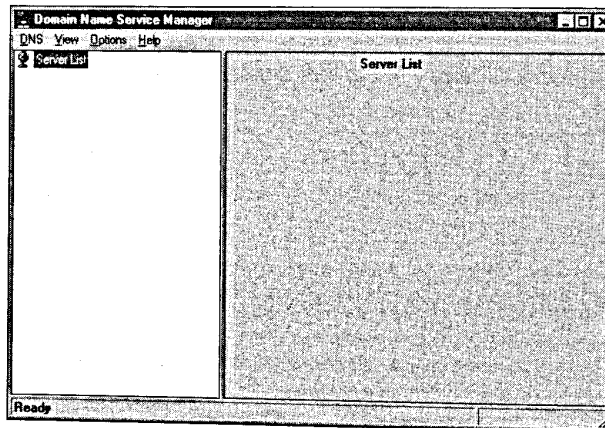


Figure 3-4:
You use
the DNS
Manager to
configure
the name
server.

In the DNS Manager, choose **DNS**⇨**New Server** from the menu bar to open the Add DNS Server dialog box. Then enter the Name or IP address of the DNS server in the appropriate text box in this dialog box. Click OK.



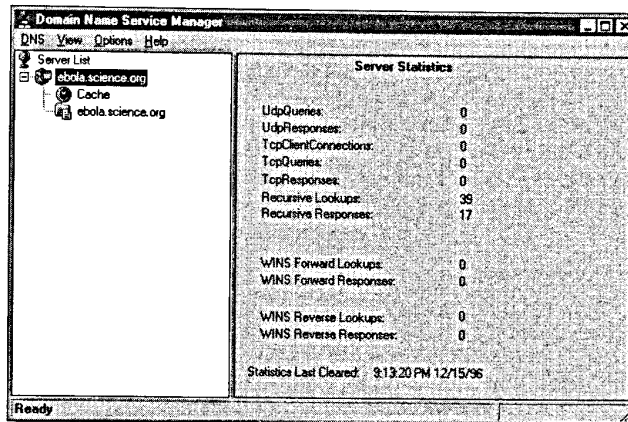
If you see an icon with a red X through it in the Domain Name Service Manager Window, the DNS Manager was unable to connect to the DNS service on the server you specified. You can delete a server that you may have entered incorrectly by right-clicking the icon and choosing **Delete** from the pop-up menu that appears.

After the DNS Manager connects to your DNS server, statistics information appears in the list box on the right side of the Manager window (see Figure 3-5). At this point, you can begin setting the properties for your name server. To do so, choose **DNS**⇨**Properties** from the Manager's menu bar. You see the IP address of the name server in the Server Properties dialog box. To set the DNS server's properties, follow these steps:

1. In the Server Properties dialog box, select the **Interfaces** tab.
2. Type the IP address of the name server you're adding in the text box.
3. Click the **Add** button.

The new IP address appears in a list in the DNS Manager Window.

Figure 3-5:
The DNS
Manager
displays
name
server
statistics.



Adding a zone

Two types of zones are possible: *primary* and *secondary*. (Remember that a *zone* is the domain space for which a server is responsible.) If a name server has primary responsibility for a zone, that server is a *primary name server* (or *authoritative name server*).

Each zone also has at least one secondary name server that acts as a backup to the primary server. The secondary name server periodically queries the primary name server for the most current zone information. In the event that other name servers can't reach the primary name server, these servers query the secondary name server, which they expect to have the most current information. Companies running their own primary DNS servers commonly have their ISP provide secondary name service.

To add a zone for your DNS server to manage, follow these steps:

1. Choose **DNS→New Zone** from the menu bar.
2. Select either **Primary** or **Secondary**, depending on the type of zone you're setting up.

If you select **Secondary**, you need to add both the Zone name and Server domain name. (The following instructions are for setting up a **Primary** zone.)

3. Click the **Next** button.
4. Type the name of your new zone in the **Zone Name** text box (see Figure 3-6).

The Zone name is the name of the domain. The name of our domain, for example, is `science.org`.

The future of DNS

Competing technologies to DNS do exist. Competition is good, however, because it drives stagnant systems to change and grow. What some of the competing technologies offer that is currently lacking in DNS are dynamic update capability, the capability for DNS to update itself whenever domains change, and security, where authentication enables DNS servers to be certain from whom they're receiving information.

Currently, Internet drafts are circulating that propose new standards for DNS, including a

dynamic update capability. Such capability would enable domain name servers to dynamically insert and delete resource records. Because this capability brings with it a possible security hole, however, another draft proposes a way to make these updates secure by using digital signature technology. Another proposal suggests that the DNS system is an ideal vehicle for managing personal public keys across the Internet.

Note: Pressing the Tab key takes you to the Zone File text box, which the program automatically fills in for you. We recommend that you accept the default value.

Figure 3-6:
The DNS
Manager
automatically
creates the
zone
filename
from the
Zone Name
information.

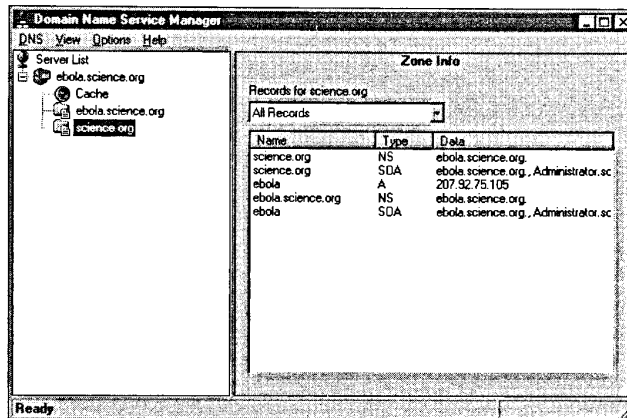
5. Click the Next button.

Another dialog box appears, explaining that you've entered all the zone information.

6. Click the Finish button.

The DNS Administrator automatically enters all the basic resource records into the zone database. After finishing the last step in creating a new zone, the basic zone information appears on-screen for you. In Figure 3-7, you can see that three types of resource records are entered: the *start of authority* (SOA), *name server* (NS), and *address* (A) records.

Figure 3-7:
The DNS
Manager's
Zone Info
display lists
all the
resource
records.



You can continue updating your zone information by adding new domains, hosts, and records. Choose the corresponding menu command from the DNS menu. Enter any information for which the program prompts you. The DNS Manager tests each of your entries to see whether it's valid. An invalid entry, however, doesn't prevent the DNS Manager from accepting the record. Instead, you receive an error message if the DNS Manager doesn't think you entered a valid value. As you enter new records, the Manager also prompts you for the resource record type. You want to refer to Table 3-3 for these record types whenever you add new records.

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Chapter 5

Creating Web Pages

In This Chapter

- ▶ Building an HTML page
- ▶ Controlling text
- ▶ Adding images
- ▶ Linking to the world
- ▶ Using page-generation programs

The heart of the World Wide Web is HTML, which is short for *HyperText Markup Language*. HTML is pretty simple when compared to other computer languages, but it's also remarkably flexible and powerful. You can pick up the basics and start creating Web pages the same day you start looking at HTML. But if you want to really go nuts over HTML, you can also spend eternity exploring all its little nooks and crannies. HTML is constantly undergoing improvement, so there's really no end to it. You could easily make a career out of HTML. Lots of people have.

Although you can create Web pages with programs that can generate HTML pages for you, you'd be cheating yourself if you took that path, at least to begin with. True, such programs take away the need to figure out HTML itself and enable you to concentrate on style and content for each page, but these programs take as much time and effort to master as HTML does. And when you're finished, all you know is how to use one proprietary program. If you put the same amount of effort into working with HTML, you know the Web itself.

All you need to make an HTML page is any old text editor. You can use one of the specialized text editors designed for HTML development (such as HomeSite), which have such niceties as a fancy word processor or colored text to help you differentiate between tags and content. If you use a word processor, however, make sure you save the file as plain text.

Your Web pages have to go on a computer called a *Web server* that is connected to the Internet before anyone aside from you can see them. You can either set up your own HTTP server on your personal computer or subscribe to a World Wide Web publishing service on the Internet, either the Internet service provider (ISP) you use for your own Net access or a virtual server supplier (see Chapter 4). You enjoy no obvious advantage in setting up your own HTTP server on your personal computer, aside from the fact that you avoid paying modest fees to a World Wide Web service provider. Even this advantage will be more than offset, however, by the cost of the dedicated Internet connection that you need if you want your HTTP server to be accessible to other users at all times.



Keep in mind also that the World Wide Web is evolving rapidly; standards are changing, and developers are creating new technologies all the time (to enable you, for example, to conduct true electronic financial transactions by using the World Wide Web). If you set up your own HTTP server, you will need to keep up with these changes and continue to update your HTTP server software or buy add-ons to take advantage of these new technologies. On the other hand, if you're using a Web-publishing service provider, the provider should do all these things for you; if it doesn't, you should change service providers.

Whether you set up your own HTTP server or subscribe to a service provider, you need to create at least one HTML document to publish on the World Wide Web before you consider other options for expanding your presence on the Web. The following sections explain how to create content for your Web site and then send that content to a Web server via the network.

This chapter covers only the basics of HTML. For a more complete experience, seek out *Creating Web Pages For Dummies*, 3rd Edition, by Bud Smith and Arthur Bebak (published by IDG Books Worldwide, Inc.), available at finer bookstores everywhere.

Tag, You're It

An HTML document is pretty much like a plain text document, except it has tags embedded in it that control its appearance. *Tags* are simply commands that tell a Web browser what the page should look like. Most of them are easy to use and intuitive. For instance, if you want text to be italicized, you put it between `<I>` and `</I>` tags. If you want text to be in bold print, you put it between `<B>` and `</B>` tags. The first tag is called the *start tag* and the second one is called the *end tag*. As you've probably guessed, they tell the Web browser where the effect starts and where it ends. End tags are always the same as the start tag, but have that little slash (/) so that the Web browser can tell the difference. And you'll find plenty more tags where those

came from. Tags for laying out the page structure. Tags for adding images and tables and colors. Tags for doing just about anything. We'll go into more detail — including some exceptions — later.



In a rare case of comprehensible technical lingo, tags are said to *contain* the material between them, and that material, you'll be happy to know, is called the *contents*. The various parts of a Web page are often referred to as elements. An *element* is everything from the start tag to the end tag, including the tags themselves.

Everything in a Web page is inside something else, and that means it's between a pair of tags. The first tag you'll run into on a typical Web page is `<HTML>`. That tells the Web browser that it is encountering a Web page. Because this tag has to define where the page begins and ends, there's also an end tag, which is `</HTML>`.



You may notice that some Web pages start with the `<!DOCTYPE>` tag, but it's not necessary, and its use, which is supposed to clarify things, can actually lead to all sorts of problems. It tells the Web browser exactly what version of HTML the page is written in, but the browsers themselves can already handle just about anything without this tag. If you do use it, you must keep very careful track of every detail of your Web page and be sure to change the document type if you decide to use an element that is not included in the version you previously specified. If you really want to delve into the mysteries of document types, check out the World Wide Web Consortium's official documentation at <http://www.w3.org/TR/PR-html40/struct/global.html>.

Okay, so now you've defined an HTML page, but it has nothing in it. You have to add a head and a body — honest. (Sounds a bit like playing Dr. Frankenstein.) The head contains a bunch of stuff that doesn't ever show up on your Web page when someone views it, and the body is where you put all the material that *does* show up, such as text and images. The head of the document lies between the `<HEAD>` and `</HEAD>` tags, and the body lies between `<BODY>` and `</BODY>`.

The Web page code so far looks like this:

```
<HTML>

<HEAD>
</HEAD>

<BODY>
</BODY>

</HTML>
```

At a minimum, you have to put a title for your page in the head. The title will show up at the top of a Web browser when someone looks at your page, and it's what your Web page will be called when it's picked up by a search engine. The title goes — you have it — between the `<TITLE>` and `</TITLE>` tags, as in the following example.

```
<HEAD>

<TITLE>
My Web Page
</TITLE>

</HEAD>
```

The other main thing to include in the head are keywords. *Keywords* are descriptive terms that apply to your Web page. You do this with — brace yourself — metadata. *Metadata* is basically a fancy way to say stuff that isn't really a part of the document but is information *about* the document. The tag for this one is `<META>` and it's one of those tags that doesn't have a matching end tag. That's because it doesn't have any content to put between two tags; all metadata is included within the start tag. You'll want to list as many descriptive terms as you can think of. The search engines will read this information and classify your Web page accordingly.



TIP

In the past, it was a good idea to list the same keyword over and over again so that the search engines will think your Web page has lots of content on a particular subject. This used to work, but search engines are wise to it now, and will not give any weight to multiple occurrences of a term in the keyword listings. They're far more interested in the keywords used than in the number of them.

This is how you put keywords in your Web page:

```
<META name="keywords" content="dachunds,leopards,clam
chowder,flying saucers">
```

Put together with the title segment, your head now looks like this:

```
<HEAD>

<TITLE>
My Web Page
</TITLE>

<META name="keywords" content="dachunds,leopards,clam
chowder,flying saucers">

</HEAD>
```

Playing traffic cop

You can pull a neat trick with the `<META>` tag. You can make someone go to another Web page automatically, which is very useful if you've changed addresses. To do this, you use the `http-equiv` command, which fools the Web browser into thinking it's received the information from the HTTP (Web) server itself. The following code, for example, will send the visitor to the LinkFinder Web site:

```
<META http-equiv="refresh"
      "content=5"; url="http://
      www.linkfinder.com/">
```

The *content* part tells the browser how many seconds to wait before redirecting itself. In this case, it's five seconds. If you wanted it to be any other number, you'd just put it in instead. The *url* part gives the Web address to switch to. Just replace the example URL with the one you want, and you — or they — are ready to go.

Just in case your visitors are using a Web browser that doesn't support `http-equiv`, you should also provide a regular link that they can click to proceed.

Bodybuilding

The *body* of a Web page is where all the stuff goes that people see. Text, images, tables, forms, you name it: It's in the body. But before we get to all those wonderful elements, you can do some pretty cool things with the `<BODY>` tag itself.

Background color

For starters, you can set the background color of your Web page and the colors of the text, too. You can also change the colors of hypertext links, but we advise against that because people are used to the standard ones.

To set the background color, you use the `bgcolor` attribute. (Attributes are the different settings you can make for the tags.) One factor that will have you tearing out your hair is that colors are specified using hexadecimal notation. Hexadecimal, or hex, notation is base 16, and it counts from 0 through F instead of 0 through 9, believe it or not. (And you'll feel like you've had a hex put on you if you try to understand it.)

Hexadecimal numbers look like `#FFD03A`. The `#` is not necessary; it announces that the number is hex, but nothing else looks like a hex number — unless your cat has been walking on your keyboard.

Fortunately, the people who make Web browsers have realized that normal people — not just math wizards — make Web pages too, so the companies

have built into the browsers the capability to recognize normal color names in plain English. So you can write `bgcolor = "red"` instead of `bgcolor = "#FF0000"`.



The colors are RGB triplets. That means that the six "digits" in the hex number break down into three pairs, the first pair for red, the second pair for green, and the third pair for blue. Thus, when you see `#FF0000`, think FF 00 00. Because F in hexadecimal is the same thing as 15 in decimal notation, FF is the same as $(15 \times 16^1) + (15 \times 16^0)$, which equals $(15 \times 16) + (15 \times 1)$, which equals 255. The reason `#FF0000` means red is because it says to use full red, no green, and no blue. If you used `#00FF00` instead, you'd be saying to use no red, full green, and no blue. And, finally, `#0000FF` is no red, no green, full blue. Black is `#000000`, the total absence of all the colors, and white is `#FFFFFF`, the full presence of all the colors. By using various combinations of red, green, and blue — remember, you have 256 shades (from 00 through FF) of each to mix — you can create just about any color imaginable.

Microsoft Internet Explorer used to support only 16 named colors, while Netscape Navigator supported a whole lot more. But Microsoft has caught up and the following full set of named colors is now supported by both:

aliceblue, antiquewhite, aqua, aquamarine, azure, beige, bisque, black, blanchedalmond, blue, blueviolet, brown, burlywood, cadetblue, chartreuse, chocolate, coral, cornflowerblue, cornsilk, crimson, cyan, darkblue, darkcyan, darkgoldenrod, darkgray, darkgreen, darkkhaki, darkmagenta, darkolivegreen, darkorange, darkorchid, darkred, darksalmon, darkseagreen, darkslateblue, darkslategray, darkturquoise, darkviolet, deeppink, deepskyblue, dimgray, dodgerblue, firebrick, floralwhite, forestgreen, fuchsia, gainsboro, ghostwhite, gold, goldenrod, gray, green, greenyellow, honeydew, hotpink, indianred, indigo, ivory, khaki, lavender, lavenderblush, lawngreen, lemonchiffon, lightblue, lightcoral, lightcyan, lightgoldenrodyellow, lightgreen, lightgrey, lightpink, lightsalmon, lightseagreen, lightskyblue, lightslategray, lightsteelblue, lightyellow, lime, limegreen, linen, magenta, maroon, mediumaquamarine, mediumblue, mediumorchid, mediumpurple, mediumseagreen, mediumslateblue, mediumspringgreen, mediumturquoise, mediumvioletred, midnightblue, mintcream, mistyrose, moccasin, navajowhite, navy, oldlace, olive, olivedrab, orange, orangered, orchid, palegoldenrod, palegreen, paleturquoise, palevioletred, papayawhip, peachpuff, peru, pink, plum, powderblue, purple, red, rosybrown, royalblue, saddlebrown, salmon, sandybrown, seagreen, seashell, sienna, silver, skyblue, slateblue, slategray, snow, springgreen, steelblue, tan, teal, thistle, tomato, turquoise, violet, wheat, white, whitesmoke, yellow, yellowgreen

Instead of bothering with hex numbers, simply use any of these names — one is bound to suit you. To set the background color to ivory, for example, type the following:

```
<BODY bgcolor="ivory">
```

It's usually a good idea to choose a color for your background that contrasts strongly with the other page elements so that the text doesn't fade into the background and make your page unreadable.

Background images

If you want to get fancy, you can use a picture instead of a solid color for the background. You use the `<BODY>` tag, but the attribute this time is `background`. Then you simply indicate what file you want to use for the background image, like this:

```
<BODY background="image.gif">
```

You need to replace the name of the file in the example with the name of the one you want to use. If the file is not in the same directory as the Web page, you also need to include the necessary information for locating it. For instance, if all your images are in a subdirectory named `pictures`, you write the code like this:

```
<BODY background="pictures/image.gif">
```

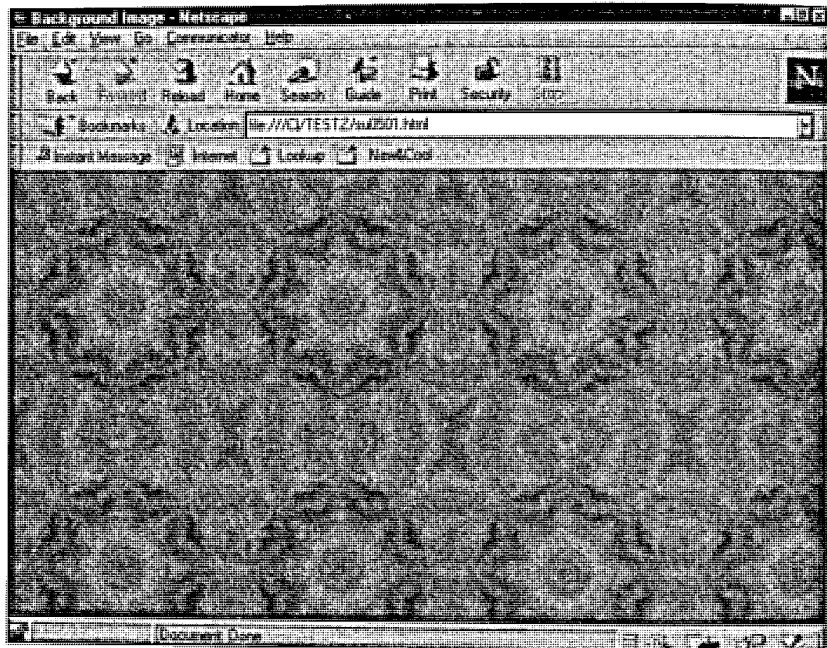
The image will be *tiled*, which means that it will repeat across your page from border to border. Because it's a background image, everything else on your page will seem to lie on top of it, as shown in Figure 5-1. You should be as careful with the background image as with the background color, and for the same reason: You don't want to end up with a page that's unreadable.

Text color

The color of text on a Web page is black by default, but you can change that if you want to. Setting the text color works just like the background color, except you use the `text` attribute. For example, if you want to change the default text color from black to blue, just set the following in the `<BODY>` tag:

```
<BODY text="blue">
```

Figure 5-1:
A Web
page with a
background
image.



Laying it on thick

Finally, it's important to realize that you can combine any or all attributes in a single `<BODY>` tag:

```
<BODY bgcolor="ivory" background="image.gif" text="blue">
```

Getting the word out

With all the emphasis placed on Web graphics these days, you'd think that was all there was to the Web. The vast majority of the material on the Web, however, is text, so it's not too surprising that HTML has a lot of tags for controlling the appearance of text. You can use different levels of text control, depending on what you want to do.

You define paragraphs with the `<P>` tag and spacing between them with the `<BR>` tag. Any time you want to start a new paragraph, you need to insert a `<P>` tag. That tells Web browsers that they're supposed to drop down a line and start fresh. Here's an example; the results are shown in Figure 5-2:

```
<P>This is the first paragraph.  
<P>This is the second paragraph.
```

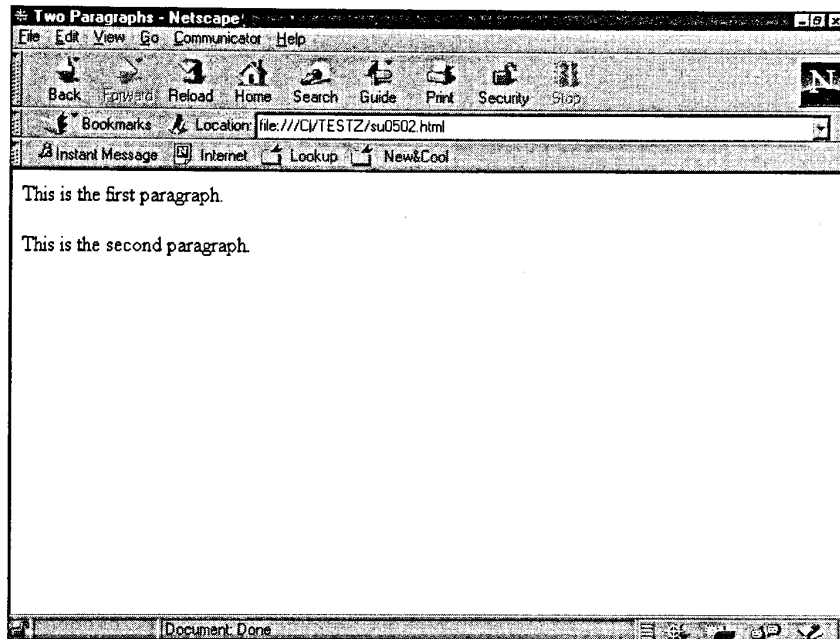


Figure 5-2:
Two
paragraphs.

You probably noticed that there's no `</P>` end tag on the paragraphs. You can insert the end tag if you want to, but it isn't necessary because the beginning of the next paragraph automatically signals the end of the first one.

If you want to put space between the paragraphs, use the `<BR>` tag. You might think that you could do something like the following, but it won't work:

```
<P>This is the first paragraph.  
<P>  
<P>This is the second paragraph.
```

That's because you aren't allowed to have an empty paragraph. If a paragraph has no content, Web browsers just ignore it. Well, okay, they're all *supposed* to, and you might get away with it for a single blank line if the browser's designers ignored the HTML specification. But the one thing for sure is that you can't stack `<P>` tags for vertical spacing as in the following example:

```
<P>This is the first paragraph.  
<P>  
<P>  
<P>  
<P>This is the second paragraph.
```

The correct way to do spacing between paragraphs is like this:

```
<P>This is the first paragraph.  
<BR>  
<P>This is the second paragraph.
```



Two types of elements are at work in page formatting. Anything that causes a break in the flow of the page contents, such as the `<BR>` tag, is a *block level* element. Anything that does not affect the flow, such as bold text, is an *inline* element. Technically, you don't need to use a `<P>` tag following a block level element because the effects are identical, but it's still good form to include it.

Text formatting

We already mentioned the `<B>` and `<I>` tags (for changing text to bold or italic form) in the opening to this section, and these tags are probably used most often. Text formatting tags can be sandwiched for multiple effects, too. The following code illustrates using both these tags individually and together; the results are shown in Figure 5-3:

```
<P>This text is <B>bold</B> and this is <I>italic.</I> This  
is <B><I>bold italic.</I></B> This is <I><B>bold  
italic,</B></I> too.
```

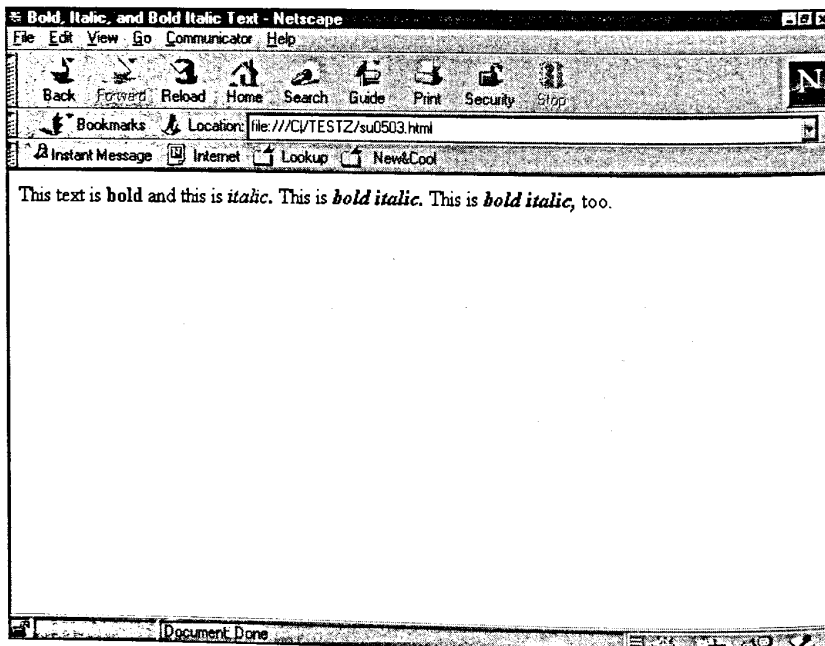


Figure 5-3:
Bold, italic,
and bold
italic text.

Notice how you sandwich, or nest, the code. As shown in the bold italic text in the example, you can start with `<B><I>` or `<I><B>`. Whichever approach you take, however, pay attention to the position of the end tags. Note that the first start tag and the first end tag don't match. The tags are nested, such that the last start tag matches the first end tag. In the first example, the italic part is enclosed within the bold part. In the second one, the bold part is enclosed within the italic part.

You can change the size of fonts, too. Several ways to do so are available, but one of the easiest is to use the `<BIG>` and `<SMALL>` tags. These tags respectively increase or decrease the size of the fonts. The following example shows how to use them; the results are shown in Figure 5-4:

```
<P>This text is normal size. <BIG>This is larger.</BIG>  
This is back to normal. <SMALL>This is  
smaller.</SMALL> And now back to normal again.
```

Notice that the effect, just like with bold or italic, is taking place only within the start and end tags. You can nest these tags, too. Of course, using something like `<BIG><SMALL>` would be silly because they'd cancel each other out. But you can, for example, double the size increase by stacking two `<BIG>` tags or double the decrease by nesting two `<SMALL>` tags. Here's how you'd do it; see Figure 5-4 for the results:

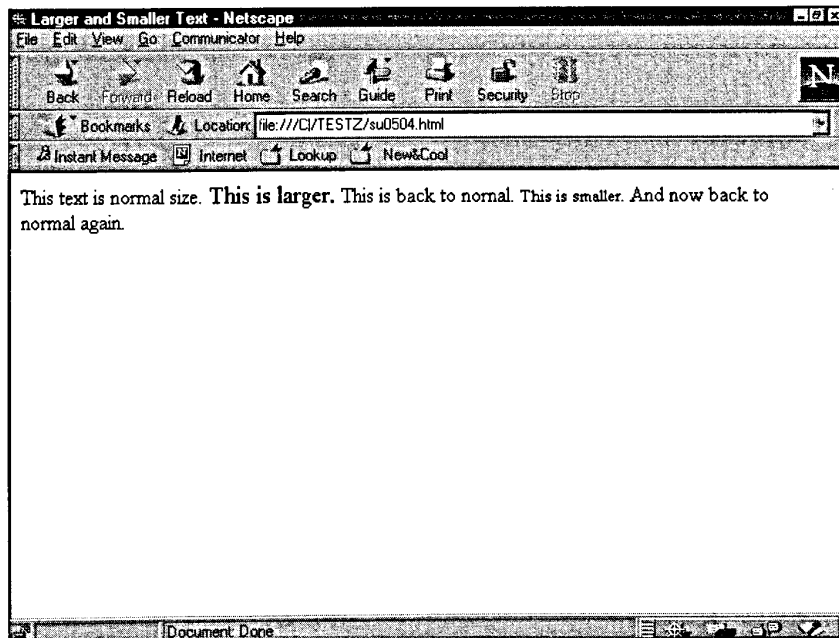


Figure 5-4:
Larger and
smaller text.

```
<P>This text is normal size. <BIG><BIG>This is much
larger.</BIG></BIG> This is back to normal.
<SMALL><SMALL>This is much smaller. </SMALL></
SMALL> And now back to normal again.
```

Text color, again

We showed you back in the beginning of this section how to set the color for the text on the entire page. Well, you can also control the text color of a short section of text using the `<FONT>` tag. A typical use of this tag looks like this:

```
<P>In this sentence, <FONT color="red">these words are in
red.</FONT>
```

In fact, this tag can allow you to set not only the font color, but also its style and size. You can specify the font face to be used with the `face` attribute, and the size with — you guessed it again — the `size` attribute. Let's take a look at the preceding example, but this time with the other attributes added:

```
<P>In this sentence, <FONT face="Arial,Helvetica,Swiss"
size="5" color="red">these words are in red.</
FONT>
```

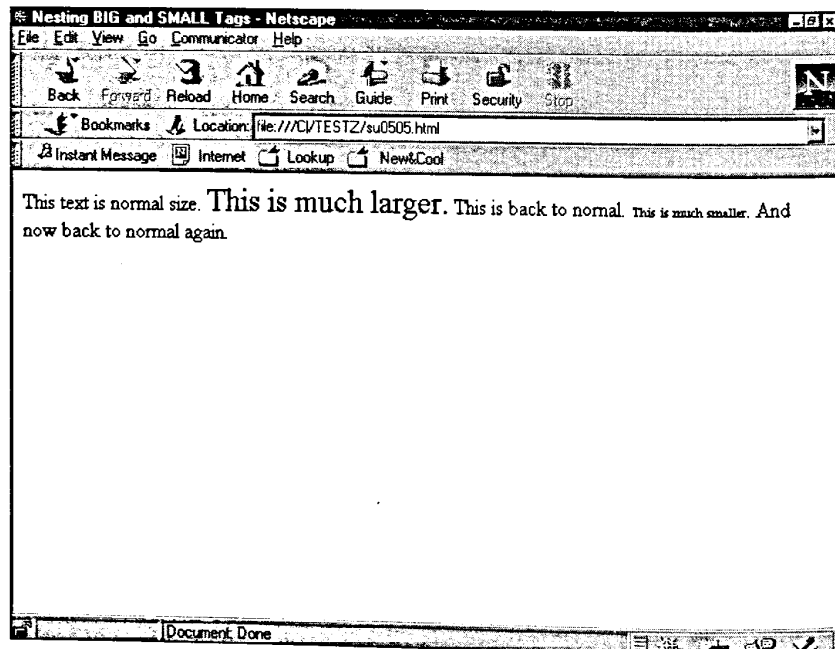


Figure 5-5:
Nesting two
`<BIG>`
tags and
two
`<SMALL>`
tags.

The reason we listed three separate font faces is because it's unlikely that everyone would have a particular one on their system. True, most Windows users will have Arial, but Mac users will have a similar font called Helvetica. By listing several different, but essentially identical, font faces, you increase the chances that visitors to your site will see what you intended them to see.

The size, set at 5, is just a bit larger than normal. Font size runs from 1 to 7; 1 is the smallest, 7 is the largest, and 4 is the normal size.

Image Is Everything

Although most of the Web is composed of text, you'll rarely find a Web page without any images. Pictures help inform, enlighten, and brighten the page. Adding an image to a Web page is simple. You just use the tag and, like the background image, indicate which file to use, as follows:

```
<IMG src="image.gif">
```

That's all there is to it. Well, mostly all. You should also include the width and height of the image so that the Web browser knows how much space to set aside for it. That way, the text that follows the image can be shown right away rather than after the image is loaded. You can find out how wide and high the image is by loading it into any graphics program, or you can just load it into a Web browser; Navigator, for example, displays the image's size at the top of the screen. After you have the numbers, you add them like this:

```
<IMG src="image.gif" width="100" height="80">
```

The Thigh Bone's Connected to the Knee Bone

Hypertext links are what make the Web a web. They're the strands that connect all the separate parts. To add a link, you use the <A> tag. A typical link looks like this:

```
<A href="http://www.coberlaw.com/">Cohen, Berke, Bernstein,  
Brodie & Kondell</A>
```

The href attribute, an abbreviation for hypertext reference, is the URL of the page you want to link to. (URL, which stands for Uniform Resource Locator, is the Web address of the page.) Everything between the start and end tags will show up on the screen in underlined, blue lettering, as shown in Figure 5-6.

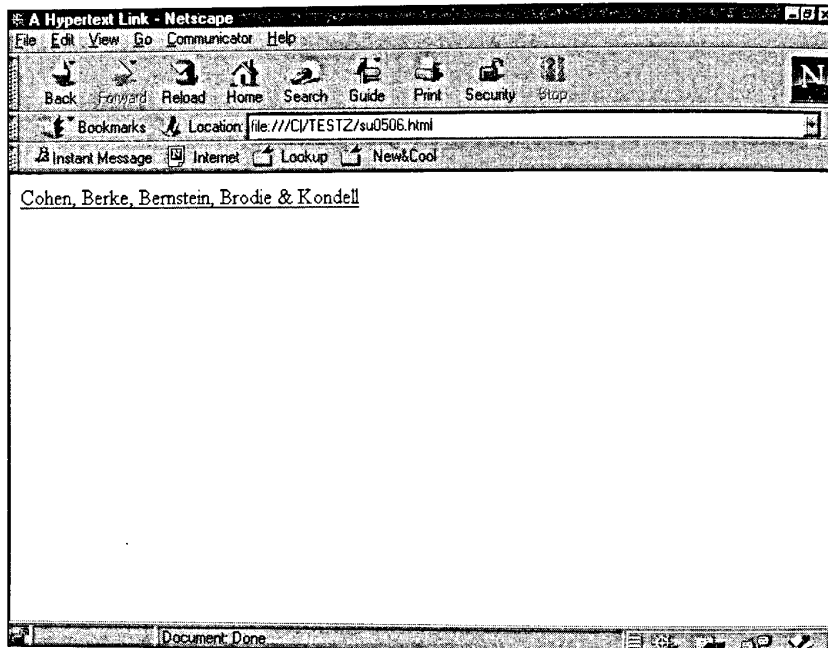


Figure 5-6:
A hypertext
link.

You can link not only to a Web page but also to any Internet resource. You could, for instance, link to an image or a program. The technique is the same: Include the URL of the resource. To link to an image, you simply change the example as follows:

```
<A href="image.gif">This is a picture.</A>
```

When visitors click that link, the image will be displayed in their Web browser.

You can do a lot more with HTML; we've only scratched the surface here. If you want to dig in, grab a copy of *Creating Web Pages For Dummies*, 3rd Edition, by Bud Smith and Arthur Bebak and *HTML 4 For Dummies* by Ed Tittel and Steve James (both published by IDG Books Worldwide, Inc.). In Chapter 6, we take a look at a bit more complex stuff, showing how to use frames, tables, forms, and image maps to help achieve the goals of your site.

Using Page-Generation Programs

If you're not intending to make a career out of site development and don't want to put in the kind of effort it takes to really master HTML, there's an easier way. As we mentioned in the beginning of this chapter, programs can

Either way, you end up in Composer as shown in Figure 5-8. The Web page is obviously blank, but it is not empty. Composer has already created the basic HTML coding of a Web page for you. To see this, choose **View**⇨**Page Source**. The results will look like Figure 5-9, except you will be listed as the author of your Web page.

As you add text, images, and other elements in Composer, the HTML code will continue to be automatically generated, enabling you to quickly create Web pages in a WYSIWYG (what you see is what you get) environment without having to perform any programming. If you've ever used a word processor, you'll be right at home with Composer.

To create the Web page shown in Figure 5-10, follow these steps:

1. On the first line, type **This is a heading.** and press the **Enter** key to move down to the next line.
2. On the second line, type **This is some text.** and press the **Enter** key to move down to the next line.

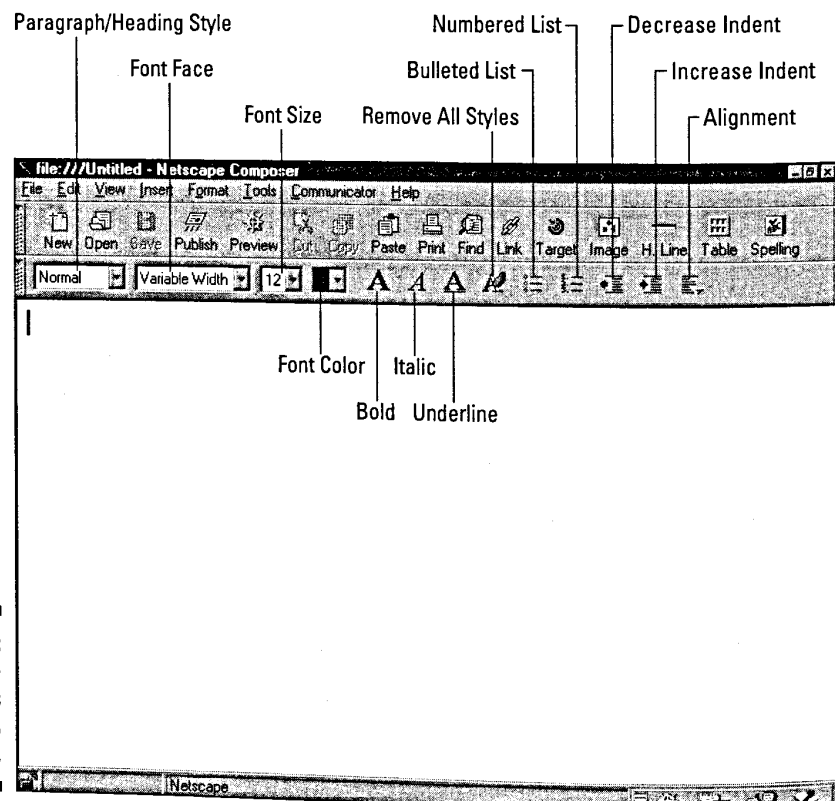
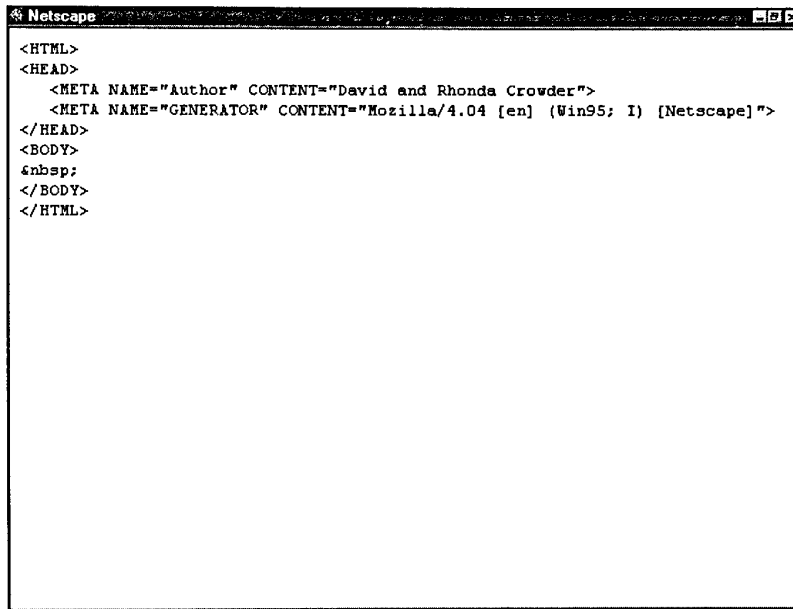


Figure 5-8:
Netscape
Composer's
main
screen.



```
<HTML>
<HEAD>
  <META NAME="Author" CONTENT="David and Rhonda Crowder">
  <META NAME="GENERATOR" CONTENT="Mozilla/4.04 [en] (Win95; I) [Netscape]">
</HEAD>
<BODY>
  &nbsp;
</BODY>
</HTML>
```

Figure 5-9:
HTML
source of
the blank
page.

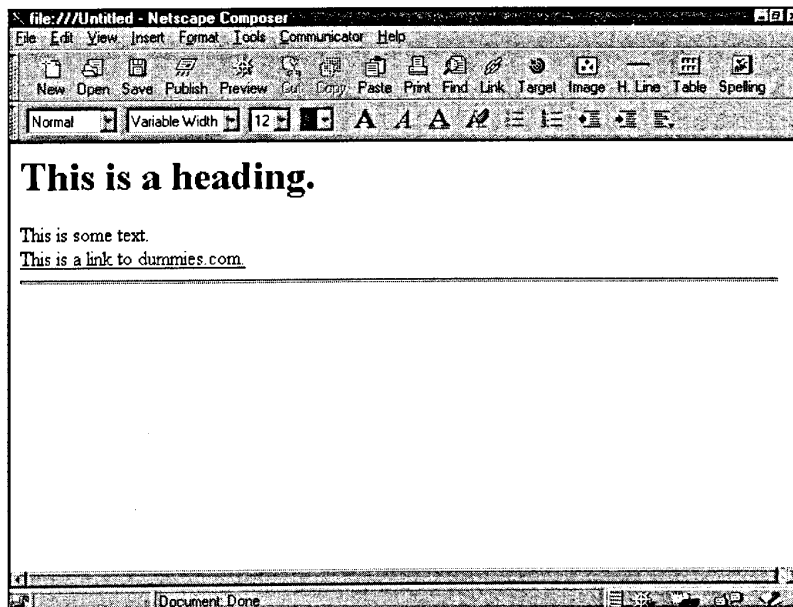


Figure 5-10:
Example
Web page.

3. Click the Link button in the toolbar.

The dialog box shown in Figure 5-11 appears.

4. Enter the text just like you see in Figure 5-10 (or feel free to substitute your own), and then click the OK button.

The link appears just as you typed it.

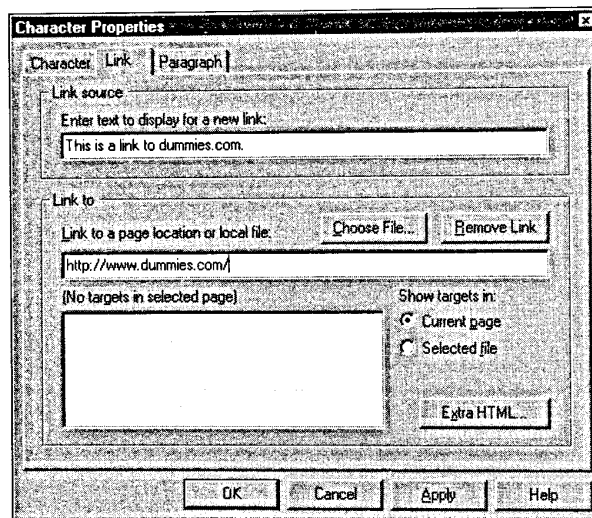


Figure 5-11:
Link dialog
box.

5. Click anywhere within the text on the first line, click the Paragraph/Heading Style drop-down list (labeled in Figure 5-8), and then select Heading 1 from the list.

6. If you want to save the results, click the Save button and give the file a name.

7. Click the OK button to finish.

In the space of a minute or two, you've created a fully functional Web page complete with heading, text, hyperlink, and horizontal line. And it's just as easy to add other elements such as images or tables.

If you don't even want to be bothered with that much work, Netscape makes it even easier with *templates* and *wizards*. These are handy little software assistants that automatically create a complete Web site or a specialized Web section within your site. To take advantage of them, just click the New button, and then click either the From Template button or the From Page Wizard button on the pop-up menu shown in Figure 5-12. You will be automatically connected to Netscape on the Web, where the wizards reside. All you have to do is follow the instructions. Figure 5-13 shows a typical wizard.

Figure 5-12:
The Create
New Page
menu.

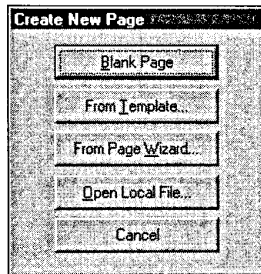
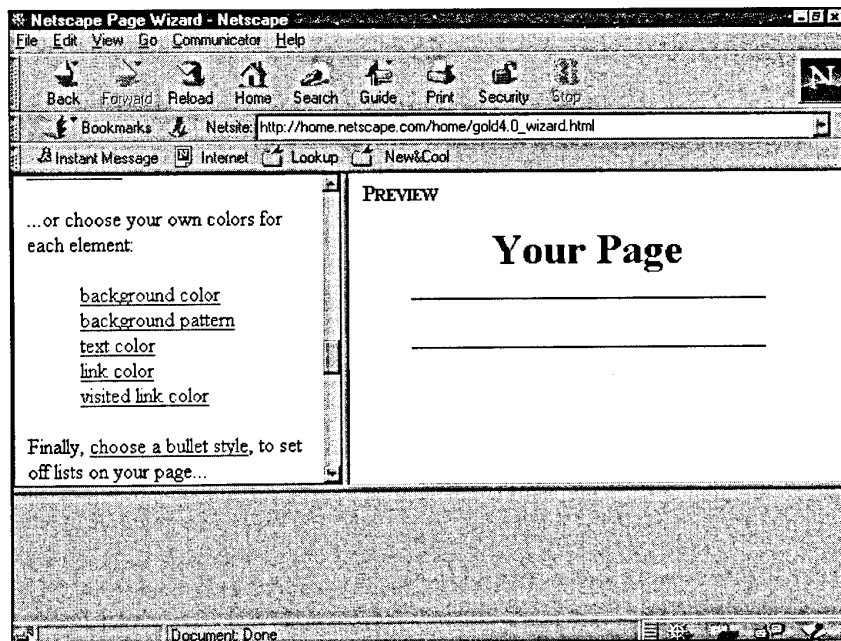


Figure 5-13:
An online
page
creation
wizard.

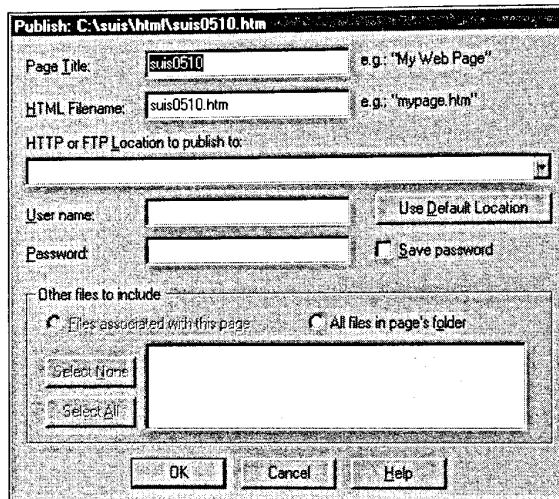


To publish your Web page, simply click Composer's Publish button to display the Publish dialog box, as shown in Figure 5-14. The page title and HTML filename are already filled in for you, but you can change them if you want. Type the Web address where you want to publish the page, fill in the User Name and Password text boxes, and click the OK button.



You must have access rights on the Web site where you are publishing the page. Unless you have a valid username and password, you cannot publish your page.

Figure 5-14:
The Publish
dialog box.



Using Microsoft FrontPage Express

Microsoft FrontPage Express, shown in Figure 5-15, works in much the same way as Netscape Composer. FrontPage Express really shines in its form creation capability and its *Webbots*, or *bots* (software robots that eliminate the need for Web programming). The following example combines these two features to show how easy it is to create the interactive form shown in Figure 5-16 with FrontPage Express.

1. To create the first line of the form, type First Name:, type a space, and then click the One Line Text Box button (labeled in Figure 5-15). Press Enter to move to the next line.
2. To create the second line of the form, type Last Name:, type a space, and then click the One Line Text Box button. Press Enter.
3. To create the third line of the form, click the Check Box button, type a space, and then type Check here if you want a subscription. Press Enter.
4. To create the fourth and final line of the form, click the Push Button button.
5. Right-click anywhere within the form.
The pop-up menu in Figure 5-17 appears.
6. Click Form Properties.
The Form Properties dialog box appears, as shown in Figure 5-18.

One Line Text Box

Check Box Push Button

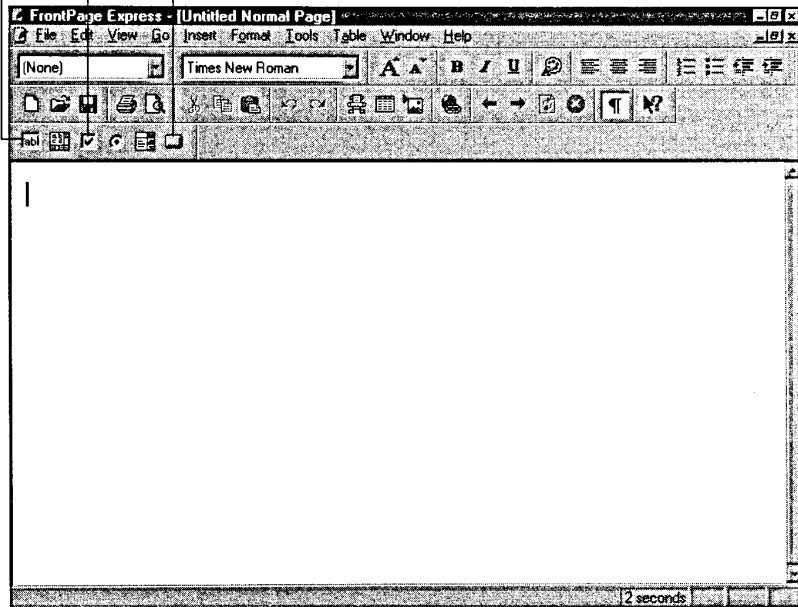


Figure 5-15:
FrontPage
Express.

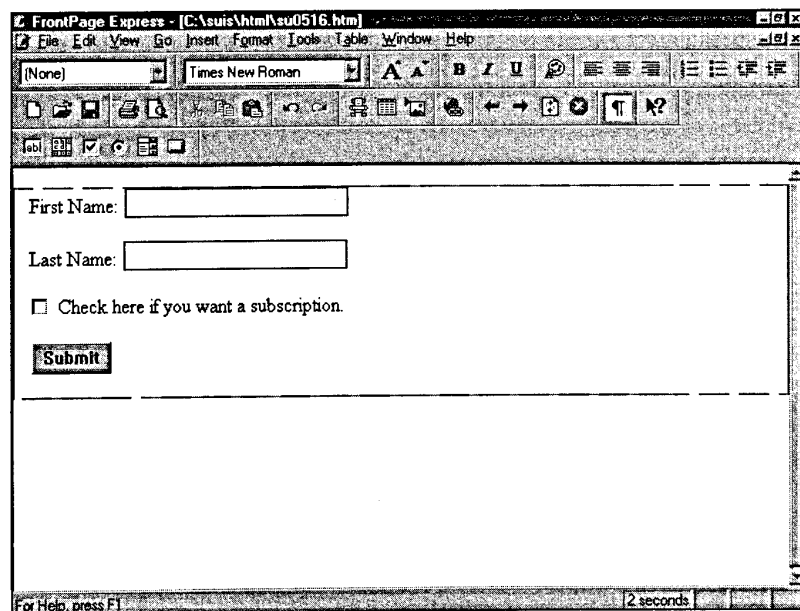


Figure 5-16:
An
interactive
form.

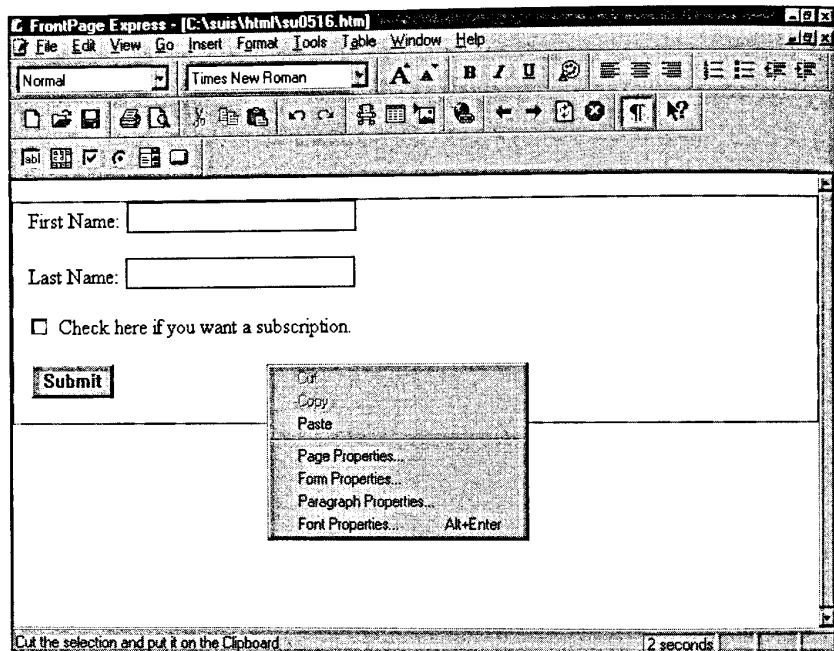


Figure 5-17:
The form
pop-up
menu.

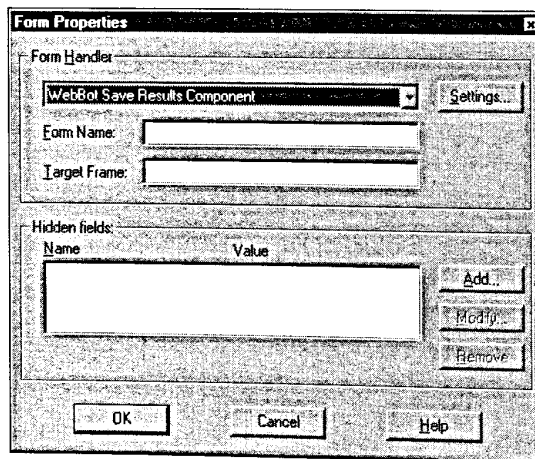


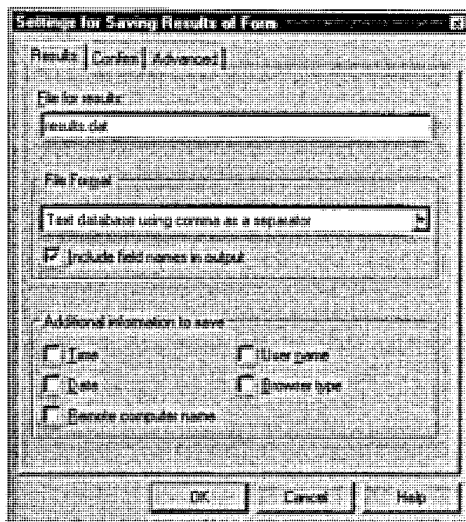
Figure 5-18:
The Form
Properties
dialog box.

7. Click the drop-down list box under **Form Handler** and scroll down until you find *Webbot Save Results Component*. Click it to select it.
8. In the **Form Name** text box, type a name for the form.

9. Click the Settings button.

The Settings for Saving Results of Form dialog box appears, as shown in Figure 5-19.

Figure 5-19:
The
Settings for
Saving
Results
of Form
dialog box.



10. In the File for Results text box, type the name of the file in which you want to record users' responses.

In this example, we called it *results.dat*.

11. Click the drop-down list box under File Format and scroll down until you find *Text Database Using Comma As A Separator*. Click it to select it, and then click the OK button.

You return to the Form Properties dialog box.

12. Click the OK button to complete the creation of the form.

There! In twelve easy steps, you've created an interactive form. Publish it to a Web server that supports FrontPage extensions and you're ready to go.



FrontPage has a major drawback. Many of its features are designed to work only with the Microsoft Internet Explorer Web browser, so approximately 70 percent of the people on the Web *won't be able to use your site*. Think long and hard before you commit to eliminating that many people from your audience.



Many, but not all, Web servers work with FrontPage server extensions. If you use an Internet service provider to host your Web site, you must ask the provider whether its Web server supports the Microsoft FrontPage server extensions before you begin. If you run your own Web server, check with Microsoft to find out whether FrontPage server extensions work with your server. Of course, FrontPage is designed to work with the Microsoft Personal Web Server that is included with it.

Unfortunately, FrontPage Express does not have Composer's capability to publish your work on the World Wide Web. You have to use another program such as an FTP client to do that. (The commercial version does have a Publish button.) See the section called "Publishing Files on Your Web Site."

The next step is to try to view your pages in a browser. The only way to know for certain that your Web site is accessible to Internet users is to try to contact it yourself by using a browser. If your Web site appears as you expect, other Web users probably can see everything, too. Don't assume, however, that everything works just because it works for you. Ask somebody else to try your site and report back to you.



Make sure to check your Web site using both Netscape's browser and Microsoft's browser, to see whether you inadvertently added any browser-specific elements.

Publishing Files on Your Web Site

After you finish creating the pages for your Web site, you must send the pages to the Web server so that other people can access your pages through a Web browser. You can send content to a Web server in several ways. Depending on the services that your Web-publishing service provider offers or the features that your Web server software provides, you may have a different set of options for getting your Web pages onto your Web server.

The simplest way to send content to your Web server is to copy the files to a folder on your computer's hard drive in a directory that your Web server is configured to look for HTML files. This method works only if you run your own Web server software on your computer. If you use a Macintosh and run the Personal WebSTAR server, you could also drag and drop files on the WebSTAR program icon to publish them. If you don't run a Web server program on your computer, you must send Web pages to a Web server over the network.

Putting files in your server's Web-page folder

We can't emphasize enough the importance of a clear understanding of this last step in publishing content through your Web site. For privacy reasons, other people on the Internet normally can't access the files on your computer's hard drive, but if you're running your own Web server, you must bear in mind that a Web server does give other people access to files on your computer's hard drive. The Web server doesn't give other people unlimited access to every file on your computer, however, because that arrangement would be insecure and would compromise your privacy. Instead, Web servers enable users to access only files in certain folders. If you want other people to be able to access a particular file through your Web server, you must place that file in one of the folders that your Web server enables users to access.

You could, for example, configure a Web server to use the following directory as the default (or *root*) Web-content folder:

```
C:\INETPUB\WWWROOT\
```

Any file or folder in the WWWROOT folder is now accessible to other people through the Web server. To publish a new Web-page HTML file through your Web server, you save the file and any associated graphics or other items in the WWWROOT folder or one of its subfolders. You could, for example, save a new Web-page HTML file in a folder named SAMPLES that's a subfolder in WWWROOT.

From your Web server, your new Web page is then available to anyone who uses a URL similar to that of the following example:

```
http://your.computer/samples/newpage.html
```

Note: Because the WWWROOT folder is your Web-publishing home directory, it is considered the root (or \) of your Web-publishing directory hierarchy and therefore is not included in the URL of your Web page.

If you decide not to run your own Web server software, you must rent space on a Web server maintained by an Internet service provider. To publish your Web-site content through your rented Web server, you still must put files in a special folder. Your service provider's Web server operates exactly the same way as the Web server software that the chapter describes. Your service provider's Web server looks in a particular folder for all your Web-page content, as does the Web server software that you can run on your own computer. The following section explains the issues involved in using a Web-publishing service provider.

Using a Web-publishing service provider

Rather than run your own server, you can subscribe to a Web-publishing service, meaning that your Web pages reside on someone else's computer. That computer attaches to the Internet full time and runs a Web server program. This arrangement ensures that your documents are available through the Web all the time, normally through a fast Internet connection.

Most World Wide Web service providers charge by the number of bytes you publish, or the amount of network traffic that your publishing generates, or both. More people reading your World Wide Web material means more work for your service provider, so the provider passes on the cost to you. You may reach a point at which setting up your own HTTP server is more cost-effective than paying a World Wide Web publisher. You must balance your needs against your resources to decide on the best approach.

After you subscribe to a World Wide Web publishing service, your service provider gives you at least the following:

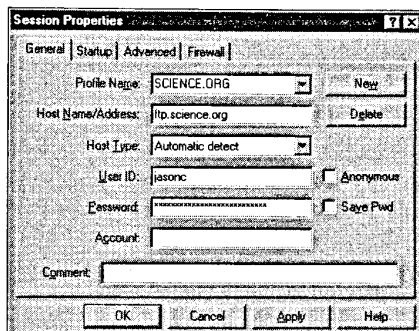
- ✓ User ID
- ✓ Password
- ✓ Directory in which to place your files so that they're available at your Web site

Your service provider also gives you instructions for logging on using your user ID and password and for sending files to your World Wide Web directory. To publish your HTML documents and other Web files, simply follow your service provider's instructions to send the files to your Web directory.

The most common way to send files to your Web directory on your service provider's server is to use an FTP (File Transfer Protocol) client program. WS_FTP, an FTP client program, is one of the most popular FTP programs for Windows; Fetch is a similar FTP client for the Macintosh. (Macintosh programs always have friendlier names than Windows programs.)

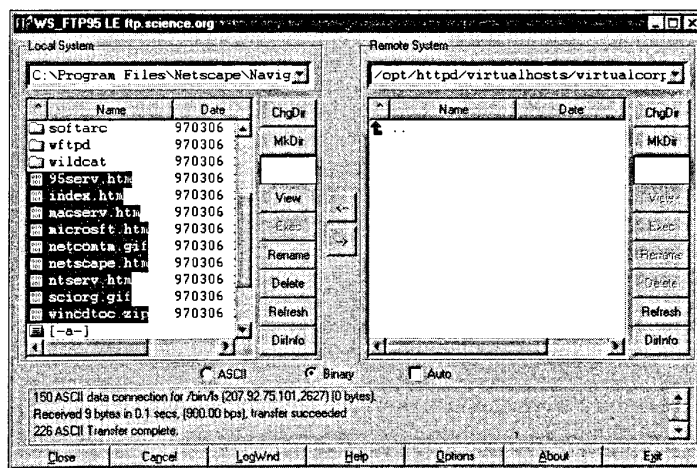
The first thing you do in using your FTP client program to send files to your Web directory is to tell your FTP client program which FTP server to contact. Your Internet service provider tells you the domain name of the FTP server to which you need to send Web files. Figure 5-20 shows how WS_FTP asks you which FTP server to contact (in this case, `ftp.science.org`). The Macintosh FTP client (Fetch) and other Windows FTP clients have a different way of asking you to enter the name of the FTP server to contact.

Figure 5-20:
Contact
your ISP's
FTP server
by using an
FTP client.



After your FTP client program successfully connects to the FTP server, you must locate your remote Web directory and tell the FTP client program to send your Web files to that directory. Every FTP client program works differently; Figure 5-21 shows how WS_FTP works. The WS_FTP ChgDir button on the Remote System side (the right side) of the WS_FTP window enables you to specify the full name of your Web directory.

Figure 5-21:
Locate your
remote Web
directory by
using your
FTP client
program.



In the sample screen shown in Figure 5-21, the full name of the sample remote Web directory is as follows:

`/opt/httpd/virtualhosts/virtualcorp`

This directory is the one in which you must put Web files if the files are to become accessible to visitors to your Web site. Save any files you want publicly accessible to Web site visitors in this directory. Be aware that the full name of your remote Web directory will be something different.

You also want to locate on your local system the directory in which you save all the files for your Web site. You must send these files to your remote Web directory so that the files are published on your Web site. At this point, all the files have successfully transferred from the local system directory to the remote Web directory. Now these files should be accessible to your Web-site visitors.

You definitely want to check to make sure that the files you just sent to your remote Web directory are available through your Web site. Start a Web browser and point the browser at the URL of your site to make sure that the files are accessible. If everything is in order, you can exit your FTP client program. In WS_FTP, you exit the program by clicking the Exit button.

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What's It All About?

If you're running an online publication that depends on advertising or subscription-based access, you'll need to consider how to get as many people as possible to visit your site. After all, the bigger the numbers you accumulate, the more advertising revenue or subscription prospects you have. You need to aim for the same goal if you're using the Internet to sell products directly to the general public. Sometimes, the "product" is a political or social view, but the approach is still the same. If you don't "sell" your ideas effectively, your site won't generate much interest.

Some organizations — even commercial ones — are not interested in the vast numbers of the general public, though. They are interested in a small number of dedicated buyers, called a *niche market*. They are, however, terribly concerned with the *type* of visitors they get. Dealers in pre-Han dynasty Chinese maps, for example, want to attract a certain type of person to their site, and would be happier with a few hundred affluent geographers than with two million gaming enthusiasts who mistakenly thought the site offered a new level for DOOM. In fact, such sites will want to take great care in marketing to ensure that their site isn't so overloaded that real potential customers cannot get through.

So now you know something about two different types of Internet sites: One depends on the greatest number of people landing on the site, and the other depends on the right people finding the site. You need to promote these two types of Internet sites somewhat differently. We begin in this chapter with some of the basics common to both types of sites, such as getting a listing in the various Internet search engines.



Users have coined many new words over the Internet; one of the better ones is *netiquette*, derived from *Net* and *etiquette*. Because the Internet has no rules — only guidelines — you need to become familiar with the netiquette of your area of the Internet, just as you'd need to discover all the different customs and protocols should you move to a new country. Be sensitive to cultural differences on the Internet. Take the time to study the customs and protocols of a particular group of Internet users before using shared Internet resources to promote your Internet site. That way, your site has a chance to become famous rather than infamous.

Graduating from being known to being famous

You can make your Web site known among Web surfers — or you can make your site *famous*. Before you launch any cybermarketing attempt, therefore, take time to ask yourself which one you want. Then answer your own question. To help determine the answer, consider these factors: If your Internet site offers resources that you intend for only a small group of people to use, being known may be quite enough for your purposes. On the other hand, if your goal is to reach as many people as possible on the Internet, you definitely want your site to become famous.

Being famous, of course, always has its price. In the case of a famous Internet site, you must

work to keep your site fresh and exciting. Just like movie stars, Internet sites must keep taking on new roles to stay in the public eye.

If you want to transcend being known and enter the realm of being famous, try to get your site listed as a cool site. Several pages on the Web offer a “cool site of the day.” Getting chosen as a cool site can take you from having only hundreds access your Web site to having tens of thousands of visitors. (See the “Cool Site of the Day” section later in this chapter for more information.)

Whose Site Is This, Anyway?

Whose site is it? Well, it's yours, obviously. But, in another sense, it belongs also to a whole lot of other people. Marketers call this *brand loyalty*, and you see it all the time when people say things like “That's my beer” or “Honey, you got the wrong kind of hand grenades.” It's what made us trade our old Jeep in for a new Jeep instead of going to all the trouble of hunting up a classic Yugo. And it's what keeps people coming back again and again to your site.



People will never develop loyalty to your site (or any other product) until it achieves a certain level of performance that people find satisfactory. You have to earn loyalty by giving people what they want and keeping up to date.

Whether you want your site simply to be known or your goal is to own the hottest site on the Internet, you must know your audience. Not knowing the people for whom you create your site is like trying to paint in the dark. Fortunately, defining Internet audiences is now the subject of research by some of the top marketing agencies in the world. Even Nielsen, famous for its TV ratings, has joined the Internet survey game. Internet users are literally as diverse as the cultures of the world, and the analysis of that diversity results in data known as *demographics*. The studies that advertising companies and organizations such as Nielsen conduct help define who is using the Internet and for what purpose.

On the Internet, the one thing that you can count on is the fact that everything's always changing. By *everything*, we mean any and all of the following characteristics:

- ✓ **The profile of the average user.** The Net used to be the exclusive territory of the young white male technonerd, a strange bipedal creature chiefly noted for its ghastly eating habits and plaintive cry of "More RAM!" Today, normal people are often found encroaching on its former grounds.
- ✓ **The number of people connected.** The Global Village is undergoing the biggest population explosion since the Baby Boom. Pretty soon, everybody's middle name will be @.
- ✓ **Improved technology.** Any hardware or software is obsolete by the time you remove the shrink wrap. By the time you get it installed, it's a museum-quality antique. Don't expect the pace of technological improvement to slow down any time soon. As better methods of connecting to and surfing the Internet become available, your site will need to become more and more sophisticated to effectively compete for audience share.

Just what is the potential audience? How many people are on the Net, and what are they like? Fortunately, this is a burning question to a whole bunch of people who actually like using calculators and figuring out means and chi squares and things like that. The only real problem now is, if you ask 200 different statisticians what the number is, you'll get 400 different answers.

To get a handle on what the experts have to say about who's on the Net these days, take a crack at the sites in Table 12-1.

Table 12-1	Internet Demographic Info
Service	URL (Internet Address)
CyberAtlas	http://www.cyberatlas.com/
GVU's WWW User Surveys	http://www.cc.gatech.edu/gvu/user_surveys/User_Survey_Home.html
Nielsen Media Research	http://www.nielsenmedia.com/
The NPD Group	http://www.npd.com/
NUA Internet Surveys	http://www.nua.ie/surveys/
Win Treese's Internet Index	http://www.openmarket.com/intindex/

It's one thing to know in general what the overall Net population is like (statisticians call that the *Net universe*). But what about the people who actually come to your site? It's a really good idea to find out as much as you can about them. At the very least, you should have a good log analyzer program such as Statbot by Dave Tubbs, which will enable you to track how many people are visiting your site, which ones are repeat visitors, and what type of domains you are appealing to most. For instance, if most of your visitors are from domains ending in .edu, which denotes an educational institution, you are most popular with students or professors. On the other hand, if they end in .mil, you're appealing mainly to the military. You can find Statbot at <http://www.xmission.com/~dtubbs/club/cs.html>.



Don't bother with page counters if you're really serious about knowing your audience. They're cute and come in such a variety of looks that they can fit into just about any design, but they don't give you any real, meaningful information. All they'll tell you is how many times a particular page was accessed; you have no way of knowing if those 20,000 *hits* you got yesterday were from one obsessed person or from thousands of different people. And the page counters you get from services outside your site really increase the download time for the page you put them on, because the page has to wait for a separate server to respond before it can complete loading.

You may also want to post a questionnaire form that can be voluntarily filled out. If you have something people really want, like the beta for a hot new piece of software, you can make the questionnaire a condition of getting the software, although many people find this annoying and you will very likely get some truly bizarre answers to innocent questions.



In most localities, it is illegal to require people to answer the very questions a marketer is most interested in, such as age, sex, and race. Make sure that your form has these as *optional* responses and says in no uncertain terms that they are not required. If in doubt, check with your attorney.

The Little Search Engine That Could

The cliché "If you build it, they will come" may be true for baseball fields but not for Web pages and other Internet resources. If nobody knows about your presence on the Internet, that's exactly who you can expect to visit your site — nobody. Just as you can advertise your business by putting your phone number in the local Yellow Pages, you can advertise your Internet site in online directories and through search engines.

A *search engine* is a program provided as a Web page that enables you to search for key words and phrases found in Web pages indexed by this program. Many types of programs, known as *crawlers* and *spiders*, wander around the Web creating these indexes so that people can navigate through the hundreds of thousands of Web pages on the Internet without getting lost.

One of the most successful types of Internet business has been the World Wide Web search engine. Without search engines, finding what you need on the Internet is a near impossibility. Figuring out how to make the best use of the search engines in promoting your Internet site is of great importance. Search engines are usually the first place everyone starts in visiting the World Wide Web. In fact, most search engines use a customized screen that loads each time users who have made the search engine their home page start their Web browser.

We suggest configuring your Web browser to load a popular Web search engine, such as Yahoo!, as the default home page. You can set your browser's default home page or start page by using your browser's configuration menu. The search engine, a logical starting place, therefore becomes an "Internet Main Menu" for the average Internet user.

Taking advantage of search engines in promoting your site is the single most important thing you can do in marketing your site. In the following sections, we take a look at some of the different types of search engines, as classified by the following list:

- ✓ Edited lists of sites
- ✓ Web crawlers, spiders, and worms (sounds creepy, doesn't it?)
- ✓ Site-published resource lists

Yippee! Hurray! Yahoo!

One of the most popular types of search engines is the edited list of sites. Yahoo! is a good example of such an edited list. People submit their Web pages and newsgroups for inclusion in the Yahoo! directory. One reason for Yahoo!'s success is that a real, live human being manually visits the submitted resource and determines whether to include it in the directory. Each page is submitted to Yahoo! in a specific category or categories. The person at Yahoo! checking out the resource makes certain that the submitted page is appropriate for the category for which it was submitted. This screening process results in an edited but still very complete list of Internet resources. Having Yahoo! include your Internet site in its directory is very important.



Sometimes you must be persistent in your efforts to get Yahoo! to include your site in its directory. The number of requests for a listing in the Yahoo! directory has resulted in a long waiting list. Our experience is that a certain number of requests simply fall through the cracks. Be patient and don't bombard the folks at Yahoo! with requests. But if your site doesn't appear after a week or two, checking to make sure that your site is still in the running for a listing is a good idea.

Submitting your Internet site to Yahoo! is a little trickier than getting a listing with some of the other Web search engines. Because a human reviews each site for Yahoo! and because the service is free, the Yahoo! folks expect you to do some of the work of figuring out exactly where in their directory to list your resource.

You can enter your Internet site into more than one Yahoo! category. Your first step is to access the main Yahoo! page at the following URL (see Figure 12-1):

<http://www.yahoo.com/>

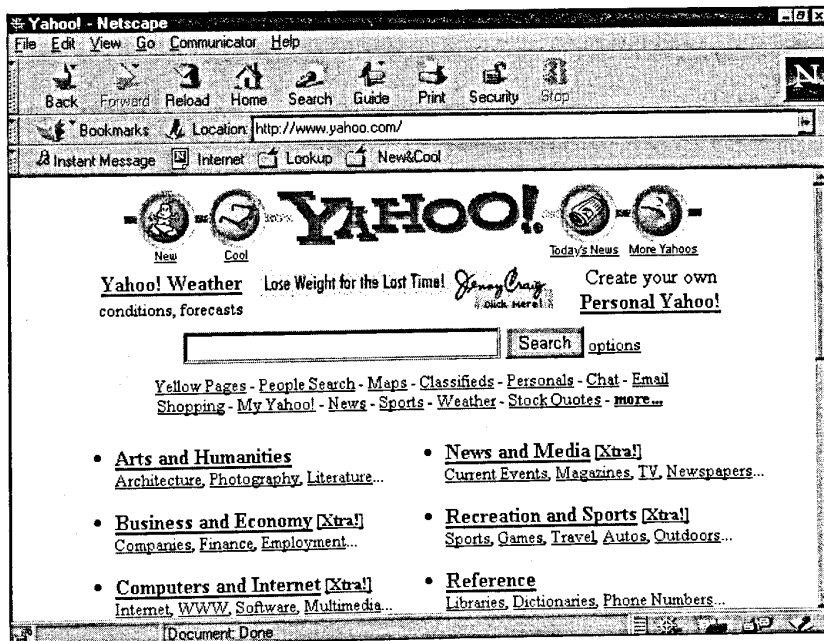


Figure 12-1:
Locate the appropriate Yahoo! category for your Internet site.

Notice in Figure 12-1 that you have several categories from which to choose. For complete instructions, you can scroll down to the bottom of the main Yahoo! page and click the link entitled "How to Suggest a Site." Or you can go directly to adding your site. Find the category that best fits your Internet site. After you locate the correct category, click the Add URL icon at the top of the Yahoo! page. This action launches a new Yahoo! page containing instructions for adding your URL to the Yahoo! directory.



If you choose a category that's too general, you receive a notification to choose a more specific category. If you receive such a notification, select the subcategory that's closest to the topic of your Internet site.

After you have finished reading the page of instructions, click the Proceed to Step One button. This will lead you to a form composed of four steps. In Step One, you need to fill in the title, location (URL), and description of your site. Be careful to enter the URL of your resource correctly and completely. Remember that an Internet resource can be a Web page, a newsgroup, a mailing list, or many other possible Internet information types. Don't be confused because the `http://` part of your URL is already filled in for you. If your Internet resource is not a Web page — you have a mailing list, for example — you can delete the `http://` part and enter the correct URL. (You may, for example, need to enter a `mailto:` or a `news:` URL type in place of `http://`.) When you have finished with Step One, click the Proceed to Step Two button.

In Step Two, you can type any other categories you think your site should be listed under (you must enter the category title exactly, or it will be rejected by Yahoo!) and suggest a new category if you want. You don't have to make any entries in this step. When you are ready to proceed, click the Proceed to Step Three button.



In Step Two of the Add URL form is a place where you can add categories for your site. To include your page in more than a single category, you really need to have already browsed through the different Yahoo! categories and made a note of the page titles of each appropriate category. You should click the Add URL icon only after you're on the category page you feel is most appropriate to your Internet site. That category automatically appears on the form. Then, in the box provided on the form, enter the additional category names. Make sure you enter them exactly as they appear on the Yahoo! category pages.

In Step Three, you give contact information. Type your name and e-mail address into the appropriate text boxes. Yahoo! people use this address to notify you after entering your resource into the Yahoo! directory. They may even contact you with questions about accessing your Internet resource, although this situation is rare. You can optionally give the geographical location of your site. Entering the location of your Internet site on Yahoo!'s Add URL form is important only if your site contains region-specific information or resources. If, for example, you own a bagel shop that takes local

delivery orders from your Web page, you want to note your locale. Bagel connoisseurs in Algiers can then avoid disappointment because you can't deliver hot, fresh bagels to their door. When you are finished with this step, click the Proceed to Step Four button.

In Step Four, you can enter the dates during which your site will be available. This is an optional process, and is of importance only if you are operating a site that will have only a temporary existence, such as a holiday site that you plan to take down after the holiday. You can also enter any additional information that you think will be useful to the Yahoo! staff in handling your submission. When you have finished Step Four, click the Submit button to complete the submission.

Figure 12-2 shows the Yahoo! Add URL form. Fill out a separate form for each Internet resource you want Yahoo! to list.

Directory assistance, please

Another type of Internet directory does not rely solely on people submitting their resources for indexing. Lycos, AltaVista, Infoseek, and Inktomi are examples of search engines that use special programs to search the Internet, looking for Internet resources to index in their directories. These search programs have all sorts of bug-related names, such as *worms* and *spiders*.

Figure 12-2:
Fill out the
Add URL
form to
have your
Internet
resources
added to
Yahoo!.

Suggest a Site to Yahoo! - Step 1 - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security Stop

Bookmarks Location: <http://add.yahoo.com/last/add>

Instant Message Internet Lookup New&Cool

Site Information:

Title:

- Please keep the title brief.
- Use the official business name for the title of a commercial site.
- Please do not use ALL capital letters.
- Please do not including marketing slogans or superlatives (e.g., "The Best site on the Internet" or "We're the Number One Dealer...")

URL:

- Not sure what this is? It's the address of your site that begins with "http://"

Document Done

(Perhaps these programs would be better named Internet ferrets.) The programs constantly search the Internet for new resources to list.

Such programs primarily search the World Wide Web for new Web pages, moving link by link from page to page and site to site. Some also search the Usenet newsgroups, indexing newsgroup information. This kind of program has its good aspects and its bad aspects. On the good side, these programs — we henceforth call them *spiders* for simplicity's sake — collect keyword information from hundreds of thousands of Web pages throughout the Internet. Whether someone specifically submits a URL or keeps a low profile on the Web, these Web spiders seek out and locate new Web pages and include those pages in their keyword index. If you're searching on an obscure topic, you have a much better chance of finding what you're looking for by using the search engine of an Internet directory that employs a spider.

The downsides to using a spider-based search engine are that you often receive not only too much information but a lot of out-of-date information as well. Searching on a keyword or phrase may return results numbering in the thousands. Most search engines return their results ranked by *relevance*. In other words, the first results in the list are more likely what you're looking for than are those farther down the list. But such is not always the case, and searching through thousands of results is both time-consuming and tedious.

Domo arigato, Mr. Roboto Thank you, Mr. Robot

Doing your part to make Internet directories more useful is easy. An important file to have in your Web-publishing directory is a ROBOTS.TXT file. Spiders, Web robots, worms, and other wandering Web-indexing engines use this file primarily to exclude directories and files you don't want them to index. You may, for example, create several Web pages as tests. Because these pages aren't a permanent part of your site, you probably won't want them showing up in searches through Lycos and AltaVista.

A ROBOTS.TXT file is a simple text file that you create by using any text editor. You save your completed ROBOTS.TXT file in your Web-publishing root directory (which is the same directory in which your main home page normally resides).

The following sample displays a comment line, beginning with a pound sign, that states that it allows any user-agent (crawler, spider, and so on), plus a few lines specifying directories that we want robots to stay out of. These lines begin with the word *Disallow*. The following is a sample of a ROBOTS.TXT file:

```
# SCIENCE.ORG Robot File
User-agent: *
Disallow: /test
Disallow: /graphics
```

You can find the full specification for creating a ROBOTS.TXT file at <http://info.webcrawler.com/mak/projects/robots/norobots.html#format>.

One reason why so many results return from spider-based searches is that the searches include Web pages, which were never really meant to be indexed. Suppose, for example, that you want to learn more about Visual Basic, the Microsoft programming language. You perform a search on the words *Visual Basic* — and wind up with thousands of results. You find that these results include listings for everyone who's ever used the words *Visual Basic* in their online resumes as well as anyone who's ever put up a job posting looking for Visual Basic programmers. Often, wading through these inappropriate Web pages to find the specific information you want just isn't worth the trouble.

Expired and broken links also are problems you encounter in using both spider-based directories and hand-entered indexes. Many Internet information resources are time-sensitive or temporary. Many others simply either move, usually by changing service providers, or stop publishing their resources. People searching through these types of indexes for information should consider wearing a hat to keep from pulling out their hair in frustration. Even so, without these types of search engines, finding information on the Internet would be nearly impossible.



Be sure to check out Chapter 5 to see how to use the META tag and keywords so that search engines can index your site more effectively. Also, make sure you update your pages regularly so that the search engines see that the pages are not stale.

Table 12-2 gives the URLs of various Web sites that either evaluate the different search engines or deal with using search engines for business promotion.

Table 12-2	Search Tool Information
Service	URL (Internet Address)
The Art of Business Web Site Promotion	http://www.deadlock.com/promote/
did-it.com	http://www.did-it.com/
Evaluation of Selected Internet Search Tools	http://www.library.nwu.edu/resources/internet/search/evaluate.html
Internet Search Tool Details	http://sunsite.berkeley.edu/Help/searchdetails.html
Interwave Marketing Group	http://ibmc.com/interwave/
The Spider's Apprentice	http://www.monash.com/spidap.html

Feeding the worms and spiders

Instead of waiting for a spider, worm, or Web robot to find your Internet resource, you can increase your chances of getting indexed by submitting your URL to different search engines. Table 12-3 lists in alphabetical order several of these search engines, along with their URLs.

Table 12-3 Internet Search Engines	
<i>Internet Search Engine</i>	<i>URL (Internet Address)</i>
AltaVista	http://www.altavista.digital.com/
Excite	http://www.excite.com/
Galaxy Search	http://galaxy.tradewave.com/search.html
goto.com	http://www.goto.com/
HotBot	http://www.hotbot.com/
Infoseek	http://www.infoseek.com/
Inktomi	http://www.inktomi.com/
Inter-Links	http://alabanza.com/kabacoff/Inter-Links/search/search.html
LinkFinder	http://www.linkfinder.com/
Lycos	http://www.lycos.com/
Magellan Internet Guide	http://www.mckinley.com/
Open Text Index	http://index.opentext.net/
WebCrawler	http://www.webcrawler.com/
World Wide Web Virtual Library	http://vlib.stanford.edu/Overview.html

Each search engine or directory in Table 12-3 includes its own mechanism for enabling you to add your URL to its index or directory. Using your Web browser, go to the Web pages listed in the table and look for the link or button on the page that enables you to add a URL. This process is much simpler than that of submitting your URL to Yahoo!. In most cases, you simply type the URL of your resource and perhaps a brief description, and then click a Submit button. The search engine takes care of adding your site to its index. It usually sends some sort of spider to index your entire site (all your Web pages).

Submitting your URL the easy way

Hundreds of search engines and directories are on the Internet. Probably no one really knows how many are there. Some guesses put the number of these services at somewhere slightly less than 500. If you just became a little faint at the thought of having to enter your Internet site URL into all those different search engines, however, take heart. Services exist that enable you to automatically enter your URL into many different search engines at once.



Because the different search engines have widely varying content and requirements, you may find that you are limiting your site's exposure if you use a mass submission service. Make sure that the service takes these differences into account before you go with them.

One such service, WebStep Top 100, estimates that adding a link to 100 different search engines takes a professional about ten hours. The WebStep site lists 100 different directories and search engines, rating each with from one to four stars. You can save time by choosing to add your site to only three- and four-star directories. You can use the WebStep site as a quick access guide to each of the 100 search engines and directories the site lists.

But don't expect any real shortcuts. You still must manually enter the information about your resource into each directory's Add URL form. If you're in a hurry, however, and time is more important to you than money, WebStep offers to add your URL to 100 search engines and directories for \$295. WebStep can be contacted at the following URL:

<http://www.mmgco.com/top100.html>

!Register-It! is another company offering a free service that enables you to enter your information once and, by doing so, automatically enter the information into 16 of the top directories and search engines (see Figure 12-3). Of course, !Register-It! also offers a commercial service that enters your site into 100 directories for \$39.99. You can surf to the !Register-It! site by pointing your Web browser to the following address:

<http://www.register-it.com/>

Submit It!, the very first service of its kind, offers more than 20 submissions and several other commercial rates for submitting your resource information to more than 400 search engines and directories. The service also offers special rates to Webmasters who need to submit URLs for several different companies. Submit It! Online, a commercial service, advertised rates of around \$200 for 10 companies and around \$300 dollars for 20 companies. You can reach the Submit It! site at the following URL:

<http://www.submitit.com/>

Figure 12-3:
IRegister-It!
offers both
a free and a
commercial
URL
registration
service.

The last service we cover here is Postmaster. This service is similar to the others in this section, with a few exceptions. The folks at Postmaster offer to add your site to around 400 different directories and search engines. They also offer to send your URL to more than 10,000 individuals. This service is aimed mainly at organizations with a bit of cash. The company offers to submit 80 posts, for example, for \$2,999. You can reach the Postmaster site at the following address:

<http://www.netcreations.com/postmaster>

Using a service saves you time, whether you choose to take advantage of the free offers or pay a fee to have your site added to many directories. Be aware, too, that some search engines to which you submit your URL may offer additional exposure for your Internet site for an additional fee. Some value-added services include posting an announcement on a special page that highlights new submissions; others may post your listing in their directory in a larger and colored font. As many of these registries grow to rival the traditional printed phone books, having your listing stand out from the many other listings becomes a challenge. You must decide for yourself whether the additional exposure these marketing features add is worth the extra money.

Using an online ad agency

Sit back and relax while Internet promotion specialists take your Internet site from obscurity to fame. Traditional ad agencies have only recently become aware of the potential of the Internet. Most agencies don't fully understand how to go about marketing someone's online presence. Several companies, however, have performed really well in online marketing. One of these companies, DoubleClick, provides a full service ad agency devoted to online promotion.

You can contact DoubleClick at the following URL:

<http://www.doubleclick.net>

Aliweb, alakazam!

You need no magic to add your Internet resources into Aliweb's directory. The Aliweb directory compiles its listings using a different method than Yahoo! or any of the Web spiders. Aliweb builds its index by reading special *index* files on your computer. You (or the person who maintains your Internet site) build these index files, named SITE.IDX. Then, after you register your site with Aliweb, the service visits your site several times a week to read your SITE.IDX file for the most current site information.

The following list describes advantages to using a system such as Aliweb:

- ✓ **Resources in Aliweb are always up to date.** (You find few expired or broken links.)
- ✓ **You have complete control over what resources appear in Aliweb.** (No pages appear that you do not specifically enter into the SITE.IDX file.)
- ✓ **Update-to-implementation time is relatively fast.** (Changes you make appear as soon as the Aliweb engine queries your site, which means that the wait before the updates appear may be two or three days maximum — quite speedy compared to that of any other service.)

One requirement to using the Aliweb system is that your Internet site must be available over a dedicated connection. The Aliweb queries come at regular intervals. If the engine can't reach your site several times in a row, Aliweb removes your site's information from its database. This practice helps ensure that the information in the Aliweb database is always current.

The first step in getting your site ready to register with Aliweb is to create a SITE.IDX file. To create this file, you must use a text editor or a word processor that can save to text-only (TXT) format. The SITE.IDX file contains *records* — blocks of information that describe your entire Internet site. Each record contains specific *name-value pairs* that describe each resource or *template type*. A name-value pair is a fancy way of saying that for each *name* (what is known in a database as a *field*, or a *column*) you have a *value*.

The following table is an example extracted from a SITE.IDX file. The names appear in the left column and the values appear on the right.

Template-Type:	USER
Title:	Joe P. Macandsun
Handle:	joe@virtualcorporation.com
Email:	joe@virtualcorporation.com
Work-Phone:	800-555-1234
URI:	http://www.virtualcorporation.com/joe/

This table is an example of a record that describes a USER. A SITE.IDX file contains records that describe different template types.

Your SITE.IDX file always begins with two records, one that describes your Internet site and the other that describes your organization. The following is another example of a typical SITE.IDX file:

Template-Type:	SITEINFO
URI:	/
Host-Name:	SCIENCE.ORG
Admin-Handle:	webmaster@science.org
Owner-Organization-Name:	SCIENCE.ORG (tm)
Description:	The WWW Server at SCIENCE.ORG
Keywords:	Research, Science, Technology

Template-Type:	ORGANIZATION
Organization-Name:	SCIENCE.ORG
Organization-Handle:	SCIENCE
Organization-Phone:	619-943-9382
Organization-Fax:	619-944-6888
Organization-Email:	info@science.org
Organization-Postal:	258 Neptune Avenue
City:	Encinitas
State:	California
URI:	http://www.science.org/
Description:	SCIENCE.ORG (tm) is a non-profit science and technology research and development lab.
Keywords:	Research, Science, Technology

Use the preceding two record types to describe your site and organization in as much detail as you want. An important point to keep in mind is that you can't deviate from the template. To describe users, services, and documents, you must use the correct associated template type. The first example

in this section demonstrates the template type for users. The two most common template types are SERVICE, which you use to describe an Internet service such as FTP, Finger, or some other service, and DOCUMENT, which you use to describe a document that's available through a service. Examples of documents are Web pages and files available through Gopher or FTP.



If you find this confusing, check with your favorite programmer types. They love this kind of stuff.

The following are examples of both the SERVICE and DOCUMENT template types:

Template-Type:	SERVICE
Title:	FTP
URI:	ftp://ftp.science.org/
Description:	FTP site for sharing research info
Keywords:	Anonymous, FTP
Admin-Handle:	jasonc@science.org
Template-Type:	DOCUMENT
Title:	ActiveX Source
Admin-Handle:	tedc@science.org
URI:	http://ebola.science.org/ActiveX/
Description:	A source for ActiveX controls
Keywords:	ActiveX, COM, DCOM, Microsoft, WWW, Web

When you are ready to register with Aliweb, go to their Web page at <http://www.nexor.com/aliweb/register/doc/register.html> and fill out the online form there. Once you have done this, Aliweb will automatically keep your site on file.

Promoting Yourself

Not everyone who wants to promote an Internet site is a business or an organization. Some people may want to promote their personal site or possibly tell people how to reach them by e-mail. Most of the search engines and directories listed previously in this chapter enable you to submit a personal Web page URL.

A hint about getting people to visit your personal Web page is to have an interesting theme. You can relate this theme to one of your interests or hobbies. Having a focused content about a specific topic makes placing your page in a directory much easier and also attracts people who share your interests to your home page. Making the page interactive keeps them coming back. A good example of this is a fun page we created a few years

ago: the Coombs Family Reunion in Cyberspace page (<http://www.science.org/coombs/>). Visitors to this page could leave their own messages and family histories. Pretty soon, we had wonderful messages from distant relatives all around the world.

Most of these people came across our page doing something most people do at least once — use one of the search engines to search for their name. (Where do you think the idea of the Coombs Family Reunion page came from?) Finding other people with the same name can be fun, especially if you get to meet them, as one of the authors of this book did.

The first directory that enabled people to enter their home page, e-mail addresses, and favorite URLs was People On the Net. Soon after People On the Net was started, a really wonderful service called Four11 started up. Four11 not only provides the most complete listing of people on the Internet, but also offers access to all U.S. telephone directories. If you're looking for someone in the United States, we know of no quicker way to find who you seek than if that person is listed in the phone book or has an e-mail address registered with Four11. Even Yahoo!, which used to maintain its own listing of people, now uses the Four11 service.

The Four11 directory includes the following directories (among others):

- ✓ **E-mail addresses.** This directory is an important one in which to appear.
- ✓ **Telephone.** This list comes straight from the telephone white pages.
- ✓ **Netphone.** Want people to call you on your Internet phone system? Add your name to this list.
- ✓ **Celebrities.** This directory includes lists of celebrity mailing addresses and e-mail addresses. If you're a celebrity actor, model, author, or VIP, make sure you add yourself to the celebrity directory.

Four11 also offers additional services to paid members. You can maintain a Web page on the Four11 server, create searches that continue searching even while you're offline, and use several other services such as the iName service. Get an iName personalized e-mail address for life that redirects e-mail to any e-mail account of your choice. While you're getting yourself set up with an iName, go ahead and register yourself in the Four11 directory so that people can find you online. Entering your name in the directory is free. Simply go to the Four11 home page at the following URL and click the Add Me link under the My Listing category:

<http://www.four11.com/>

Table 12-4 lists some of the places you can add your name and personal profile so that people can find you on the Internet. One of these sites, the InfoSpace page, is shown in Figure 12-4.

Table 12-4	Personal Internet Directories
Service	URL (Internet Address)
Bigfoot	http://www.bigfoot.com/
Four11	http://www.four11.com/
InfoSpace	http://www.accumail.com/iui/index.htm
WhoWhere	http://www.whowhere.com/
World Wide Profile Registry	http://www.wizard.com/wwpr.html

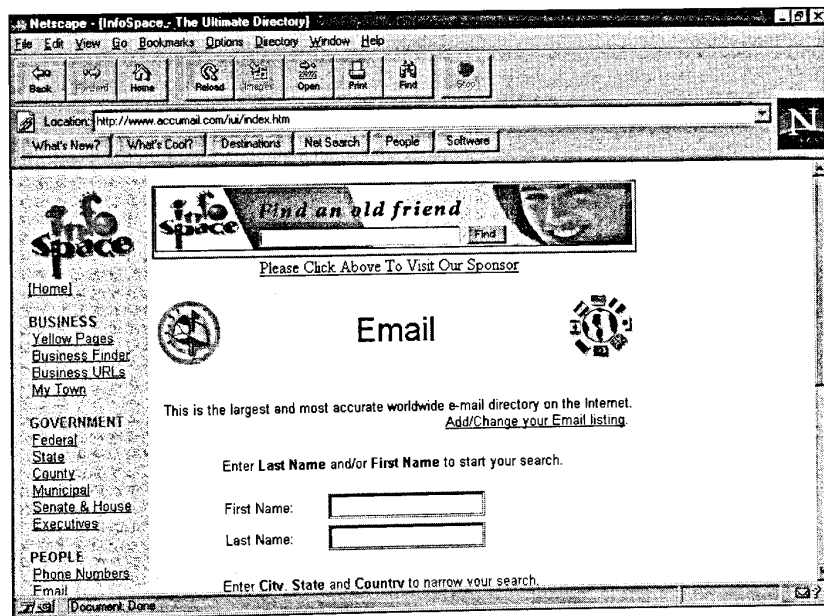


Figure 12-4: InfoSpace is one place to add your name when promoting yourself.

Cool Site of the Day

If traffic to your site is what you're looking for, your goal is to shoot for a listing in one of the *Cool Sites of the Day* pages. The idea started several years ago with Glen Davis launching the first Cool Site of the Day page. His Internet site was so overrun with people trying to load his page that his

Internet service provider could barely handle the traffic. Every day, these pages feature a different Web page as a cool site. Thousands of people make a point of finding out where clicking the link to the Cool Site of the Day takes them.



Becoming the Cool Site of the Day probably means that your site is going to receive visits from tens of thousands of people in a single day. Make sure that your connection, your computer, and your software can handle that many connection attempts. If your site becomes overloaded, replace your Web page with a brief explanation that your site is overloaded with requests and for visitors to try back later. Don't just turn your computer off or shut down your Web server. That upsets people, and they may never return to your site. Another alternative is to find someone with a very fast connection and a powerful computer and ask that person to temporarily host your Web site. Create a simple home page with a link that takes people to the temporary site.

Infinet, now several years old, runs the Cool Site of the Day page (see Figure 12-5). As always, Infinet takes recommendations for the day's cool site. (Recommending your own Web page as the Cool Site of the Day is okay.) To correspond with Infinet or to find out for yourself just what's cool today, go to the following address:

<http://cool.infi.net>

Figure 12-5:
The bonanza of all cool site pages, Infinet's Cool Site of the Day page.



A good idea doesn't stay lonely for very long. Just about everyone now has a list of cool links. Netscape Navigator, for example, provides a button for "What's Cool?" as part of the Navigator interface. In case you use a different browser, clicking the What's Cool? button in Navigator takes you to the following URL:

```
http://guide.netscape.com/guide/whats_cool.html
```

Yahoo!, the mother of all Internet directories, used to point to Glen Davis's Cool Site of the Day. That support probably helped make the site as popular as it is today. Not to be outdone, the Yahoo! main Web page now has its own Cool icon at the top of the page. Clicking the icon takes you to the following address:

```
http://www.yahoo.com/Entertainment/Cool_Links
```

If you're going to diligently pursue becoming a cool site in one or more of the lists of cool sites, you want to make sure that your Web site

- ✓ Is graphically appealing
- ✓ Contains interesting content
- ✓ Loads quickly — go easy on those Java applets!

Don't be discouraged if no one immediately selects your site. The number of Web sites is rapidly approaching the one million mark. The companies that run the lists of cool sites receive a large number of requests every day for consideration as the cool site. Your persistence and creativity is bound to pay off eventually. (See Chapters 5 and 6 for tips on creating a great Web page.)

Extra! Extra! Read All about It!

Make your site big news. Newsgroups were among the first popular gathering places on the Internet — so popular, in fact, that the words *newsgroups* and *Internet* were once almost synonymous. A newsgroup, by the way, is one of the many discussion areas available on the Internet. Newsgroups were originally formed (and are still formed today) to enable users to share information or carry on electronic dialogue about anything and everything. If you tell people in newsgroups that you have an online presence, you automatically increase your visibility.

Certain newsgroups work better than others as places to post an announcement of your new Web page. Begin with general newsgroups that were specifically created for posting announcements. One recommendation is the comp.infosystems hierarchy of newsgroups, especially the following:

```
comp.infosystems.www.announce
```

You can use *newsreaders*, such as the ones that come with either Microsoft Internet Explorer or Netscape Navigator, to read and post messages to newsgroups. In writing your posting, tell newsgroup readers a little about what to expect after they log onto your Web page. Remember to include your URL. Getting caught up in the description of your site while completely forgetting to tell people how to get there is all too easy.

The following list offers guidelines to keep in mind if you post your site to newsgroups:

- ✓ Post messages to newsgroups with the same topic or focus as the Internet site you're promoting.
- ✓ Read the newsgroup before you post to it. Reading posts completely unrelated to the information pertinent to the newsgroup is aggravating.
- ✓ Don't post the same message to hundreds of similar newsgroups.
- ✓ Don't advertise specific items as you would in a magazine or a newspaper; save specific product or service information for the people who are interested enough to seek out your online presence.
- ✓ Newsgroups archive their messages, so they erase your posting after a period of time. The more active a newsgroup is, the quicker the messages disappear. Posting to a newsgroup one time doesn't guarantee that your message is around forever.
- ✓ Make certain that your posting and the content of your Internet site appeals to the audience of a particular newsgroup before you post your message with that newsgroup. If you post to `alt.wolves`, for example, don't post a "Humans Against Wolves Home Page" message unless you're looking for a fight.

It's a Jungle out There — How Amazon.com Does It

Whether you're marketing fresh lobster from Maine, tours of the Holy Land, coffee from Hawaii, or rare books from your attic, you can sell your wares on the Internet. You don't need to be a big mall, like the Internet Shopping Network, to be a big success. The Internet is often called the "great equalizer." You have as much opportunity to sell your products in this electronic village as the bigger guys do. You just need a few tricks up your sleeve.

Awards

Ever notice how many people will watch any movie that wins an award? Well, awards exist in every field, not just movies, and the Web is no different. Whether it's the Top 5% of the Net or George's Grungy Gonzo Award, there's something about winning one that just plain ol' feels good. But it also means that lots and lots of people will be heading your way as a result. They'll find your site listed among the other prestigious winners and know right off the bat that there's something special about it.

A word of caution here: You can get some awards that have no criteria for winning. In other words, anyone can put these awards up without passing any judging. You can have a truly shallow and meaningless experience by putting one on your site. But you won't be taken seriously if you apply for any of the real awards.

You might also consider issuing an award. It's a bit of work, but most Webmasters would be happy to get one, and that means a reciprocal crosslink back to your site. Translation: free promotion. If you do this, though, don't do it indiscriminately or your award will be cheapened and your reputation will suffer. You'll have to actually go to the sites that apply and decide whether they merit your award or not. It's a lot of work but can be truly fulfilling.

Here are a couple of award sites to get you started:

- ✓ The Most Meaningful Awards on the Web at <http://www.konnections.com/outpost/bestawards.html>
- ✓ So You Want to Win an Award? at <http://ucsu.colorado.edu/~hundley/win.html>

A wonderful success story began in 1994 when Jeff Bezos founded Amazon.com. This Internet-only bookstore has one of the world's largest selection of books and is the leading bookstore on the World Wide Web. If you're wondering what the Amazon has to do with books, the company is named after the Amazon River, which is more than eight times the size of the next largest river in the world. Amazon.com claims that its catalog of books is more than eight times the size of the largest physical bookstore.

One of the tricks up Amazon's sleeve is to partner with Internet site developers. Just about anyone can become a "branch store" for Amazon.com by listing books in a Web page and linking to the Amazon.com site. This partner program benefits Amazon.com by having thousands of Web pages selling their books, and the commissions paid back to the partners is a great incentive to continue selling books through Amazon.com.

Find out about the Amazon.com partner program by going to the Amazon.com home page at the following address:

<http://www.amazon.com/>

You can use this same strategy in promoting your own products or services. Create partnerships and pay commissions to people who promote your products. To do so correctly, you need the assistance of a network programmer. The programmer must create a program that tracks how purchasers of your online product land on your Internet site so that you can appropriately credit whoever promotes your product.

Forming partnerships certainly fits with the overall cooperative model of the Internet. Many other business models certainly can find their way successfully onto the Internet. Perhaps your ideas can create the next huge success.

Promoting Your Electronic Mailing Lists

Information is one of the hottest products going on the Internet. After all, aren't we currently in the Information Age? If information is your product, one of your most important considerations is how to distribute what you know.

One great way to distribute information is by creating an *automated mailing list* — which is nothing more than a vehicle that enables people to sign up to receive your information automatically or to participate in e-mail conversations. (See Chapter 10 for complete instructions on how to create an electronic mailing list.) More and more people subscribe to automated mailing lists every day. Some electronic mailing lists, such as the one run by Robert Seidman, have more than 15,000 subscribers.

Follow these significant ways to increase participation in your mailing list:

- ✓ Post messages in newsgroups about your mailing list. (If you're working with newsgroups, follow any guidelines they have for posting. Newsgroups usually post such guidelines in a newsgroup *FAQ*, which stands for frequently asked questions.)
- ✓ Mention the mailing list on your home page and tell people how to subscribe.
- ✓ Enter your mailing list in some of the search engines that post mailing list information.

As we mention in the preceding list of suggestions on how to promote your electronic mailing list, placing a link from your home page is one of the best ways to promote your list. You can offer a complete description of the list and provide a `mailto:` URL that enables people to send a *subscribe* e-mail message to your list server.

Entering your mailing list in a search engine doesn't guarantee that people can find your list, but doing so does increase the chances enormously. Yahoo!s list of mailing lists is the most complete resource of electronic mailing lists on the Internet. You can begin browsing their resources at the following address:

```
http://www.yahoo.com/computers_and_internet/internet/
mailing_lists/index.html
```

Many "lists of lists" are available through the World Wide Web. Yahoo! is only one of the sources. You can find another significant index of mailing lists at the following URL:

```
http://www.internetdatabase.com/maillist.htm
```

Many people get caught up in advertising their Web pages and forget about promoting all their other Internet resources. Getting people to subscribe to your electronic mailing lists creates an online community centered around your Internet site. Forming this type of community can prove much more valuable than simply trying to get hordes of people to see your Web page.



Remember that e-mail isn't limited to text. Your electronic mailing list can distribute full multimedia files, HTML files, or even sound files. Sending a lot of multimedia can possibly lower your list server's efficiency but certainly makes your mailing list more interesting.

Advertising Your Anonymous FTP Site

Anonymous FTP sites are wonderful places to store and share programs, information files, or other types of electronic information. If you decide to run an anonymous FTP site, you quickly find that advertising the site is simple. Archie, started in the late 1980s at McGill University, is a search utility that checks a database containing the filenames of files stored in anonymous FTP and Gopher sites around the world.

Adding your anonymous FTP site to the Archie database is simple. Just find the Archie server nearest you and send an e-mail message to the administrator. If you need help finding the Archie site nearest you, check out the Archie page at Yahoo!.

Figure 12-6 shows a Web-based Archie request form. Using this form, you can search an Archie database for keywords that match the names of files stored in anonymous FTP sites. If you're offering files from your anonymous FTP site, you can see the importance of registering your site in the Archie database.

Figure 12-6:
You use the
Archie
Request
Form at
NCSA to
find files
stored in
anonymous
FTP sites.

You can access the NCSA Archie Request Form at the following address:

<http://archie.rutgers.edu/archie.html>

In addition to Archie, the University of Illinois has put together the Monster FTP Sites List. You may want to contact the university to add your site to the list. You can access the Monster FTP Sites List at NCSA's Web site at the following URL:

<http://hoohoo.ncsa.uiuc.edu/ftp/>



Remember to advertise your anonymous FTP site on your Web page. You can create lists of files and documents available in your FTP site with links directly to the file by using an ftp: URL. That way, people can download files from your anonymous FTP site by clicking a link in your Web page.

Sending Electronic Postcards

Postcards don't sound very high-tech, do they? But electronic postcards provide a fun and interesting way to announce your Internet resources to friends, clients, and prospects.

Today, most people pay more attention to the information they receive through e-mail than they do to the mountains of paper that the postal service delivers. A nice break from the usual e-mail is an electronic postcard or greeting card. Point your Web browser to the following URL to find out how you can send electronic postcards:

<http://postcards.www.media.mit.edu/Postcards/>

To send a postcard, go to the electronic postcard rack at the URL we've listed and pick a card — any card. You find many different categories, including holiday cards, famous art, photographs, bug drawings, science, and pictures from outer space. Some even include music.

After you choose a card (actually a graphic), enter the e-mail address to which you want to deliver your card. (You don't actually deliver a card. Instead, you send an e-mail message to the recipient notifying that person that a postcard is waiting.) Finish creating your card by entering a private message and your name. Your card goes out as soon as you click the Submit button.

The recipient, armed with a password, can then use his or her Web browser to go to the postcard Web site and view the card you sent. Even though viewing a postcard takes longer than reading an e-mail message, receiving an electronic postcard adds something special to the communication. Whoever you sent the card to isn't likely forget that you sent it.

You can find all sorts of variations on the postcard theme. You can send everything from virtual bouquets to virtual vacations. Table 12-5 shows a sampling of the things you can do.

Table 12-5	Postcards and Suchlike Fun
Service	URL (Internet Address)
Cybear Gram	http://www.bearisland.com/cyb.html
Postcard Desk	http://www.webjunkie.com/christmas/cardrack.html
Virtual Florist	http://www.virtualflorist.com/
Virtual Vacation	http://www.virtual-vacation.com/
Zodiacal Zephyr Card Shop	http://www.zodiacal.com/cgi-hts/htmlscript?cardshop.hts

Physical World Promotion Techniques

Getting lost in the marketing possibilities offered by your connection to the Internet is easy. But you want also to remember some of the more conventional marketing methods, such as radio, TV, and print magazines. These days, you see URLs at the end of movie trailers, TV shows, TV commercials, and in magazine ads. People now expect to find along with these forms of communication an Internet address that takes them to a site where they can get more information. You must find out how to use the resources around you, whether through word of mouth or corporate letterhead, to promote your Internet site.

Never pass up an opportunity to plug your site. At the very least, add your Web address and e-mail address to your business cards. Consider putting them in the return address portion of your snail mail (that's what techno-geeks call the U.S. Postal Service).

Word of mouth

Tell people you're online. You are the best marketer of your information. Gone are the days when you needed to give a lengthy description while waving your arms trying to describe the Internet or the World Wide Web to people. The Internet is now a ubiquitous part of life in North America and parts of Europe and Asia. Tell people that you have an e-mail address, a Web site, and other electronic resources that you provide online.

A side benefit to discussing your online presence with others is the fact that they discover that you keep up with the times and use the resources around you to succeed. Of course, having someone grab a pen (if the person can find one), ready some paper (other than the restaurant napkin), and then write out *h-t-t-p:-/-/* can prove time-consuming and frustrating; by the time everything is written down, the person may have lost interest. So try combining word-of-mouth advertising with printed materials.

Printed materials

Online advertising hasn't replaced printed advertising yet; printed materials remain one of the most effective ways of telling people that you have an Internet site. Putting the URL of your site on your business card, along with your e-mail address, makes finding and contacting you online fast and simple — no one must struggle to find a pen, paper, and a place to write down your information. In fact, including your e-mail address and URL in all your printed material, such as stationery, advertisements, business cards, newsletters, brochures, and slide presentations, is always appropriate now.

The following list provides some additional suggestions for advertising your Internet address:

- ✓ Run small advertisements in appropriate media.
- ✓ Add your URL and e-mail address to coffee mugs, pens, floating key chains, and other advertising specialty items.
- ✓ Add your home page URL to greeting cards. You may be surprised how much closer contact you maintain with distant associates or even family and friends from long, long ago if you keep in touch electronically. Aunt Marsha and Uncle Herb might have an e-mail address and a home page, too.

The telephone

The telephone remains one of the most important business tools in the world; the Internet hasn't replaced Ma Bell yet. But the problem with the phone is the fact that most people use it only to talk to people during business hours or to leave the ubiquitous voice mail. You need to take advantage of current telephone technology to direct people to your more interactive technologies. Your company's interactive voice response system (you know — the electronic voice that answers the phone) can offer electronic alternatives for customers looking for more information about your products or services. Direct them to your Internet site. You could use a recorded message such as the following example:

"If you want further information, you can browse our World Wide Web site at [address] or download the most current specifications from our FTP site at [address]. You can also contact the sales department directly through our NetMeeting connection. Connect to [address]."

Millions of people still use the telephone to transact business, provide information, and talk with friends. No reason on Earth exists why you shouldn't take advantage of this old technology to direct people to your exciting online presence.

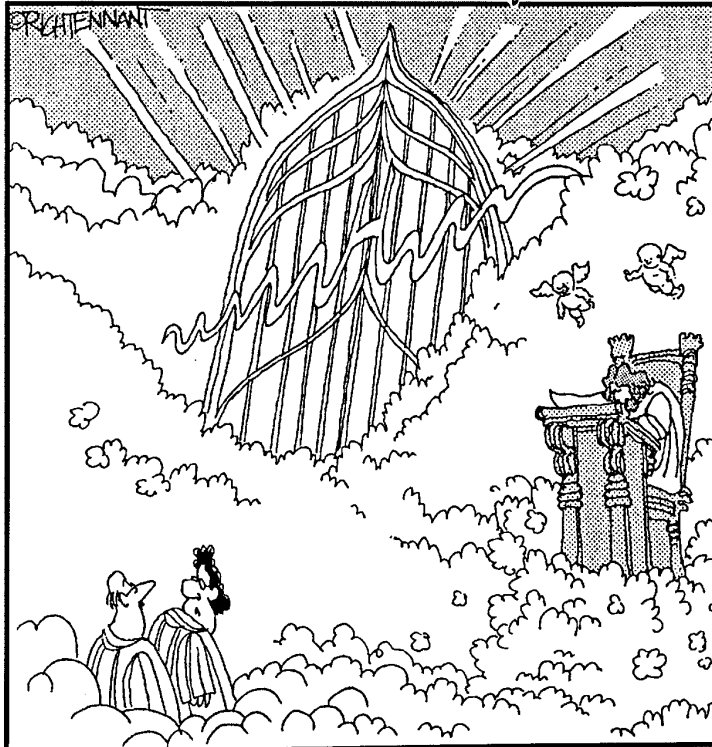
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Part V

The Part of Tens

The 5th Wave

By Rich Tennant



"OH, I'LL GET US IN - I USED TO RUN TECH SUPPORT AT AN
INTERNET ACCESS COMPANY."

Petitioner's Ex. 1008

In this part . . .

This part of the book is the most fun. Each Part of Tens chapter highlights ten things that we thought you'd like to know about but that didn't fit anywhere else in the book. Among these are ten Internet services you can't live without. You also discover ten technology add-ons for your site, ten easy ways you can enhance your site, ten lords-a-leaping, and anything else we could think of that had anything to do with the number ten.

Chapter 13

Ten Trends in the Interactive Global Village

In This Chapter

- ▶ Coping with the change that is upon you
- ▶ Finding out how the Internet is the key to shared diversity
- ▶ Creating the future with Internet programming

The Internet of today is still a confusing environment for many people, and it's not going to get any less complex. Just about everyone now recognizes the *potential* of the Internet, but few realize that the Internet is already transforming the future of communications and the structure of society.

Predicting the future direction of the Net is like trying to predict the weather, but we think a few solid trends will hold true.

Science on the Internet

The Internet has its roots in the scientific and research communities. Expanded communications and collaboration tools have increased the speed at which information disseminates in these communities. Scientists and science students are realizing truly remarkable advantages from the Internet.

One resource that has been in the news lately is The Visible Human Project, a large set of digital images that displays every detail of human anatomy, 1 millimeter at a time. You can access the project, which includes both male and female anatomy, at the following URL:

http://www.nlm.nih.gov/research/visible/visible_human.html

To science, The Visible Human Project represents the opportunity to incorporate a precise electronic anatomy model into all kinds of biological research. Now programmers can write new software, giving researchers around the world an interactive biology laboratory in which they can conduct endless experiments. Only the capabilities of the computers and software involved limit the potential of such an interactive biology lab.

Another exciting Internet science project involves astronomy. The Hubble Space Telescope has helped renew interest in astronomy, but its effect is much more significant now because of NASA's use of the Internet. Through NASA's Web site, you can download astrophotographs taken by the Hubble, sometimes within hours of their transmission back to Earth. The NASA Web site is located at the following URL:

<http://www.nasa.gov/>

Interactive Shopping

The Internet Shopping Network (at <http://www.internet.net/>) is reporting a significant increase in sales, primarily because of shoppers from outside the United States. This trend makes a great deal of sense, if you think about it. Although many Americans live just around the corner from a physical shopping mall, people in other countries (especially developing ones) don't have this luxury; their shopping options are severely limited. The Internet Shopping Network and other operations like it offer an excellent solution to their problem.

Along with enabling retailers to reach the overseas market, the Internet is proving to be an excellent sales vehicle for retailers that offer unique or specialty items. If a product is hard to find in the real world, the Internet is the place to sell that item. In fact, specialty retailers generated impressive sales even before the Web offered security features. People who wanted to purchase specialty or hard-to-find items were willing to take the chance that a hacker could intercept their credit-card numbers; more often, they found alternative ways to make their payments.

Even among affluent people who have good physical shopping facilities easily available, the Internet is bound to become a major alternative to the hassle and hustle of old-style shopping. Already, mail-order catalog companies — which also keep a strong presence on the Net — are gaining a distinct edge over shopping malls, offering better pay, working conditions, and benefits than the stores can. As Net commerce expands, you'll be able to sit around the house in your underwear and take your pick of the exact thing you want at the best price you can get. The days of fighting traffic, battling for a parking space, elbowing your way through a snarling crowd,

and settling for whatever's on the shelves will fade into the footnotes of history. A few decades from now, historical preservation societies will lobby to save the crumbling ruins of the last shopping mall, and professional actors will be hired to staff it and recreate what it was like in the old days. Tourists will come from all over the world to see the mall reenactment, complete with screaming children, husbands complaining that they're missing the football game, surly clerks, and muggers in the parking lot.

A new technology called digital ID (which we describe in Chapter 11) promises to make Internet shopping as simple as clicking the ad for the product you want to buy. Personal digital IDs for individuals prove to the Web sites you connect to that you are who you say you are. Companies such as Verisign (<http://www.verisign.com/>) that handle digital IDs for Web servers also handle the personal ones. In fact, the operation of generating key pairs is virtually identical, except you can generate them on the Web at Verisign's site instead of messing about with all that server nonsense or bothering your ISP. Your browser will generate the appropriate keys and connect with Verisign to complete the process. You can do a free trial run with a temporary, but fully functional, digital ID for 60 days to see if you like it. Web browsers such as Netscape Navigator and Microsoft Internet Explorer will supply customers' digital IDs (if they have those IDs) to merchants automatically after those customers decide to make a purchase. This type of setup means you no longer need to fill out a long form and type your credit-card number each time you make a purchase.

Online Advertising

If you create an Internet site that includes online sales, you're going to be confronted with two specific areas of concern: advertising and selling. Advertising and purchasing are going to become interactive, with sales generated instantly if you place the right ad in front of the consumer at just the right time.

Network agents

In the future, your customers are likely to use personal network agents that can filter ads that don't interest them. The network agents that are being developed can describe customers' interests and buying habits to automated advertising generators so that these programs can dynamically create ads to appeal to a specific customer. You want to stay abreast of agent technology so that you can make maximal use of this technology to further target your customer base. To read an excellent article on the JavaWorld site, check out <http://www.javaworld.com/javaworld/jw-05-1997/jw-05-hood.html>.

Credit checks

The new intelligent advertising-generation programs may have access to credit ratings and the current bank-account balances of the customers who are viewing your advertising. More likely, your Internet commerce site is going to access an Internet credit agency that doesn't reveal confidential information but does track (and score) the purchasing habits of your potential customer.

This type of automatic credit checker may be a little scary to the average consumer, providing personalized and targeted advertising at the expense of consumer privacy. Even if legislation doesn't end up restricting it, as the developer of an online store, you must weigh the pros and cons of using such a system. No matter what happens, Internet shopping is certain to have a unifying effect on global society.

Access to Government

Another trend that is certain to develop in the future is a set of Internet tools that change the way in which private citizens throughout the world interact with their representatives. Through the Internet, voters can inform elected officials of their opinions, as well as track the performance of officials through voting records and multimedia political archives. Keeping abreast of government activity can become simple, and real facts about government actions may be available at everyone's convenience.

Ideally, the cumulative effect of these changes will be positive. Interactive Internet government presents the possibility of a more accessible governing process that could revolutionize the way government officials and the governed relate to one another.

In addition, it seems likely that, with the emergence of digital IDs, online voting is not far away.

Virtual Communities

Another exciting development is the emergence of virtual communities. Entire towns are organizing to establish a presence on the Internet.

Electronic villages

The city of Blacksburg, Virginia, for example, worked in cooperation with Virginia Tech to create the Blacksburg Electronic Village. You can visit this impressive creation at the following address:

<http://www.bev.net/>

The electronic village has helped bring the people of Blacksburg together, even though they clearly were very "together" to begin with.

Internet coffee shops

Another interesting trend in community development is the emergence of Internet coffee shops. These establishments, which are appearing in all parts of the world, offer Internet access along with a hot cup of java and a friendly atmosphere. Internet coffee shops are a great way to build real-world relationships surrounding the Internet.

The desire to associate and conduct business within our own communities seems to be human nature. Becoming part of the online community can bring about the same sense of camaraderie and, with it, trust, relationships, and business. As in any community, the responsible store owners are the ones who help shape the neighborhood.

Recently, some people have discussed the possible harmful effects of the Internet on cultures — how the Internet may work to water down or homogenize cultures around the world. But this is nothing new. Port cities such as New York, Los Angeles, Miami, London, and Hong Kong have always been a mix of cultures. You can think of the Internet as the biggest port in the world, but without the oil slicks. And the capability to communicate with people in other cultures, as we now regularly do through the Internet, can work to increase understanding by sharing the unique aspects of those cultures with all people who have online access.

We also hear the ridiculous statement that the Internet, in reducing the diversity of the global community, may wipe out the incentive for creativity. We believe quite the opposite: The Internet acts as a place to share diverse ideas, spawning new creativity.

Virtual Workplaces

You may already be one of the millions of Americans who telecommute. If so, you know how significantly telecommuting changes your life. Although you may still be employed by a company, you're empowered to create your

own work environment and develop your own work habits. This opportunity can be challenging, but the rewards are well worth the extra initial effort required to get your bearings and develop good telecommuting skills.

The benefit of telecommuting to companies is also significant. Studies have shown that worker productivity increases if management puts effective telecommuting practices into place. Telecommuting has become such a mainstream and important effort that even the State of California's transportation department, CalTrans, is researching ways to implement telecommuting practices in California companies, in the belief that reducing the number of cars on the road will also reduce air pollution. Recently, the idea of a paperless office has engaged the imaginations of companies everywhere. According to *Wired* magazine, however, the excitement about the paperless office is over; now companies are on to the idea of an *officeless* office.

Internet Programming

Internet software is no more difficult to build than traditional software is, and anyone who has computer programming experience can build these programs. We've watched Internet programming evolve from laboratory experiment to corporate technology to its current Web-oriented phase. Developments in Internet programming technology are sure to become some of the most important keys to the future of the Internet and to the world that the Net helps create. Many companies have products that make Internet programming simple and fun. Macromedia's Backstage product, for example, helps you create powerful Web-based database applications. Check out the following URL for more information:

<http://www.macromedia.com/>

Some other Internet programming technologies, such as Java and ActiveX, have made network-application development a reality for almost any programmer and removed such work from the arcane world of the UNIX gurus. For more information about ActiveX, you can visit the Microsoft home page at the following URL or find more information on the science.org Web site:

<http://www.microsoft.com/>

Anyone setting up an Internet site needs to become familiar with Java and find out more about some of the exciting standards that are going to change how software communicates. For more information on Java, point your Web browser to the following address:

<http://java.sun.com/>

Chapter 14

Ten Internet Services Your Internet Site Can't Live Without

In This Chapter

- ▶ Increasing access to your Web page
 - ▶ Making a little money with your Web page
 - ▶ Participating in a Webring community
 - ▶ Spiffing up your Web page by adding some extra services
 - ▶ Delivering goods online
-

This book covers many details about getting your site online, setting up the software to provide services, marketing your site after you're online, and more. Now is our chance to tell you about some of the services on the Internet that we think you're going to love using.

Link Exchange

You've seen banner ads gracing thousands of Web pages. The cost of some of those ads can be astronomical. But what if you could place your banner ad on tens of thousands of Web pages for free? Well, you can do that, through Link Exchange, which is one of the most valuable services on the Internet because the service is a barter arrangement. You agree to place on your page banner ads that the Link Exchange provides, and for every two times someone views the Web page on which you place the ad, your banner ad appears on the Web page of another Link Exchange participant.

The great thing about the way the service works is that the more people who visit your page, the more your ad appears on other people's Web pages. The thing can really snowball. By using Link Exchange, you can easily keep track of how many people visit your pages, how many people click your banner ad to visit your page, and how many times your banner appears on other Web pages. Using Link Exchange is fun and costs you nothing.

If You Have Problems (Of the CD Kind)

We tried our best to compile programs that work on most computers with the minimum system requirements. Alas, your computer may differ, and some programs may not work properly for some reason.

The two likeliest problems are that you don't have enough memory (RAM) for the programs you want to use, or you have other programs running that are affecting installation or running of a program. If you get error messages such as Not enough memory or Setup cannot continue, try one or more of these methods and then try using the software again:

- ✓ **Turn off any anti-virus software that you have on your computer.** Installers sometimes mimic virus activity and may make your computer incorrectly believe that a virus is infecting it.
- ✓ **Close all running programs.** The more programs you're running, the less memory is available to other programs. Installers also typically update files and programs. So if you keep other programs running, installation may not work properly.
- ✓ **Have your local computer store add more RAM to your computer.** This is, admittedly, a drastic and somewhat expensive step. However, if you have a Windows 95 PC or a Mac OS computer with a PowerPC chip, adding more memory can really help the speed of your computer and enable more programs to run at the same time. This may include closing the CD interface and running a product's installation program from Windows Explorer.

With the CGI scripts, you might have problems if your server is using an older version of Perl than the programs are written for. Check the program's documentation (often found at the beginning of the script instead of in a separate file) to see what version of Perl the program needs. Make sure you have changed any variables in the script to those that apply to your own server setup. You also must have the authority to run CGI scripts on the server. If you are using an ISP's server, you may have to ask your ISP to okay and install the scripts for you.

If you still have trouble with installing the items from the CD, please call the IDG Books Worldwide Customer Service phone number: 800-762-2974 (outside the U.S.: 317-596-5430).

Glossary

Aardvark. A type of anteater whose name means *earth pig*.

Alias. An e-mail address that has no mailbox of its own, but simply relays messages sent to it to another address that does have a mailbox.

Anonymous FTP. File access via the File Transfer Protocol, which is open to the public and does not require a registered user name and password. The user name is given as *anonymous* and the password is either the user's e-mail address or the word *guest*.

Attachment. A file that is sent along with an e-mail message. Most e-mail clients place attachments into a separate directory from the one where e-mail messages are stored.

Authentication. Verifying the identity of a person or a service, usually through digital IDs.

Autoresponder. Program that automatically responds to an e-mail message by sending back a preprogrammed e-mail message of its own. Autoresponders are useful, for example, for providing price lists and newsletters.

Banner. An image with an associated link that appears on a Web page (generally at the top of the page) and contains advertising for a sponsor.

Bertie Wooster. The employer of the famed fictional butler, Jeeves.

Binary file. A program file. When transferring files via FTP, you must be careful to send program files as binary files rather than text files, because text files have a different format.

Browser. See Web browser.

Carbon copy. Sending an e-mail message to more than one person at a time. The person you are sending the e-mail message to is aware of this. If you want to send a carbon copy without the original recipient knowing about it, you send a blind carbon copy. The regular kind is usually abbreviated *cc* and the blind version is abbreviated *bcc*.

Cat. A creature that deigns to allow humans to inhabit the same planet.

CGI. See Common Gateway Interface.

Client/server. A computer that provides resources to other computers over a network is said to be providing a network *service* and is referred to as a *server*. The computers that use the services of a server are called *clients*. The term *server* is used also to refer to the software that provides the service; the software that accesses the server is also called the *client* or *client agent*.

Common Gateway Interface (CGI). A technique for passing to a program for processing information gathered by a Web form.

Configuration. The process of setting options in a program. Also, the set of options chosen.

Dedicated connection. A permanent, 24-hours-a-day, Internet connection. A dedicated connection can be a telephone line that is used solely for a modem that connects to a local ISP but is usually a high-speed connection installed specifically for Internet usage.

Dedicated server. A computer reserved for the use of a single person, company, or organization. *See* virtual server.

Default. Failure to pay bills. Seriously, defaults are the normal settings that software and hardware come with. In most cases, you can change the default settings to suit yourself.

Demographics. Literally, "writing about people." Information you gather from the people who visit your site. Commonly, demographics includes such things as computer system used, income level, and any other information you think you require to understand your audience. Be careful about gathering data on age, race, sex, ethnicity, religious persuasion, and the like because this can lead to discrimination charges. Make sure that, if you do ask for this type of information, you make it clear that such disclosures are purely optional. And never, never, never, make any of this information available to anyone else, except as a lump sum total. Individual input should be held absolutely confidential.

Denmark. A country in eastern Europe, of which about 75% is composed of farms.

Dial-up connection. A telephone line by which occasional connections are made to the Internet via a modem call to a local ISP.

Digital ID. An encrypted identifier kept on file at a central repository (called a *certificate authority*) that certifies that you are who you say you are (just in case you were beginning to wonder).

DNS. *See* Domain Name System.

Domain Name System (DNS). DNS enables computers on the Internet to have names that are easier than IP addresses for people to remember. The names assigned to computers through DNS are called *domain names*. The term *domain name* has two meanings, depending on the context in which the term is used. A domain name such as *science.org* refers to the Internet site run by a particular organization, whereas a domain name such as *titanium.science.org* refers to a particular network node within the *science.org* domain. The longer domain name is sometimes referred to as the *network node's fully qualified domain name* to differentiate it from the larger domain, but the term usually is shortened to *domain name*. Therefore, both *titanium.science.org* and *science.org* are domain names. The former, however, refers to a particular computer named *titanium* that exists within the *science.org* domain; the latter refers generally to a group of related computers that belong to a single organization.

Download. To get a file transferred from another computer to yours. Also, the file which is downloaded. *See also* upload.

E-mail. Messages sent via a local network or the Internet from one computer user to another. When sent across the Internet, e-mail is addressed to the user as

username@hostname. The *username* part is — you guessed it — the person's user name, and the *hostname* part is the fully qualified domain name of the user's host computer. So, if you wanted to send an e-mail message to someone whose user name was ralph123 and who maintained an account on toymouse.com, you'd address it to ralph123@toymouse.com (the @ means *at*).

Emerald City. The home base of the Wizard of Oz.

EtherNet. A common network standard.

Fargo. A city in North Dakota.

Feed. The transmission of messages from one news server to another.

File Transfer Protocol (FTP). A method for transferring files from one computer to another across a network or the Internet.

Flame. A message containing insults or inflammatory material.

Flame war. An extended exchange of messages containing flames. Flame wars disrupt the normal process of communication in mailing lists or newsgroups. *See also* flame.

FTP. *See* File Transfer Protocol.

GIF. An image stored in a file that follows the standards of the Graphics Interchange Format. GIFs are commonly used for limited animation.

Gopher. An early method, predating the World Wide Web, for locating and accessing resources on the Internet. The name comes from the fact that you would tell it what resources you wanted to see and it would "go for" them.

Guillemot. A type of sea bird famous for waddling.

Header. The top part of an e-mail message, which contains information showing the date and time the message was sent, what path it took to reach you, and lots of other information of interest only to the true e-mail maniac. Most e-mail client programs enable you to set an option that relieves you of ever having to see header information.

Hit. A single access of a Web page.

Horace Greeley. Newspaper editor, most famous for the phrase, "Go west, young man, go west." He wasn't the person who said that, but nobody remembers John Soule, who did.

HTML. *See* Hypertext Markup Language.

HTML editor. Specialized text editor for writing Web pages.

HTTP. *See* Hypertext Transfer Protocol.

Hyperlink. *See* link.

Hypertext. Text available on a computer that includes links to other text, images, sound, and so on.

Hypertext Markup Language (HTML). The native language of the World Wide Web, used to construct Web pages.

Hypertext Transfer Protocol (HTTP). A system for transferring files across the World Wide Web.

IANA. *See* Internet Assigned Numbers Authority.

IETF. See Internet Engineering Task Force.

Image. General term for any picture or artwork included on a Web page. Images are stored usually in GIF or JPEG format.

Image map. An image that contains multiple links. Users viewing an image map select different links by (with mouse-oriented systems) moving the pointer to different parts of the image and clicking. The images used with image maps must be carefully designed to provide visual clues to the contained links.

Inactivity timeout. The period of time after which a connection will be automatically severed if no activity occurs.

Internet. Short for *internetwork*, which means to link many networks. Sometimes called the “network of networks,” the Internet was created — and continues to grow — by linking computer networks so that they can all communicate with one another.

Internet access. The capability to connect to the Internet. Usually provided by an ISP.

Internet Assigned Numbers Authority (IANA). The group that makes port-number assignments on a first-come, first-served basis. Only developers of network software need to worry about having a port number reserved for their software, but the IANA Web site, at <http://www.iana.org/iana/>, is an important place for you to visit anyway, to understand more about how Internet software works.

Internet Engineering Task Force (IETF). The group responsible for keeping track of existing Internet standards and helping create new ones. Anyone can join the IETF

for free and participate directly in the creation of new Internet standards. Visit their Web site at www.ietf.org for more information.

Internet presence provider (IPP). A company that provides servers for the use of paying customers. Most IPPs are also ISPs.

Internet relay chat (IRC). Live, online interaction between people. The interaction takes place as a kind of live e-mail, with the participants typing messages that are instantly seen by all others who are in a particular chat room. You first need to use a program such as mIRC or Microsoft Chat to log on to an IRC server, and then choose a chat room from the list of available ones (or create your own).

Internet service provider (ISP). A company that provides Internet access, usually by dial-up connections, though many also offer high-speed dedicated connections.

Internet site. A collection of computers that are permanently connected to the Internet and that appear to the outside world to be related to one another.

Internet standards. Worldwide agreements about how Internet technology should function.

Internet telephony. The Internet is essentially a telephone system connecting computers. With the addition of a microphone, speakers, and a sound card to your computer, programs such as Internet Phone and FreeTel make it possible to carry on conversations with anyone who has a similarly equipped computer anywhere in the world over the Internet. Although the sound quality falls short of

what you're accustomed to on a regular telephone, unlimited worldwide telephone service for the price of a local Internet connection is hard to beat. And the sound quality is improving all the time as Internet telephony catches on. It goes without saying that the telephone companies are somewhat upset about this development.

IP address. A unique numerical identifier for Internet sites. An IP address is a set of four numbers separated by periods, or dots (also called a *dotted quad*): 207.92.75.100, for example.

IPP. See Internet presence provider.

IRC server. See Internet relay chat.

Isopoda. A type of crustacean with a small head.

ISP. See Internet service provider.

John of Lancaster. Admiral of the British fleet in 1422.

JPEG. Also called *JPG*. An image stored in a file that follows the standards of the Joint Photographic Experts Group. JPEG files are generally smaller than other file formats, but maintain a high-quality image nonetheless.

JPG. See JPEG.

Jukebox. A CD-ROM drive that holds multiple disks simultaneously.

Keyword. A search term supplied by a person to a search engine, which then looks for Internet resources that contain that term. Also, such terms that are included on a Web page so that search engines can properly categorize the page.

Klondike. An area in Alaska where gold was discovered in the late nineteenth century.

Link. Also called a *hyperlink*, a connection between a Web page and another Internet resource. Usually, a link contains the URL (Internet address) of another Web page, but it can also link to other resources, such as images. By convention, links are displayed as blue, underlined text that, when activated (usually by a mouse click), causes a Web browser to load the linked resource. Images are also often used as links; by convention, such image links are surrounded by a thin blue border to differentiate them from normal images. Image maps, which are images that contain more than one link, are an exception to the blue border rule.

List owner. The person who manages a mailing list. Usually, the list owner is the person who conceived and launched the list. Also called *list manager*, and may be the *moderator*. See moderator.

List server. A program that processes the e-mail messages that compose a mailing list. The list server usually also handles such routine administrative matters as subscribing and unsubscribing list members when they send a message containing the appropriate commands.

Locomotive. A specialized type of railroad car, also known as an *engine*, that propels other railroad cars along the track.

Log file. A file that records activity. A Web server log file, for instance, records the origin of anyone who looks at a Web page, the type of browser they were using, and so on. Log file analyzer programs such as Statbot are useful to Webmasters in figuring out peak times of usage, the number of hits per day, where visitors were referred from, and so forth.

Mail filtering. The process of automatically taking action on e-mail messages as they come in. You might set rules that put all mail with a particular word in the subject into a different folder, for instance, or that delete mail from a particular person before you see it.

Mail server. A program that receives, stores, and forwards e-mail messages.

Mailbox. A storage area where your e-mail messages are kept until you retrieve them.

Mailing list. A discussion group, the members of which post messages that are relayed via e-mail by a list server. Mailing list membership can be either open or closed.

Message board. Similar to a newsgroup, but operates on an individual Web site. Message boards, sometimes called graffiti walls, allow site visitors to leave messages for other visitors to read. The more sophisticated message board programs include such niceties as message threading and keyword search capabilities.

Modem. *Modulator/Demodulator.* Device that allows a computer to send signals over a telephone line.

Moderator. A person who controls the content of a mailing list or newsgroup. In extreme cases, this can amount to censorship, but moderate moderation simply results in the removal of extraneous material such as sales pitches for products and services unrelated to the topic of the mailing list or newsgroup. A moderator may also play peacemaker, attempting to keep tempers in check among the members of the mailing list or newsgroup, thus avoiding flame wars.

Modesty Blaise. A popular adventure character first introduced in a 1962 comic strip, later the subject of about a dozen novels and at least one movie.

Name server. A computer that maintains a database of domain names and IP addresses. See Domain Name System.

Netiquette. Internet etiquette. A series of customs that has evolved to enable people to get along while living together in cyberspace. Basically, be nice and consider how other people might be affected by your actions.

Network. A collection of computers and other devices (such as printers) that are connected for the purpose of sharing resources.

Network adapter. A computer card that allows a computer to be connected to a network.

Network hub. A device that is the central point for relaying signals between parts of a network.

Network News Transfer Protocol (NNTP). The system by which newsgroup messages are transferred between news servers.

Network node. Any device on a network.

Network repeater. A signal amplifier that allows devices on a network to be located farther apart than usual.

News reader. A program that is used to connect to a news server. News readers allow people to read messages and download images from newsgroups.

News server. A program that receives, stores, and forwards newsgroup messages. The server that is sending is called the *upstream* server; the one that is receiving is called the *downstream* server.

Newsgroup. A discussion group, the members of which post messages relayed via a news server. Newsgroups can be either local or global. Global newsgroups are open to the public.

NNTP. See Network News Transfer Protocol.

Northwest Passage. The channel leading from the Atlantic to the Pacific Ocean north of North America. Much sought after since the fifteenth century, but not successfully negotiated until 1906.

Ogdensburg. A city in New York State at the meeting of the Oswegatchie and Saint Lawrence rivers.

Online service. Sort of a mini-Internet, services such as CompuServe and America Online provide many of the functions that the Internet does, but on a smaller scale. In recent years, the online services lost much business to the Internet and decided to provide Internet access as part of their services.

Packet. Like little envelopes sent by traditional mail. Each packet contains an address, just as any paper envelope does, and some amount of information.

Page-generation program. Software that uses a WYSIWYG (what you see is what you get), point-and-click interface for creating Web pages.

Password. A secret word used to gain computer access. Passwords are sometimes chosen, sometimes assigned. Two schools of thought on passwords exist. One says that passwords should be so difficult to imagine that no one else could possibly guess yours in a million years. These people want everyone to have a password like *109834akjd30d9dfnap33o78dsjfa23sdorf*. Although it's true that it's not a good idea to use your dog's name for your password, this approach seems a bit extreme. (Most passwords are between 4 and 10 characters, anyway.) The other school of thought says that you should be able to remember your password. If you have only one or two, this is no big deal, regardless of their complexity; you'd be surprised how quickly a random series of numbers can become familiar. One technique favored by many people is to combine two unrelated but easy to remember words, putting a few numbers between them, such as *music42bank*. Just make sure the terms have no connection to you. The *music42bank* password would be a fine password for a dog breeder, but a lousy one for a banker who played jazz gigs after hours, especially if he or she was 42 years old.

Pausanias. General of the Greek army in the Battle of Plataea in 479 B.C.

POP. See Post Office Protocol.

Port numbers. Part of the IP address, port numbers are unique for a particular IP address, meaning that two information services can't both use port 80 on network node 207.92.75.100. But port numbers are not unique globally. The network node at IP address 207.92.75.100 can provide an information service by using port 80, and

at the same time, IP address 207.92.75.101 can provide a service by using port 80. Together, an IP address and a port number identify a unique network node and a unique information service on the network node, respectively.

Post Office Protocol. The method by which e-mail clients pick up e-mail from a mail server.

Privileges. Limitations on access or the types of commands available given to various people or groups. *Root privileges*, for example, are available only to the person in charge of a server, because they allow anyone who has them to totally change the system.

Protocol. An agreed-upon set of commands for accomplishing a particular purpose.

Quimper. A French city on the Odet River.

Ray tracing. A method of producing images that follows rays of (theoretical) light as they pass through a (hypothetical) scene and reproduces the effects that would be produced by those light rays if the scene actually existed.

Reciprocal link. A link to a Web page that also has a link back to your own Web page. Hyperlinking is a common practice for building traffic among Web sites. If you want to establish reciprocal links with someone's site, put in a link to their site on your own, and then send them an e-mail message asking them to reciprocate.

Ring. A series of Web sites connected with links that lead from one to the other such that visitors who follow all the links can go full circle and return to their starting place.

Runic alphabet. The characters used by Teutonic peoples of early Europe, also called *futhark*.

Samuel Langhorne Clemens. The real name of a writer known to history as *Mark Twain*.

Search engine. A program that checks through a database of terms to see which Internet resources contain them. Local search engines are a variant on this; they actually read every page in a Web site to see if it contains the search term.

Server. *See* Client/server.

SGML. *See* Standard Generalized Markup Language.

Shopping cart. A program that permits people visiting your site to choose which items they will purchase. The shopping cart metaphor extends to the ability to put items into the cart and remove them before making the final purchasing decision.

Simple Mail Transfer Protocol (SMTP). A common method for sending e-mail between mail servers.

Sleep. A common practice utterly unknown to authors trying to meet a deadline.

SMTP. *See* Simple Mail Transfer Protocol.

Spam. Unsolicited e-mail messages, sent in bulk quantities to several addresses. Also, the same message posted to multiple newsgroups simultaneously.

Standard. A generic term for just about anything that lots of people agree on. A standard may be a way to transfer files from one system to another one, the exact

structure and function of a computer language, or a method of compressing video images. If a recognized, organized group develops a standard, it's called an *official standard*. If a standard is developed by the market leader and is used by most of the people in a particular field, it's called a *de facto standard*.

Standard Generalized Markup Language (SGML). A method for describing markup languages such as HTML.

Subscriber. A member of a mailing list. Also called, amazingly enough, *list member*.

TCP/IP. See Transmission Control Protocol/Internet Protocol.

Telecommuting. Working from home via remote computer access.

Telepathy. The capability to transfer thoughts from one mind to another.

Telnet. A method of remote access to a computer. Allows users to type commands as though they were at the terminal of the remote computer.

Text editor. A simple form of word processor that saves text files without formatting.

Text file. A file of text. (No kidding.) When transferring text files via FTP, be careful to send them as text rather than as binary files because text files often need to be converted between Windows and UNIX systems, which have slightly different text formats.

Traffic. The number of visits to an Internet site, as in "Our traffic increased by 100,000 visitors last week."

Transmission Control Protocol/Internet Protocol (TCP/IP). The standard way for data to be relayed around the world on the Internet. Many, but not all, computers on the Internet speak TCP/IP directly. Other computers speak a different networking language and rely on translation equipment to convert between TCP/IP and their native network language.

Uncertainty principle. A fundamental theorem of quantum physics, which states that it is impossible to know both the direction of travel and the location in space-time of an atomic particle.

Uniform Resource Locator (URL). Each bit of information on the Internet is known as a *resource*. A URL specifies the type of software used to handle the resource, the computer on which the resource is located, and the name of the resource. The URL adds a specific resource name, such as a filename, to the IP address and port-number combination. The first part is called a *prefix*. Following are some common prefixes.

Prefix	Information Service	Example URL
http://	World Wide Web	http://www.science.org/
ftp://	File Transfer Protocol	ftp://ftp.science.org/
gopher://	Gopher	gopher://science.org/
mailto:	E-mail address	mailto:info@science.org

UNIX. A common operating system on the Internet.

Upload. To get a file transferred from your computer to another one. Also, the file that is uploaded. *See also* download.

URL. *See* Uniform Resource Locator.

User name. Also called *user ID*. The name by which a person is identified on a particular computer system. Usually some variant on the person's given name.

Van de Graaff generator. A primitive device that can generate millions of volts of static electricity.

Virtual server. A directory on a computer that simulates the existence of a separate computer. *See also* dedicated server.

Web. *See* World Wide Web.

Web browser. A program that displays Web pages and follows links to allow a user to traverse the World Wide Web.

Web page. Also called *HTML page*. A display composed with the Hypertext Markup Language that is viewable with a Web browser.

Web site. Any presence on the World Wide Web. Usually applied to a collection of Web pages.

Webmaster. The person in control of a Web site. A Webmaster may be an individual with only a single Web page, or the manager of a large team of developers who create and maintain Web sites.

William Kidd. Eighteenth-century English privateer who went down in history as the pirate "Captain Kidd." He provided documents to political authorities that showed he had attacked only ships

carrying papers that revealed they were at war with England, but the papers were lost until the 1970s.

World Wide Web (WWW). The total selection of Web sites interconnected via the Internet.

WWW. *See* World Wide Web.

Xylem. The central core of plant roots.

Ytterbium. A rare earth element often found in combination with gadolinite.

Zymurgy. The study of the fermentation process.

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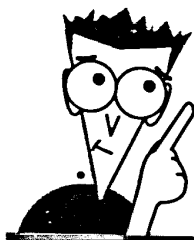
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by Colin Banfield
Product Line Manager
Mitel Corp.

Let These Icons Guide You!



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Alerts you to bits of wisdom from Internet veterans



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Points out whether you have the right stuff to build an Internet site



TECHNICAL STUFF
Highlights technical asides that give more detailed explanations

About the Authors

Jason Coombs and Ted Coombs are research scientists at SCIENCE.ORG™ (<http://www.science.org>), an independent science and technology research and development lab. They also write for technical journals and have authored several books about computer and Internet technology.

David Crowder and Rhonda Crowder have been involved in the online community for over a decade. They created the award-winning LinkFinder (<http://www.linkfinder.com/>) and NetWelcome (<http://www.netwelcome.com/>) Web sites.

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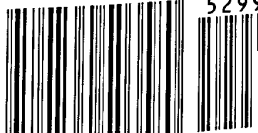
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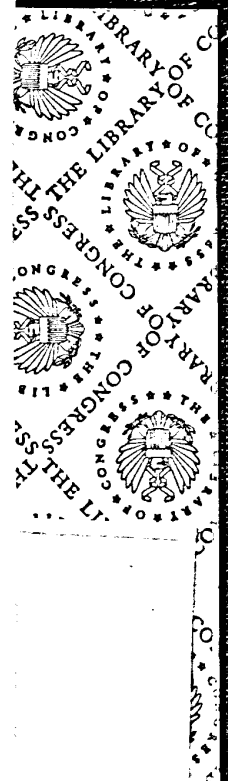
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