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Special Edition Using Netscape 2

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CHAPTER 4

Loading and Configuring Netscape for the Macintosh

The Internet has traditionally been difficult to understand and use for two reasons: it's vast, and it's arcane.

The size of the Internet is easy to see. When Valvoline advertises its Web page address (<http://www.valvoline.com/>) during televised stock car races in the southeast United States, you realize that the Internet has spread into parts of our lives unimaginable 10 or more years ago. No one expects the Internet to become any less pervasive any time soon, if ever.

In the early days of the Internet, Internet access was difficult. Everyone involved in the Internet received access through their professional careers in academia and the military. Since the Internet was built primarily by linking computer systems that spoke various flavors of UNIX, UNIX knowledge became the required passport. When the Internet grew large enough that people could not hope to find what they needed just casting about by themselves, search tools were created with names like FTP, Telnet, Gopher, Archie, and Veronica. These tools were created for use by computer professionals, and were not designed for today's average user of the Internet.

Since 1990, the World Wide Web has been created as a user-friendly way to link many of these information resources and search engines together. The first Web browser, NCSA Mosaic, was a wonderful improvement in ease-of-use of the Internet. Since Mosaic's first version, many other Web browsers, including Netscape, have been developed. While there are many Web browsers, one study in the spring of 1995 estimated that three-quarters of all Web access was through a Netscape browser. This chapter discusses how to get Netscape 2.0 running on your Macintosh computer.

In this chapter, you learn the following:

- How to get Netscape onto your Macintosh
- What communications software you need in addition to Netscape, and where to get it
- How to configure Netscape

Getting Netscape

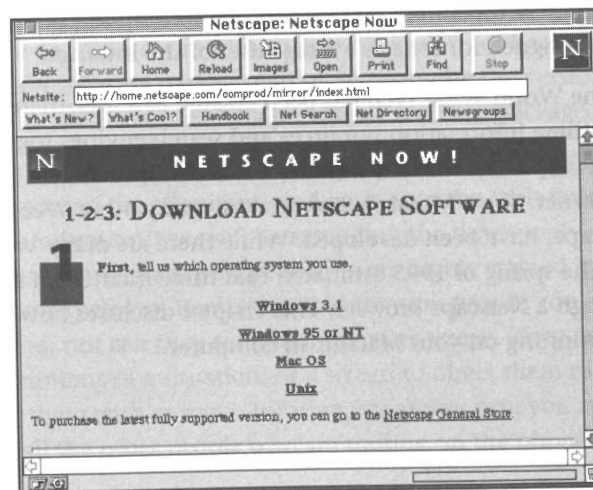
The two most likely ways for you to install Netscape on your Macintosh are either by downloading a newer version of Netscape with an already-installed older version of Netscape or other World Wide Web browser, or using floppy disks from a purchased copy of Netscape. If you are installing Netscape from a set of floppy disks, follow the instructions provided.

If you are using Netscape or another Web browser, the URL for downloading the most current version of Netscape is **<http://home.netscape.com/comprod/mirror/index.html>**.

If you have FTP (File Transfer Protocol) software, you can look for the FTP site **<ftp.netcom.com>**. If that site is busy, try **<ftp2.netcom.com>**, **<ftp3.netcom.com>**, **<ftp4.netcom.com>**, **<ftp5.netcom.com>**, **<ftp6.netcom.com>**, or **<ftp7.netcom.com>**. After you get through to the FTP site, look for the folder the files are stored in. As of this writing, the full path for the 2.0 beta release of Netscape is **<ftp.netcom.com/2.0beta/netscape/mac/netscape2.0-b1.hqx>**.

The Netscape Now! page is where you always find the most current version of the Netscape software (see fig. 4.1).

Fig. 4.1
Netscape Now!
page.



Note

If you already have Netscape and are installing a newer version, find Netscape on your Macintosh and note what folder the application is in. If you are downloading Netscape with an older edition of Netscape, choose the Preferences command from the Options menu, and then look at the Directories and Applications dialog box to see the default FTP download directory. If the default FTP directory is the same folder your current Netscape is located in, change the download folder to another folder. If you do not change the default download directory, you will overwrite your currently installed version of Netscape.

Follow Netscape's instructions on the following pages of its Web site. After you download the file, you need to uncompress the compressed file.

Installation Requirements

In order to install Netscape, you need a Macintosh that has a 68020 processor or better, can run System 7.0 or later, and has at least 3MB of free RAM and about 3MB of hard disk space.

Note

Netscape will not run on the Mac Plus, SE, Classic, Portable, or Powerbook 100.

Any helper applications you install will also want additional memory, from less than 400KB for StuffIt Expander to 2.5MB or more for Whirlwind. You also need at least a 14,400 baud modem.

The previous paragraph discussed the minimum requirements for Netscape on the Macintosh. A more realistic setup would have a Macintosh with the following:

- Either a 68040 or PowerPC processor
- At least 8MB of total RAM (not free RAM, although more RAM is always better)
- A color monitor (to take advantage of the image display capability of Netscape)
- The fastest modem you can find (28,800 external modems for the Macintosh are available for under \$150 as of this writing)

Netscape, like almost every other application, performs better with more memory. For better performance and reliability, a good general rule for Macintosh software is to set the "minimum size" memory requirement to 25

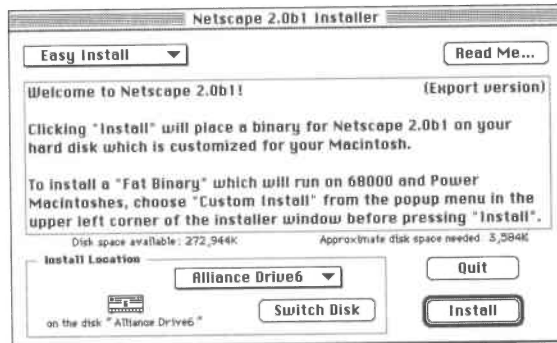
percent higher than its default setting. Also, you can set Netscape's cache value higher, so that more images and Web pages are stored on your hard disk, which gives you faster response when jumping to a Web page you've visited in that session. With a large cache, your newsreader and electronic mail requirements, several helper applications (sound, video, uncompressing files, VRML, and so on), and your Netscape and helper applications folder (counting the additions created in the Preferences folder of the System Folder) could easily reach 6MB or more of memory and 20MB or more of hard disk space.

Installing Netscape

After you have the Netscape installer icon on your Macintosh desktop, double-click the icon to display the Netscape Installer window shown in figure 4.2.

Fig. 4.2

The Netscape Installer window.

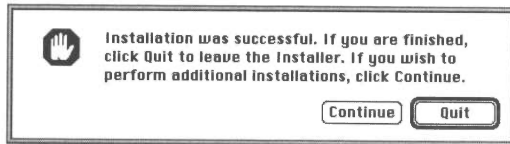


The Easy Install option, shown as the default selection of the pop-up menu in the upper-left of the window, installs a version of Netscape appropriate to your Macintosh (either a PowerPC-native version, or a version capable of running on 68000-series Macintoshes). If you choose Custom Install from the pop-up menu, you can install a fat binary version of Netscape that runs on both Power Macintoshes and 68000-series Macintoshes.

Note

Although a fat binary is larger than either a PowerPC-native application or a 68000-series version of the same application, sometimes a fat binary can be useful. At one time, I was commuting between a Power Macintosh at one location and a Macintosh SE in the second location. By carrying an external hard disk, I was able to travel with all my files and applications. Any processor-specific version of the several I used would have been inconvenient. However, available disk space on your system may recommend against wholesale installation of fat binaries.

If you have multiple disks attached to your Macintosh, use the Switch Disk button in the bottom center of the window to select the desired installation disk. Selecting the name of the disk next to its icon in the Installer window displays a pop-up list of the available disks and an option to select a folder of the current disk. If there is not enough disk space to install Netscape (about 3.5MB), the Installer will not allow you to install to that disk, and will display a message that you should select another disk. After you have decided where to install Netscape and checked to see if the chosen disk has enough memory (about 3.5MB), click the Install button in the lower-right corner of the window. An Installing window appears with a progress bar that fills in as the files are installed. A dialog box appears if installation is successful, and prompts you to quit the Netscape Installer or perform further installations (see fig. 4.3).

**Fig. 4.3**

The Netscape Installer window after a successful installation.

Macintosh Prerequisites: MacTCP and ConfigPPP

MacTCP is the Macintosh version of TCP/IP (Transmission Control Protocol/Internet Protocol) used by research organizations, universities, and the Internet to allow different types of computers to connect with each other over a network.

SLIP (Serial Line Internet Protocol) and *PPP* (Point-to-Point Protocol) are protocols that use TCP/IP to make your personal computer a part of the Internet as long as the link to your ISP (Internet service provider) stays open.

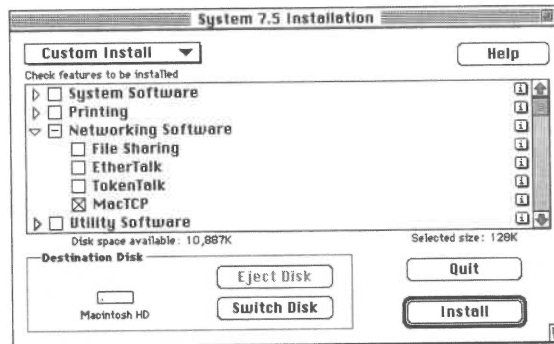
Note

If you have Netscape or another World Wide Web browser running on your Macintosh already and are just upgrading your version of Netscape, you have MacTCP and some form of SLIP/PPP working already. Skip ahead to the "Setting Basic Preferences" section of this chapter for information on how to customize your version of Netscape to work best for you.

MacTCP is included with System 7.5, but was not installed if an Easy [System] Install was performed. If MacTCP is not in your Macintosh's System Folder, install the control panel with the following steps:

1. Insert Disk 1 of your set of System 7.5 floppy disks (or the CD, if your System disk shipped as a CD-ROM), and click the Continue button in the Welcome to System 7.5 window.
2. Click the Easy Install option in the upper-left of the Installer window, and select Custom Install from the pop-up list (see fig. 4.4).

Fig. 4.4
Custom Install.



3. Click once on the triangle to the left of Networking Software to show the items in that folder. Click the checkbox to the left of MacTCP, and then click the Install button.
4. If you are using a CD-ROM, wait until you see a dialog box that says Installation was successful, and then click the Restart button to restart the Macintosh.

You also need either SLIP or PPP software to allow Netscape for Macintosh to talk to MacTCP. Apple does not supply SLIP or PPP software, but there are several shareware and freeware packages available.

Note

SLIP has almost entirely died out; almost everyone is using a PPP connection. SLIP software (such as InterSLIP) tends to be found in the same archive location as PPP software, so if you need SLIP, just follow my pointers to PPP software.

One place to find PPP packages such as MacPPP, ConfigPPP, and FreePPP is the Info-Mac HyperArchive. The URL of the TCP/IP-related software directory is <http://hyperarchive.lcs.mit.edu/HyperArchive/Abstracts/comm/tcp/HyperArchive.html>.

After you download and uncompress the file, the PPP software will be a control panel with a README file. Install the PPP software by dragging the icons onto the closed System Folder, and then restart your Macintosh.

If you are installing MacTCP and ConfigPPP, you need several pieces of information from your Internet Service Provider or system administrator. If they support Macintoshes at all, they may have a set of instructions prepared for configuring MacTCP, ConfigPPP, and Netscape.

For MacTCP, you need to know the following information to enter into the window that appears when you select the More button from the MacTCP window (see fig. 4.5).

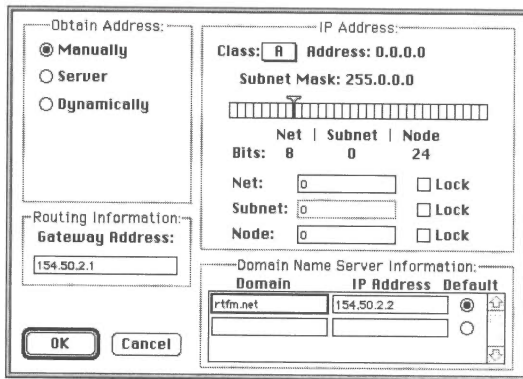


Fig. 4.5

The MacTCP 2.0.6 More window.

- *How your system obtains the IP address*—Indicate this by choosing one of the radio buttons in the upper-left corner of the window.
- *Gateway address*—This is typically four sets of one to three numbers with periods between the sets. A gateway address looks like this: 151.2.46.2.
- *Class of the server*—The A that is visible is a drop-down menu from which you can select A, B, or C.
- *Net, subnet, and node values*—These are three (normally) single-digit numbers.
- *Domain name and IP address*—The domain is typically going to be the hostname of your Internet service provider, and normally is two or more words separated by periods. The IP Address field is the IP address corresponding to your ISP's domain name, and will look like the gateway address.

For ConfigPPP, you need the following information to enter in the Config window:

- PPP server name
- Port speed of your Macintosh
- Flow control to use
- Type of telephone line (tone dial or pulse dial)
- Telephone number to dial
- Modem Init string
- Connect script for establishing connection

If you have difficulty configuring MacTCP and ConfigPPP, note these tips:

- If you are trying to enter values into the More window of MacTCP and the only fields you can enter values in are the Domain Name and IP addresses in the lower-right corner, you should set the Obtain Address buttons in the upper-left corner to Manually. Once you are done entering values in this window, remember to set the Obtain Address button to the correct choice.
- If you've entered all your information and you're having problems connecting, double-check everything. People often have trouble with typing errors. Get a friend or coworker to verify that all the information you have on-screen is correct.
- If you're still having trouble and there's another Macintosh that works with the network or service provider, find whoever is responsible for that Macintosh and double-check your settings with the settings on the working Macintosh. Remember that the connection script entered into ConfigPPP can include the username and password, so let the person responsible for that Macintosh preserve his privacy. You might ask him to make a copy of the Control Panels you need, delete his passwords from the copies, and give them to you on a floppy disk. Copying their setup to your Macintosh eliminates most of the setup this section describes how to do.

Configuring Netscape Preferences

Netscape can be customized in many ways. Most of the options ask you to choose which you prefer, more graphics or more speed. The Options menu contains controls for you to set many parameters of Netscape's appearance and behavior. There are four major windows and five toggled controls that can be selected from the Options menu.

The General Preferences Window

To view the General Preferences window, go to the Options menu and select the General command (see fig. 4.6).

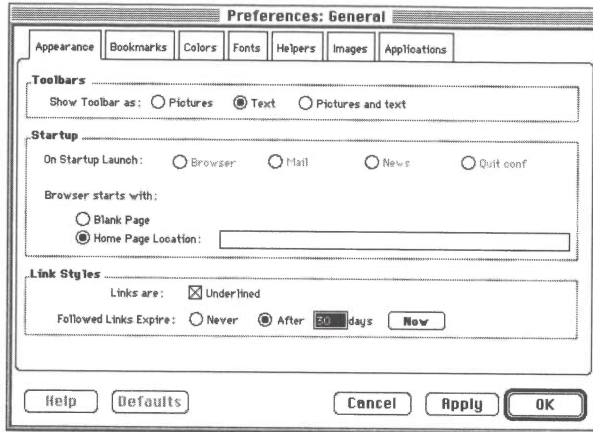


Fig. 4.6
The General Preferences window.

The General Preferences window has seven screens that let you control many aspects of how Netscape operates on your Macintosh. These seven screens are the following:

- Appearance
- Bookmarks
- Colors
- Fonts
- Helpers
- Images
- Applications

The Appearances Screen

The Appearances screen contains three panels: Toolbars, Startup, and Link Styles. The Toolbars panel controls whether the buttons on the main Netscape toolbar appear as text-only, picture-only, or pictorial buttons with text labels. If you want the window for your Web page viewing to be as large as possible, set this for text-only.

The Startup panel controls what Web page Netscape loads when it is first started, and what windows (for Web, mailbox, or UseNet news) are launched on startup. You can enter any URL (Universal Resource Locator) you like for the startup page.

TIP

One tip to speed Netscape's startup is to have your startup page be a page local to your computer, which doesn't have to be downloaded over your network connection. If you set the startup page to a local HTML file on your hard disk, Netscape typically takes less time to access a hard disk than to download a Web page over its Internet connection.

Link Styles controls whether or not you want links to appear on Web pages as underlined or not, and how long you want Netscape to keep a record of you following a given link. The default value of this Followed Links Expire option is 30 days, but you can set the time from 0 (a followed link never looks different from one you haven't looked at) to Never (a followed link will always look different than one you haven't looked at).

Expired Links as Trail Markers?

About now, somebody is thinking, "I can use these expired links as markers of where I've been!" True, but it's probably more efficient to mark your trail at just the interesting points, not every step along the path. On the other hand, expired links could be used in an experiment to research how people search for information.

The Bookmarks Screen

The Bookmarks screen lets you choose the folder your bookmarks are stored in on your Macintosh, and which bookmarks file you are using as well as the one you are adding to. For example, let's say you are researching multi-processor operating systems, and you find the URL for AT&T Bell Lab's new operating system Plan 9. The designers of Plan 9 named their project after the Ed Wood, Jr. film *Plan 9 from Outer Space*, and they have included a Web link to a Web site devoted to this movie. With the Bookmarks screen, you can open your personal hobbies bookmarks file and add the bookmark for the movie to that file. You can then reset the bookmarks file to your operating system research list, and continue on with your work.

The Colors Screen

The Colors screen lets you set the colors for new links, links you haven't looked at yet, the text color, and the background color. For contrast and ease of reading, keep the text color dark and the background color light or vice versa, unless you like trying to read purple text on a black background. Instead of a color, you can set a background image file as the default

background: a useful option if you are setting up Netscape for a presentation and want the company logo as a faint watermark-like image in the background of every page that does not have a defined background.

The Fonts Screen

The Fonts screen allows you to define the encoding format, the fixed font, and the proportional fonts used to draw the pages. You can also choose the display size of the fonts. If you find yourself leaning close to your monitor to read the words, and the text is in high contrast to the background, you could enlarge the text with these controls.

The Images Screen

The Images screen includes a choice that may improve Netscape's performance: Display Images either While, or After Downloading them. The default setting is to display an image as it downloads. If you are on a slow-to-medium speed connection, this lets you see the part of an image that has been downloaded, giving you the choice of whether to stop the download. If your computer is on a high-speed Internet connection, choosing the While Downloading option can be slower than After Downloading. Typically, a computer is idle between pieces of a downloading image. If the connection is faster than the computer can process the received information, you may have better performance if you choose After Downloading.

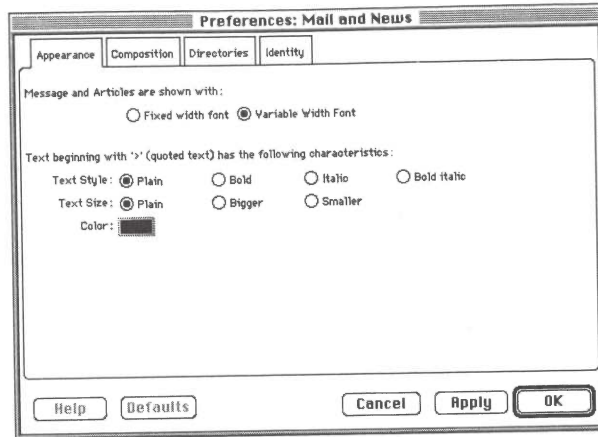
The Applications Screen

The Applications screen of the General Preferences window lets you select the supporting applications to use with a Telnet session (an older, terminal-based communication protocol explained in chapter 12), a TN3270 session (TN3270 is a fancy version of Telnet), and the application to choose to view the HTML source of a Web page. On a Macintosh, this is usually Simpletext. However, you can set the View Source application to any word processor or HTML editor you might have.

The Mail and News Preferences Window

The Mail and News Preferences window of the Options menu presents you with five ways to customize Netscape for sending and receiving electronic mail and reading UseNet newsgroups (see fig. 4.7). Chapters 12, "Accessing Other Internet Services with Netscape," and 15, "Reading UseNet Newsgroups with Netscape," cover this screen and its options in detail, so this section only covers the basics of what you need to do in order to get connected to your mail and news.

Fig. 4.7
The Mail and
News window.



Note

You will need to have the names of the computers, or servers, your Internet connection uses as the SMTP server, the POP server, and the NNTP server. You can get these names from your Internet service provider or system administrator.

To set Netscape's required preferences so that you can send and receive mail and read and post to UseNet newsgroups, follow these steps:

1. First, select the Directories tab. In the Mail panel of the Directories screen, enter the name of the SMTP (Simple Message Transaction Protocol) Server and the Mail POP (Point-of-Presence) Server in the first two fields at the top of the screen. The two servers may be the same, but they don't have to be.
2. In the News panel at the bottom of the Directories screen, enter the name of the news server.
3. Select the Identity tab. The Identity screen contains information Netscape uses to identify you to the outside world when you send a message.
4. Enter your name. This is the name you want the rest of the Internet to know you as, and does not have to be your real name.
5. Enter your e-mail address so messages you send can have a return address attached to them. Your e-mail address will look like `words_or_numbers@more_words_or_numbers`. Your POP user ID is the part of your e-mail address to the left of the @ symbol. Your reply-to address does not have to be the same as the address of the account you are sending from.
6. Click OK. To save your work, from the Options menu, choose Save Options.

The Network Preferences Window

The Network Preferences window contains settings that affect your connection to the network. The three screens of the Network window are the following (as shown in fig. 4.8):

- Cache
- Connections
- Proxies

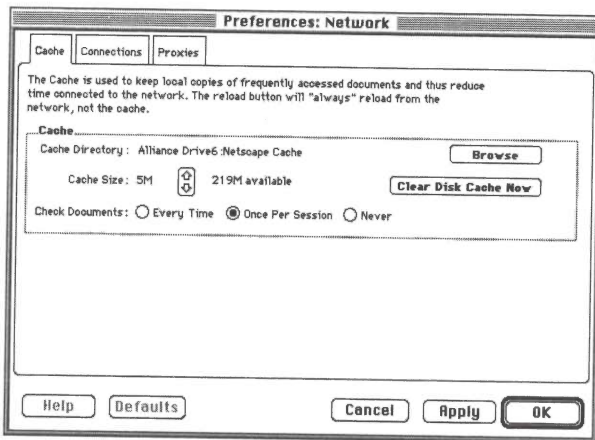


Fig. 4.8
The Network Preferences window.

The Cache screen lets you set the size of the cache Netscape uses on the local hard disk of your computer, and where you want the cache to be on your Macintosh. Netscape's cache does not have to be in the same folder or even the same disk drive where Netscape is located. If you decide to go back to a Web page that you've already downloaded, Netscape will look at the version you downloaded five minutes ago, instead of reconnecting to the network and downloading the page again (which probably hasn't changed in five minutes). Loading the page from your hard disk will always, except in very special circumstances, be faster than reloading the page from your network connection.

Note

If you think the page has changed in the last five minutes (for example, there are several people who have wired digital cameras to their Internet connection and update their Web page every minute with a snapshot of their office), selecting the Reload button will always load the page from your network connection, and not from the cache.

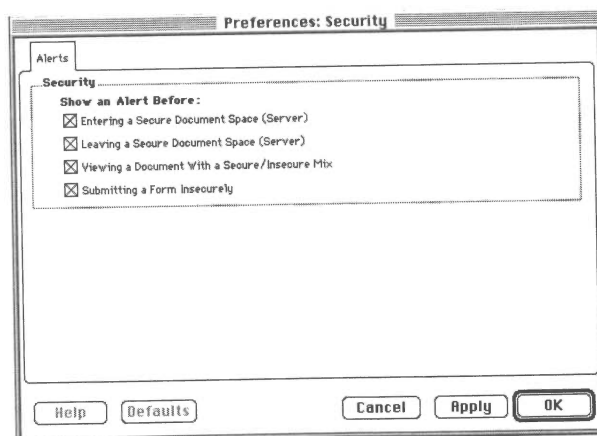
Netscape's default setting for the cache is 5MB, and you can change this to a higher or lower value. Reducing the cache size to below 1MB is not recommended, as some individual Web pages and files can exceed 1MB in size. Reducing the cache too low causes Netscape to act as if it has no cache, which can severely limit performance.

The Connections screen lets you set the number of simultaneous connections Netscape can keep operating at any moment. When you connect to a Web page with many images, Netscape is actually trying to load four (the default setting) of the images at the same time. The only difficulty is that since your network connection doesn't grow in size as you raise the number of simultaneous connections, Netscape takes as long to download a Web page four connections at a time as it does to download the same page one connection at a time. You can probably avoid this screen and leave the default value of four in place, and never worry about changing the value.

Proxies are applications that are substitutes (that is, they act as a stand-in) for your same type of application. Proxies are rarely present for any other reason than to act as guards on the firewall on a network. You will need to ask your system administrator if there are any proxies present for use across a firewall, and what settings you need to make in Netscape in order to use them.

Individuals have different concerns over their privacy and personal security. While one resident of an apartment building may use only the latch lock on their door and leave the windows open all day, their neighbor may have two deadbolt locks on each door and bars on the windows. Netscape lets you choose how often you want to be shown an alert when the security level of the page you are looking at changes (see fig. 4.9).

Fig. 4.9
The Security window.



Note

Netscape's security is always working whenever you connect to a secure Web site. You cannot turn it off, either intentionally or accidentally.

The Security panel of the Options menu lets you choose how often you want to be alerted of changes in the security of your transaction. The four choices in the amount you want to be alerted are:

- *Entering a Secure Document Space (Server)*—When this option is on, Netscape displays a dialog box every time you enter a Netscape Commerce Server.
- *Leaving a Secure Document Space (Server)*—When this option is on, Netscape displays a dialog box every time you leave a Netscape Commerce Server.
- *Viewing a Document With a Secure/Insecure Mix*—When this option is on, Netscape displays a dialog box every time you enter a Netscape Commerce Server.
- *Submitting a Form Insecurely*—When this option is on, Netscape displays a dialog box every time you send a form response to an insecure server.

If you have all these options off, you can still detect if you are connected to a secure or insecure Web page by looking at the bottom left of the Netscape window and finding the key. If the key is broken, you are looking at an insecure site. If the key is a single piece, you are connected to a secure site. If the key image is enough for you, you can turn all of the options off. However, if the key image is small and unobtrusive enough that you might not remember to check the security status of your connection, you can turn on any or all of the various warning boxes.

The Preferences Menu Commands

Below the Preferences menu entries for the General, Mail and News, Network, and Security windows, the next portion of the Options menu is a set of five settings that can be toggled from this menu. If the command has a check next to it, the command is on. These commands are as follows:

- *Show Toolbar*—Shows the toolbar across the top of the Netscape window. If you don't need the buttons, turning off this option gives more area within the Netscape window to display images.
- *Show Location*—The field which displays the URL of the current Web page is optional. I keep this field for use in helping diagnose problematic URLs.

- *Show Directory Buttons*—As with the toolbar, if you want a thinner top border to the Netscape window, turn this command off by leaving it unchecked.
- *Auto Load Images*—This command can be important for performance. If you're in a hurry, or if you don't care about pretty colored buttons, background textures and the full-page image of the Web page creator's favorite hermit crab, turn this option off to (often substantially) reduce the amount of time it takes to download a page.
- *Show FTP File Information*—When you look at an FTP site with Netscape, you see icons of folders and files with file information (size, date created or last changed, and so on). If you don't want to see this information, turn this option off.

The Document Encoding command lets you choose the document encoding standards. These options provide for more international use than earlier versions of Netscape.

The final command is important—Save Options preserves the changes you've made in this menu for the next time you start Netscape.

Technical Support: Where to Go

This chapter should be able to help you with most of your questions about where to find Netscape, how to install Netscape, and what you need in order to configure and run Netscape. In case you need some more assistance, here are some pointers.

If you have a problem with installing the MacTCP system extension, call Apple Computers at 1(800) SOS-APPL.

If you have a problem with ConfigPPP or another shareware or freeware PPP or SLIP system extension or control panel, look for the README file that comes with the software. If there is no README or Help file, throw it into the Trash, delete the file, and find another connection package.

The most likely problem you may have with getting Netscape is getting through to its site to download the software, especially if a recent version of the software was recently released. Look to the URL **<http://home.netscape.com/comprod/mirror/index.html>** for a list of mirror sites—not operated by Netscape Communications—that have the most current publicly available version of Netscape.

If you can connect to the Internet using Netscape, look in your application's menus (Netscape 2.0 for the Macintosh moved the Help menu underneath the Apple Guide or Balloon help menu item in the System menu bar) for the entry Release Notes. This command takes you to the most recent official release notes for your version of Netscape.

For general assistance, Netscape has a large amount of information on its Web site. Netscape's technical support is on the Web at **<http://home.netscape.com/assist/support/index.html>**. In general, if you have a purchased version of Netscape, consult the materials you received with your purchase for consulting with technical support. If you are having problems connecting with Netscape and can't see the Web page in order to request technical assistance, technical support is available for Netscape Navigator Personal Edition at 1(503) 626-5475. Telephone support is available for the LAN Edition of Netscape Navigator at 1(800) 320-3099.

Note

As of this writing, Netscape Communication's support policy is free telephone support for 90 days to purchasers of the LAN Edition. If you did not purchase the LAN Edition within the last 90 days, telephone support is billed to your credit card (have it with you when you call) at \$25 for the first 15 minutes and \$2 per minute after the first 15.

You can also contact other people in your area (for example, within your office or university, or the local area Macintosh User Group) for advice and assistance. Your network system administrator or Internet Service Provider (ISP) technical support should also be able to help.

A final piece of advice: If you expend a great deal of effort solving a problem and succeed, write down how you did it. Preferably, write it down where you can find it again easily. Even if you choose not to be helpful to someone else if they run into the same problem, consider how much trouble you will have reinventing your solution.

CHAPTER 18

Configuring Netscape for Graphics

If the World Wide Web were a box of Raisin Bran, text would be the bran flakes and graphics would be the raisins. While most of the Web's "nutritional content" may be in the text, the graphics are what make the Web tastier and just plain more fun than the rest of the Internet.

Netscape handles the most popular Web graphics file formats on its own, inline, but to view all the graphics on the Web, you need to set up a couple of helper applications. Fortunately, there are dozens of excellent Windows graphics programs out there that make great Netscape helpers.

In this chapter, we talk about:

- How Netscape works with graphics
- What kinds of graphics file formats you're likely to run into on the World Wide Web
- Which Windows 3.1 and Windows 95 programs make good Netscape graphics helper applications
- How to translate graphics for Netscape

Hardware Requirements for Netscape Graphics

Many older desktop PCs and notebook computers are limited in their graphics capabilities. If your machine can't display any more than 16 colors, this chapter probably isn't for you.

The minimum for cruising the Web these days is a 640×480 screen capable of displaying 256 colors. If your computer can do at least this well, you'll be able to view 85 percent of the graphics you find on the Web with no problem.

Of course, the *real* cutting-edge sites out there have pages that look good only on an 800×600 (or larger) screen, with 16-bit (65,536) or 24-bit (16,777,216) color palettes. Personally, I try to avoid such sites. They are a real killer on a 14.4KB dial-up connection.

Tip

Trying to view a big page on a small screen? No problem! Just use the scroll bar at the bottom of the Netscape window to move horizontally. Most people don't pay any attention to it on "normal" size screens, so they forget it's there when viewing pages that are a little wider than normal.

Still, some of those images are well worth waiting for. And once you've got them, you've got to have *some* way to display them.

I suggest you check the manual for your PC's display card and see what it's capable of. If your display card is more than a couple of years old, you may want to upgrade so you can handle those big, beautiful images. If your pocketbook says "no," don't despair. You can still look at them...if you're willing to compromise a bit.

Tip

Read your display card manual carefully! Even if your display isn't what you'd like it to be, it may be possible for you to plug in more video RAM and bring it up to speed. This is a much cheaper solution than buying a whole new graphics card!

How Computer Graphics Work

Computer graphics are *bitmapped images*; that is, they consist of a grid of dots called pixels that are mapped to a color palette. For example, the minimum Windows 95 display screen is 640 pixels wide by 480 pixels high (640×480), with a palette of 16 colors.

Many of the graphics images you'll encounter on the Web come in one of four "standard" sizes, which happen to match the screen sizes of common computer displays: 320×200, 640×480, 800×600, and 1024×768. However, you'll find bitmaps on the Web in sizes ranging from tiny "thumbnails" with dimensions of only a few pixels to images so huge your computer can't even load them, much less display them.

The number of colors in an image is dependent on how many bits are used to define the color for each pixel (see fig. 18.1). Table 18.1 shows how many bits are required for the five most common color palette depths.

Table 18.1 The Number of Bits Needed to Define Different Image Color Palettes

No. of Bits	Colors in Palette
1	2
4	16
8	256
16	65,536
24	16,777,216



Fig. 18.1

The scenic Grand Tetons in eight bitplanes, four bitplanes, and one bitplane.

Tip

Don't forget that black, white, and gray are colors, too! A 2-color image (1 bit) is always monochrome (black-and-white). But 4- and 8-bit images are sometimes grayscale images, with each pixel's value indicating brightness, not color.

An image's color palette is generally defined in one of two ways.

For images with 16,256, or 65,536 colors, the number that defines each pixel's color is usually a pointer into a table of predefined or user-definable colors. For example, a bit with the color "233" would point to the 233rd color defined in the color palette table. A color palette table defines colors using more bits than are used to indicate the color for each pixel. In this way, you can have images that, for example, use 256 colors out of a possible 24-bit color palette of 16 million.

But images with 24-bit color definitions usually indicate color values directly. This is done on a pixel-by-pixel basis using the same scheme that defines color palettes for entire low-color images—by splitting the number of bits for



each color value into RGB (red, green, blue) values. (This is because a video monitor builds up an image from red, green, and blue dots.) For example, a 24-bit image splits the palette into 8 bits each for red, green, and blue values. That is, each color is made up of 256 different shades, each of the three colors, for a total of 16,777,216 possible colors in a single image.

How Netscape Works with Graphics

► See “Advanced Graphics,”
pg. 673

Most computer graphic images do not share the same set of colors. This can result in color “thrashing” if, for example, your computer tries to display two 256-color images with different color palettes on the same 256-color screen. You can also run into problems trying to display an image with more colors than your display can handle, like a 16-million color JPEG on a 256-color screen. Fortunately, Netscape is very clever about how it displays inline graphics. It handles these problems by using a process called dithering.

Dithering uses a pattern of available colors to create a visual illusion of displaying more. For example, if the Netscape screen palette had no orange available to it, it might try to “fake” orange by displaying a grid of yellow and red pixels. Your eye interprets the area as orange-ish, if you don’t look at it too closely.

Note

Netscape actually does a very good job of dithering images. Dithering selection is automatic in Netscape 2.0, though you can change it manually.

To change Netscape’s setting for dithering images, follow these steps:

1. Open the Netscape menu and choose Options, General.
2. Select the Images tab (see fig. 18.2).
3. The Automatic (Alt+U) radio button is checked by default. If you leave it checked, Netscape will continue to decide when it does and doesn’t need to dither an image.
4. Choose Dither to Color Cube (Alt+D) to cause Netscape to always dither images to its internal “Color Cube” of reference colors.
5. Choose Use Closest Color in Color Cube (Alt+C) to turn off dithering altogether; Netscape will always pick the closest solid color it has available.
6. Click OK to end.

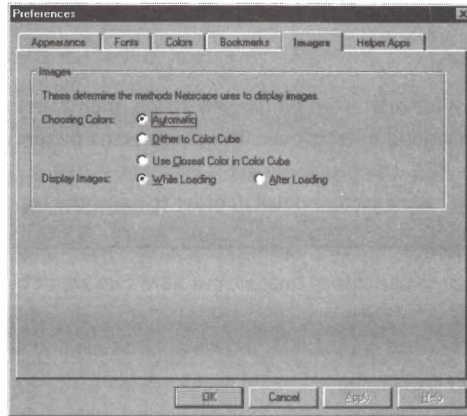


Fig. 18.2
Setting Netscape's
dithering options.

Note

Plug-ins are a new feature in Netscape 2.0. Plug-ins are basically add-on viewer modules for "live objects" that can be placed inline on Web pages. In the case of graphics files, this means that "foreign" image formats could be displayed inline just like GIFs, JPEGs, and XBM's, without having to launch a helper application. This doesn't mean that you'll never need another graphics helper application for Netscape, but it is an exciting new capability. For a discussion of plug-ins, see chapter 36, "Netscape Plug-Ins."

► See "Netscape Plug-Ins,"
pg. 933

Graphics File Formats

There are three different ways that images can be stored in files.

Most computer graphics file formats store image information as bitmaps. After all, that's how a computer displays them. All three of the image types that Netscape can display—GIFs, JPEGs, and XBM's—are bitmapped images.

Note

Okay, okay, we're lying. GIFs and JPEGs are aren't really bitmapped image files; they're *compressed* bitmapped image files.

GIFs are 256-color (or fewer) images that are compressed using LZW compression, a technique similar to the file compression algorithms used in various archive file formats.

(continues)

(continued)

A JPEG image begins life as a 24-bit bitmapped image, then a very sophisticated image compression algorithm takes over. This analyzes the picture and compresses it to a very high ratio. JPEG compression is actually “lossy”—that is, it usually doesn’t care if it throws away some picture detail in order to make the image a whole lot smaller.

XBMs are monochrome bitmapped images, but XBM files aren’t binary bitmaps—they are C language source files, which represent images as numeric (hexadecimal) arrays; they can be read by C compilers, as well as Netscape and a few image display programs.

It just goes to show you that, when it comes to graphics image file formats, there are a *lot* of extremely different ways to store an image!

Fig. 18.3

JPEG compression at its worst. The rose on the left is a GIF image. On the right is a JPEG version of the same image compressed to the maximum possible degree (a compression setting of 1 out of 100, with optimized Huffman encoding).



Vector image files take a different approach—they actually describe how an image is drawn. When a computer displays a vector image file, it follows the instructions in the file to redraw the image. While it sounds tedious, vector images are much easier to rescale to different sizes, because the image doesn’t have a hard-and-fast correlation between its definition in the file and the pixel-by-pixel image on the screen.

Metafiles use a combination of bitmapped and vector image definition. Windows Metafile (.WMF) format images are used quite often under Windows for clipart images that frequently need to be resized.

Note

You can find out more about graphics file formats by checking out the four-part Graphics FAQ (Frequently Asked Questions) list on UseNet. You can retrieve the latest version by pointing Netscape to <ftp://rtfm.mit.edu/pub/usenet/news.answers/graphics/fileformats-faq> or <http://www.smartpages.com/>

faqs/graphics/fileformats-faq/part[1-4]/faq.html. This FAQ is also distributed monthly on the UseNet newsgroups comp.graphics, comp.answers, and news.answers as four separate files.

More information on graphics files can also be obtained by reading the UseNet newsgroup **comp.graphics.misc**.

Troubleshooting

I downloaded an image that looks just fine in [insert the name of your favorite generic graphics display program here], but the program I have configured as my Netscape helper application doesn't display it properly.

You're probably running into an older (or newer) version of that particular image file format. Though most image display and manipulation programs can handle older versions of various file formats just fine, some will "choke" on unknown variations. And standards groups are always updating file format definitions, sometimes coming up with variations that "break" older viewers. Because of the real-time nature of the Internet, these changes will often show up first on the Web. Make sure your Netscape graphics helper applications can always handle the latest versions of a graphics file format.

Netscape recognizes graphics files the same way it identifies all the files it accesses on the Web: by MIME type first, then (if it doesn't receive a valid MIME type from the Web server it's connected to) by file name extension.

◀ See "Configuring Helper Applications," pg. 395

Caution

There are several very different image file formats that share the file extensions .PIC ("picture") and .IMG ("image"). The only way to properly identify what kinds of images these really are is by MIME type or to use a program that actually reads and interprets the file's header information. Don't assume that either of these (or any other) file extensions can be used to accurately identify an image's real file type.

Netscape can display inline GIF, JPEG, and XBM images. These three formats account for almost 100 percent of the inline images on the Web. But external images are another matter. If you click a link and it leads to a file in a format that Netscape can't handle, you'll have to configure a helper application for it.

The graphics file MIME types and file name extensions that Netscape knows about are listed in table 18.2.



Table 18.2 The Graphics File Types Recognized by Netscape

Type/Subtype	Extensions	Description
image/ief	.IEF	
<u>image/x-MS-bmp</u>	.BMP	Windows Bitmap
image/x-rgb	.RGB	RGB Image
image/x-portable-pixmap	.PPM	PPM Image
image/x-portable-graymap	.PGM	PGM Image
image/x-portable-bitmap	.PBM	PBM Image
image/x-portable-anymap	.PNM	PBM Image
image/x-xwindowdump	.XWD	X Window Dump Image
image/x-pximap	.XPM	X Pixmap
*image/x-xbitmap	.XBM	X Bitmap
image/x-cmu-raster	.RAS	CMU Raster Image
image/tiff	.TIFF, .TIF	TIFF Image
*image/jpeg	.JPEG, .JPG, .JPE	JPEG Image
*image/gif	.GIF	CompuServe Image Format

Images it can display internally are marked with an asterisk (). The file type you'll probably want to configure a helper application for right away is image/x-MS-bmp.*

Of course, there are dozens more graphics image file formats in use on the World Wide Web. Table 18.3 lists some of these, though it is by no means an exhaustive list.

Table 18.3 Some of the Other Graphics File Types You'll Find on the World Wide Web

Extension	Description
.CGM	Computer Graphics Metafile
.DEM	Digital Elevation Model
.DXF	Autodesk Drawing Exchange Format
.IFF	Interchange File Format
.NAPLPS	North American Presentation Layer Protocol Syntax
<u>.PCX</u>	ZSoft Paint
.PIC	Pegasus Imaging Corporation Format
.PNG	Portable Network Graphics
.PSD	Adobe Photoshop
.RIFF	Microsoft Resource Interchange File Format

Extension	Description
.SGI	Silicon Graphics Image File Format
.SPIFF	Still Picture Interchange File Format
.TGA	Truevision (Targa) File Format
.WMF	Windows Meta File
.WPG	WordPerfect Graphics Metafile

The one you'll probably want to configure a helper application for right away is underlined.

Note

The hottest new graphics file type on the World Wide Web is the Portable Network Graphics (.PNG) format, which was created mostly as a response to the Unisys/CompuServe GIF graphics copyright controversy (which we won't go into here). According to the first drafts of the PNG specification, "The PNG format is intended to provide a portable, legally unencumbered, simple, lossless, streaming-capable, well-compressed, well-specified standard for bitmapped image files which gives new features to the end user at minimal cost to the developer." Look for PNG graphics to carve a major niche for themselves on the Web in the months to come.

Note that in each of these tables we've underlined a file type that you'll probably want to configure a Netscape helper application for right away. The two we've targeted are Windows Bitmaps (.BMP) and Zsoft Paint (.PCX) files. Though the GIFs and JPEGs that Netscape can handle internally are much more popular on the Web, you'll run into enough BMPs and PCXs to make configuring helper applications for these two file formats worthwhile.

Windows Bitmaps

Because BMPs are the native graphics file format of Microsoft Windows, you'll find quite a few of them on the Web. (And if not on the Web itself, on the rest of the Internet, at the very least.)

Most of the programs described in this chapter can display .BMP format image files.

Tip

In the Windows directory in both Windows 3.1 and Windows 95 is a little program called Paintbrush that displays both .PCX and .BMP images. For a step-by-step guide to setting up Paintbrush to work with Netscape, see chapter 16, "Configuring Helper Applications."



Zsoft Paint Files

.PCX (Zsoft Paint) format files were really popular on the PC when all it could run was MS-DOS. The continuing popularity of .PCX files on the PC platform is a real testament to Newton's laws of inertia—.PCX files just don't seem to be fading away.

Fortunately, many of the programs discussed in this chapter can display .PCX files, too.

Note

Have Microsoft Office installed on your Windows 3.1 or Windows 95 system? Then you also have a little program available called *Microsoft Imager* (see fig. 18.1). (It may not have been installed automatically when you installed Office. If not, you can add it easily by running the Office Setup program again.) Imager can handle seven different graphics file formats: .BMP, .DIB, .GIF, .JPG, .PCD, .PCX, and .RLE. You can configure it as a Netscape helper for any of these file types (though you won't want to do so for .GIF or .JPG, since Netscape handles those inline). Microsoft Imager can also manipulate images in many different and interesting ways, since it's based on the popular graphics processing program HALO Desktop Imager.

Fig. 18.4

Microsoft Imager is included in the Microsoft Office package.



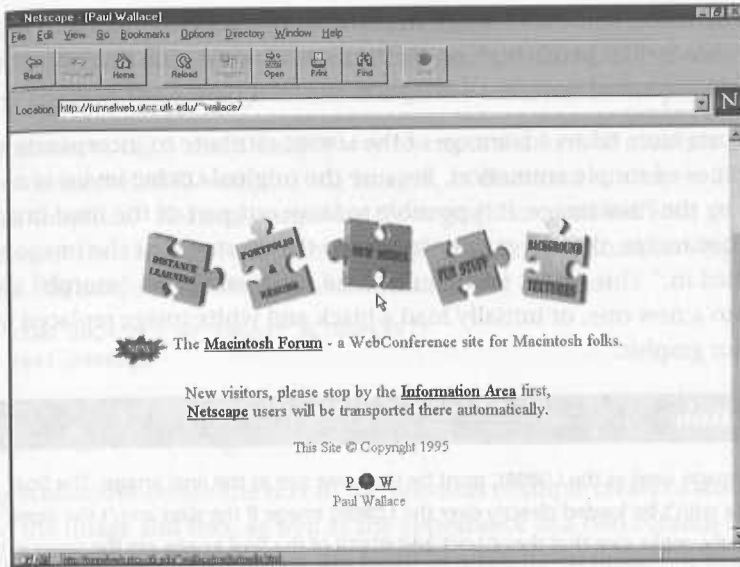


Fig. 31.11
Three-dimensional images break up the visual monotony of browsing two-dimensional pages.

The IMG LOWSRC tag

The LOWSRC attribute to the IMG tag was designed to allow a low-resolution graphic to initially load on the viewer's Netscape screen, replaced by a higher-resolution image during the final layout of the page. This attribute allows developers the ability to present the general look of a page quickly to the viewer, replaced with more detailed images as the download continues.

The LOWSRC attribute is appended to the IMG tag in the following way:

```
<IMG SRC="url_of_high-resolution_image" LOWSRC="url_of_low-
resolution_image">
```

The LOWSRC image can further take advantage of download time by specifying the height and width of the final image. As discussed in chapter 27, "Advanced Graphics," on using thumbnail images, an image can be resized on the browser's screen by specifying the HEIGHT and WIDTH attributes for the image. This can be used with the LOWSRC by loading a thumbnail image as the low-resolution image with the specified HEIGHT and WIDTH attributes of the high-resolution image. For instance, with a high-resolution image of 200 pixels wide by 100 pixels high and a thumbnail image with the dimensions of 20 pixels wide by 10 pixels high, you could use the LOWSRC in the following way:

```
<IMG SRC="url_of_high-resolution_image"
LOWSRC="url_of_thumbnail_image">
```

In this instance, the LOWSRC image stretches to fit the final image area of 200 pixels wide by 100 pixels high on the browser window. The final image replaces the stretched thumbnail image on the final pass.

Developers have taken advantage of the LOWSRC attribute to incorporate the appearance of simple animation. Because the original LOWSRC image is replaced by the final image, it is possible to leave out part of the final image in the LOWSRC image, thereby giving the viewer the illusion that the image is being “filled in.” This LOWSRC trick can be used, for instance, to “morph” an old logo into a new one, or initially load a black and white image replaced by a full-color graphic.

Caution

The image used as the LOWSRC must be the same size as the final image. The final image won't be loaded directly over the LOWSRC image if the sizes aren't the same. Similarly, make sure that the HEIGHT and WIDTH of the final image are the same as the LOWSRC's image.

Advanced Layout Design

While there are a lot of features in HTML, the language doesn't provide nearly as much control for the HTML author as a desktop publishing (DTP) program. Something as simple as indenting a paragraph is impossible with standard HTML, because spaces before and after words are ignored. Similarly, there's no provision within the HTML standard to give the HTML author any margins to work with, unlike most DTP packages. Because of such limitations of HTML tags, here are some tricks. Most of these tricks aren't widely known, because they either require a bit of work or aren't intuitive. All of these provide for much better control over the flow of the text, which makes your page stand out more. A few of these have problems under certain conditions, but by and large, you can use them to make a dazzling page.

Aligning Text and Image with BLOCKQUOTE

The BLOCKQUOTE tag is used widely in the development of sophisticated Web pages. To see why, look at the text in a printed book such as this one and then look at the text on a WWW page. What are the differences? The first thing you might notice is that the book has a right and left margin, whereas, most likely, the text on Netscape's window runs from edge to edge with no discernible margin. The BLOCKQUOTE tag allows you to pull the text in from the

Netscape Plug-Ins

With the advent of plug-ins, Netscape 2.0 makes a quantum leap in the Web's possibilities. For the first time, the Web is able to come alive with animation, sophisticated interactivity, and video for a widespread audience, not just in high-tech development labs. Through plug-ins, Netscape users can integrate and access media standards created by other companies, helping to push the Web closer to the envisioned potential of being a truly live, truly real-time, truly interactive conduit to any computer in the world.

Most widely accepted cross-platform media formats are now supported by Netscape plug-ins—if they aren't, they soon will be. These include Macromedia Director, Adobe's Acrobat, and Apple's QuickTime. Netscape plug-ins are not limited to media support, but these are the plug-ins that are going to most radically impact the Web, and are the plug-ins this chapter focuses on.

In this chapter, you learn:

- What Netscape 2.0 plug-ins are
- What plug-ins mean for users, and for programmers
- What plug-ins are currently available, and how to install and use them
- What plug-ins are "coming soon" for Netscape 2.0

What Is a Netscape 2.0 Plug-In?

Plug-ins are feature add-ons designed to extend the capabilities of Netscape 2.0, much the way plug-ins extend the capabilities of other products such as Adobe PhotoShop. In more technical terms, plug-ins are dynamic code modules that exist as part of Netscape's Application Programming Interface (API) for extending and integrating third-party software into Netscape 2.0.

The creation of (and support for) plug-ins by Netscape is significant primarily because it allows other developers to seamlessly integrate their products into the Web via Netscape, without having to launch any external helper applications.

For Netscape users, plug-in support allows you to customize Netscape's interaction with third-party products and industry media standards. Netscape's plug-in API also attempts to address the concerns of programmers, providing a high degree of flexibility and cross-platform support to plug-in developers.

What Plug-Ins Mean for End Users

Because plug-ins are platform-specific, you must have a different version of each plug-in for every operating system you use, such as Windows or the Mac OS. Regardless of your platform, however, Netscape plug-ins should be functionally equivalent across all platforms.

Tip

Many plug-ins ship with the copy of Netscape you purchased, already designed for your platform. However, if you find other plug-ins that you want to either purchase and/or download from the Internet, make sure the plug-in is designed for your specific platform.

For most users, integrating plug-ins is transparent. They open up and become active whenever Netscape is opened. Furthermore, because most plug-ins are not activated unless you open up a Web page that initiates the plug-in, you may not even see the plug-in at work most of the time. For example, after you install the Shockwave for Macromedia Director plug-in, you will notice no difference in the way Netscape functions until you come across a Web page that features Shockwave.

Once a plug-in is installed on your machine and initiated by a Web page, it will manifest itself in three potential ways:

- Embedded
- Full-screen
- Hidden

An *embedded* plug-in appears as a visible, rectangular window integrated into a Web page. This window may not appear any different than a window created by a graphic, such as an embedded GIF or JPEG picture. The main difference between the previous windows supported by Netscape and those created by plug-ins is that plug-in windows can support a much wider range of interactivity and movement, and thereby remain live instead of static.

In addition to mouse clicks, embedded plug-ins may also read and take note of mouse location, mouse movement, keyboard input, and input from virtually any other input device. In this way, a plug-in can support the full range of user events required to produce sophisticated applications.

An example of an embedded plug-in might be an MPEG or QuickTime player, or the Shockwave for Macromedia Director player discussed later in this chapter (see fig. 36.1).

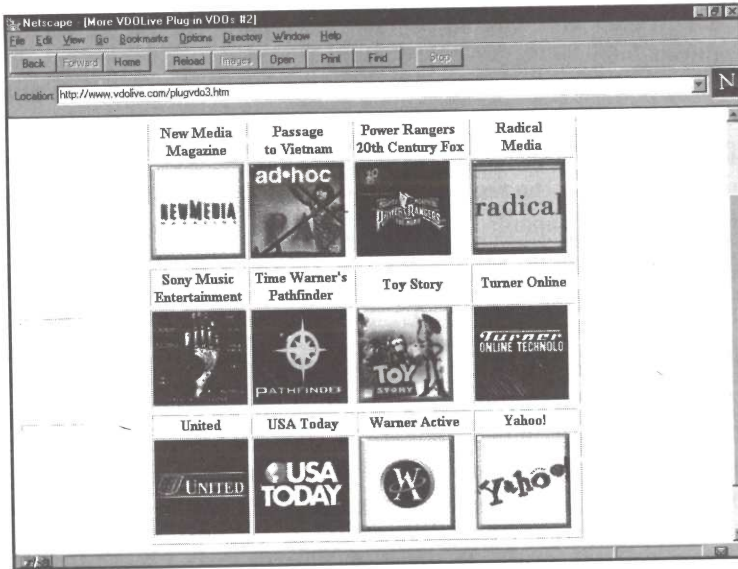


Fig. 36.1

Shockwave for Macromedia Director is an example of an embedded plug-in because it can seamlessly integrate a window within an HTML document.

A *full-screen* plug-in takes over the entire current Netscape window to display its own content. This is necessary when a Web page is designed to display data that is not supported by HTML. An example of this type of plug-in is the Adobe Acrobat viewer.

If you view an Acrobat page using the Netscape plug-in, it pulls up just like any other Web page, but it retains the look and functionality of an Acrobat document viewed in Adobe's stand-alone viewer. For instance, you might find an online manual for a product displayed on a Web site with Acrobat, and you'd be able to scroll, print, and interact with the page just as if it were being displayed by the stand-alone Acrobat Reader program.

A *hidden* plug-in doesn't have any visible elements, but works strictly behind the scenes to add some feature to Netscape that is otherwise not available. An example of a hidden plug-in might be a MIDI player or a decompression engine. A MIDI player plug-in could read MIDI data from a Web page whenever

it's encountered, and automatically play it through your local hardware or software (such as QuickTime). Similarly, a decompression engine could function much the way it does on commercial online services, decompressing data in real time in the background, or saving decompression until the user logs off the Internet.

Tip

For more information on Netscape 2.0 plug-ins, point Netscape to http://home.netscape.com/comprod/products/navigator/version_2.0/plugins/index.html.

Regardless of which plug-ins you are using, and whether they are embedded, full-screen, or hidden, the rest of Netscape's user interface should remain relatively constant and available. So even if you have an Acrobat page displayed in Netscape's main window, you'll still be able to access Netscape's menus and navigational controls.

What Plug-Ins Mean for Programmers

For programmers, plug-ins offer the possibility of creating Netscape add-on products or using development plug-ins to create your own Internet-based applications. Creating a custom plug-in requires much more intensive background, experience, and testing than actually using a plug-in (such as Shockwave for Macromedia Director). If you are a developer, or are interested in creating a plug-in, the following discussion will be useful.

The current version of the plug-in Application Programming Interface (API) supports four broad areas of functionality. Plug-ins can:

- Draw into and receive events from a native window element that is a part of the Netscape window hierarchy.
- Obtain MIME data from the network via URLs.
- Generate data for consumption by Netscape or other plug-ins.
- Override and implement protocol handlers.

Netscape plug-ins are ideally suited to take advantage of platform-independent protocols, architectures, languages, and media types such as Java, VRML, and MPEG. While plug-ins should be functionally equivalent across platforms, they should also be complementary to platform-specific protocols and architectures, such as OLE 2.

Note

Netscape Corporation has a wealth of information online for programmers who want to create their own Netscape plug-ins. For starters, you can read the online documentation for the Plug-Ins SDK (Software Developers' Kit) for both Macintosh and Windows at http://home.netscape.com/comprod/development_partners/plugin_api/index.html. You can also download the SDKs themselves from this page.

When the Netscape client is launched, it makes note of any plug-ins available, but does not load any into RAM. This way, a plug-in is only resident in memory when needed, although because many plug-ins may be in use at any one time, you still need to be aware of memory allocation. Plug-ins simply reside on disk until they are needed.

Integration of plug-ins with the Netscape client is quite elegant and flexible, allowing the programmer to make the most of asynchronous processes and multi-threaded data. To further this claim, Netscape makes note of plug-ins based upon the MIME type they support, since all plug-ins are associated with a MIME type not native to the Netscape client. Plug-ins may be associated with multiple MIME types, and Netscape may in turn create multiple instances of the same plug-in.

By allowing many instances of many plug-ins to be readily available, without taking up any RAM until just before the time they are needed, the user is able to seamlessly view a tremendous amount of varied data. A plug-in is deleted from RAM as soon as the user moves to another HTML page that does not require the plug-in.

At its most fundamental level, a plug-in can access a URL and retrieve MIME data just as a standard Netscape client. This data is streamed to the plug-in as it arrives from the network, making it possible to implement viewers and other interfaces that can progressively display information.

For instance, a plug-in may draw a simple frame and introductory graphic or text for the user to comprehend, while the bulk of the data is streaming off the network into Netscape's existing cache. All the same bandwidth considerations adhered to by good HTML authors need to be accounted for in plug-ins.

Of course, plug-ins can also be file-based, requiring a complete amount of data to be downloaded first before the plug-in can proceed. This type of architecture is not encouraged due to its potential user delays, but may prove necessary for some data-intensive plug-ins.

If more data is needed by a plug-in than can be supplied through a single data stream, multiple, simultaneous data streams may be requested by the plug-in, so long as the user's system supports this.

While a plug-in is active, if data is needed by another plug-in or Netscape, the plug-in can generate data itself for these purposes. Thus, plug-ins not only process data, but they also generate it. For example, a plug-in can be a data translator or filter.

Plug-ins are also provided a random access model of network data, via the proposed Byte Range extension to HTTP.

To embed a plug-in in an HTML document, you use the EMBED tag.

The Netscape page at http://home.netscape.com/comprod/development_partners/plugin_api/win_avi_sample.html presents this example: If you were to compile and install the program they present, you'd get a plug-in that can serve as an AVI (Video for Windows) player. You initialize it from your HTML document with the EMBED tag and two parameters, "autostart" and "loop." The autostart parameter specifies whether the AVI movie starts playing right away or whether it waits for user input, and the "loop" parameter dictates whether playback repeats back to the beginning of the movie when the movie finishes. In this example, the EMBED tag in your HTML document might look like this if you wanted to display the AVI file "myavi.avi" in a 320 × 200 window:

```
<embed src=myavi.avi width=320 height=200 autostart=true loop=true>
```

In the example above, the EMBED tag serves as a command line for the plug-in, allowing you to pass different values as parameters. This tag also allows you to specify where in your HTML page the AVI window appears. Of course, you can create larger, even full-screen versions of this plug-in as well by implementing a full-screen plug-in that puts the AVI window in the center of the Netscape window.

Tip

To view actual C++ code for the sample AVI player plug-in discussed here, check out the "NPAVI32.DLL" page on the Netscape Web site at http://home.netscape.com/comprod/development_partners/plugin_api/win_avi_sample.html.

Note

While creating a plug-in is much easier to do than, say, writing a spreadsheet application, it still requires the talents of a professional programmer. Some third-party developers may soon offer visual programming tools or BASIC environments that provide plug-in templates, making the actual coding of plug-ins much less tedious. However, most plug-ins are, and will be, developed in sophisticated C++ environments, requiring thousands of lines of code.

The Shockwave Plug-In

Perhaps one of the most significant and awe-inspiring plug-ins supported directly by Netscape 2.0 is Shockwave for Macromedia Director, which allows you to view Director “movies” directly on a Web page. Director movies are created with Macromedia Director (don’t confuse Director “movies” with other file types of the same name, such as QuickTime movies), a cross-platform multimedia authoring program that gives multimedia developers the ability to create fully interactive multimedia applications, or “titles.” Because of its interactive integration of animation, bitmap, video, and sound media, and its playback compatibility with a variety of computer platforms including Windows, Mac OS, OS/2, and SGI, Director is now the most widely used multimedia authoring tool.

Note

Macromedia Director was originally designed as an animation tool, and when it added support for other media and interactive scripting several years ago, it blossomed into the multimedia authoring program designers craved. Director now supports all major types of multimedia and provides a sophisticated scripting language called Lingo.

Using Shockwave, a Director movie run over the Internet can support the same sort of features as a Director movie run off a CD-ROM, including animated sequences, sophisticated scripting of interactivity, user input of text right into the Director window (or “stage”), sound playback, and much more.

Shockwave for Director is not a new authoring environment, in and of itself. It's a collection of three distinct programs:

- *Afterburner*, a post-processor application that compresses and converts standard Director movies by up to 60 percent for Internet playback. The Afterburner application doesn't alter the way a Director movie appears or behaves, but merely preps it for use on the Internet by compressing it and changing its file format. Users still create Director movies the same way they always have for other applications.

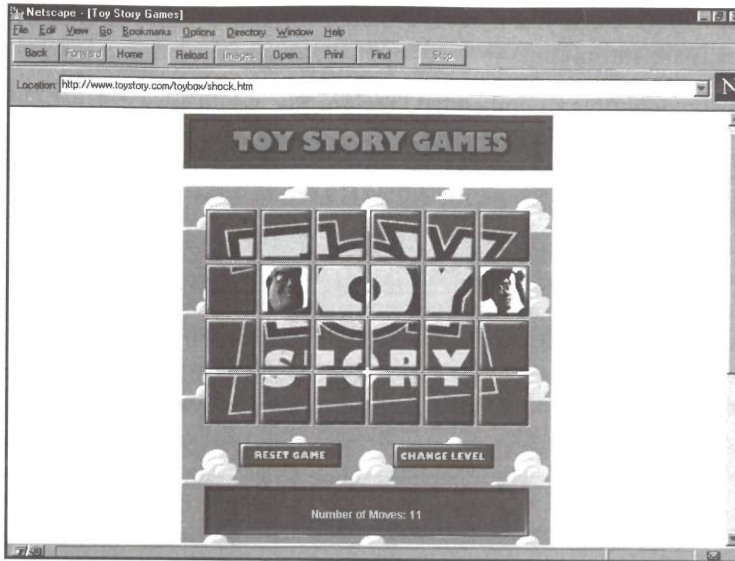
Tip

If you want to convert Director files for use with Shockwave, you can download Afterburner from <http://www.macromedia.com/Tools/Shockwave/sdc/Dev/AftrbnDC.htm>.

- *Shockwave player plug-in* (see fig. 36.2), which allows Web browsers such as Netscape 2.0 to play Director movies seamlessly within a Web page. This program is bundled with Netscape 2.0 and is ready to go as soon as you finish the installation procedure. Any Web page that contains a Director movie will automatically play in your Netscape Web browser in the manner prescribed by the Web page.
- *Shockwave player helper application*, a program that works with any Web browser, but that only allows Director movies to appear in a separate window. This part of Shockwave is only used by Web browsers that don't support Netscape plug-ins or other Shockwave plug-in implementations created by Macromedia.

Tip

Macromedia maintains a treasure trove of pages to aid you in the creation of Director files for viewing with Shockwave on the World Wide Web. Check them out at <http://www.macromedia.com/Tools/Shockwave/sdc/Dev/contents.htm>.

**Fig. 36.2**

The Shockwave plug-in for Netscape 2.0 plays interactive multimedia Director files inline in the Netscape window. These can range from simple animations to complex interactive games, like this “concentration” game from the Toy Story Web site.

Installing Shockwave

You can download Macintosh and Windows versions of Shockwave from Macromedia’s Web site at <http://www.macromedia.com>. Follow the links from its home page to click and download the file using Netscape.

The Windows version is a self-extracting archive file. (The current version as this is written is named `sw10b132.exe`; it’s just a little over 1MB in size.) Using Windows Explorer, you should create a new folder, and then drag the file you downloaded into it. Double-clicking the file in Explorer causes it to self-extract into several files. Make sure Netscape is not running—if it is, close the Netscape window before proceeding. Then double-click the Setup icon to run Shockwave’s setup wizard, which installs the plug-in into Netscape for you.

Caution

Make sure you have the latest version of Netscape 2.0 properly installed before you install the Shockwave plug-in, or any other Netscape plug-in. They will not work with earlier versions of Netscape.

Running Shockwave

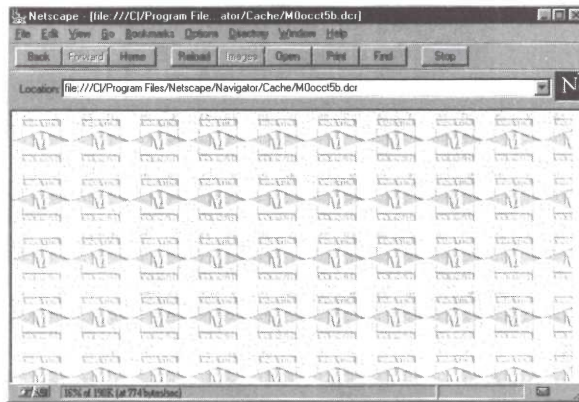
Like all plug-ins, once it’s properly installed, Shockwave runs automatically whenever you encounter a file it can interpret. In Shockwave’s case, this means Director files, which usually have a file name extension of `.DCR`,

.DXR, or .DIR (though you'll never see the file name unless you look for it—downloads are automatic).

When you encounter an embedded Director file, you'll see a "placeholder" in the Netscape window until Shockwave executes it (see fig. 36.3). This is then replaced by the running Director application once the whole file is in place.

Fig. 36.3

Netscape shows this placeholder pattern while a Director file loads.



This means that Shockwave doesn't display Director files in real time. Of course, this makes sense because Director files are really interactive multimedia programs that must be run, not mere linear audio and video data streams like RealAudio or QuickTime files. You can't run a Director file before the whole thing is available, since user interaction might result in having to jump to some command near the end of the file. However, movies or audio files that have been embedded in Director files can, themselves be played in real time off the Web using Shockwave.

There are no controls or menus inherent in the Shockwave plug-in. However, many Director files incorporate interactive elements like menus, buttons, and so on. You'll have to trust the file's designer to explain them somewhere on the page or make them intuitive to use.

Macromedia's Web site at <http://www.macromedia.com> includes an entire online gallery full of sample Director files for you to view with Shockwave. They range from simple animations to full-fledged applications, like the Toy Story "Concentration" game shown in figure 36.2. Even a cur-

sory sampling of the files on Macromedia's site should give you a good idea of the kind of revolutionary content that Shockwave and Macromedia Director are capable of bringing to the Web.

Caution

Because of the relatively rigid conditions under which Shockwave for Director must operate, there are many special limitations for networked Director movies that do not apply to standard Director movies. Most of these limitations are due to the fact that the Director movie must be able to interact with the network and does not have the luxury of working just within a local environment. For complete information on the Director architectures, features, and Lingo commands and functions that do not work with Shockwave, see Macromedia's Web site at <http://www.macromedia.com/Tools/Shockwave/shock.html>.

Tip

For more information on Shockwave, check out Macromedia's Web site at <http://www.macromedia.com/Tools/Shockwave/shock.html>. Here you'll find links to Shockwave Plug-In FAQs, a "What is Director?" page, and the Shockwave for Director discussion group.

The WebFX Plug-In

Another interesting plug-in is WebFX from Paper Software (see fig. 36.4). This plug-in works under Windows 95, Windows 3.1, and Windows NT, and gives you the ability to view embedded VRML data. WebFX is an elegant solution for anyone interested in providing Web users with a three-dimensional image or animation.

Virtual Reality Modeling Language is an emerging standard for network-based 3D graphics. Several popular 3D animation programs will now save files in VRML format, allowing you to easily integrate such work into an HTML page. WebFX supports multiple VRML windows within the same HTML page, so you can have multiple 3D environments running at the same time. While WebFX is fairly fast at rendering images to the screen, the more VRML windows open at once, the slower things are going to run.

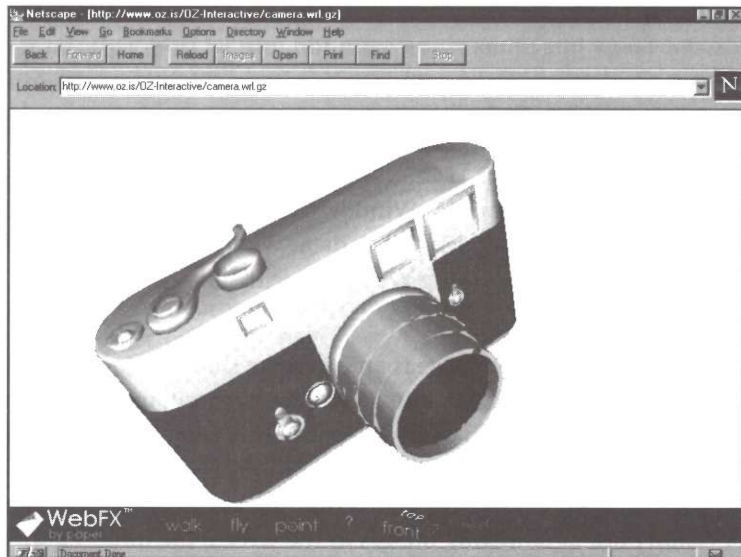
◀ See "Using VRML," pg. 491

Some of the features supported by WebFX include:

- Fast and fully compliant VRML 1.0 viewing
- Support for 3D acceleration hardware such as Creative Labs' 3D Blaster
- IRC-based chatting with VRML avatars
- General purpose in-place VRML authoring
- Physics-based navigation with optional collision detection
- Support for common Open Inventor nodes
- Background rendering and parsing
- Multitasking support for viewing multiple worlds at once
- Support for .GIF, .BMP, .RAS, .RGB, and .JPG textures
- Object-oriented user interface with heads up display
- Extensions for collision detection, sound, and animated textures
- Light, camera, and object manipulation
- Multiple nested inlines
- Full GZIP support
- Support for Windows 95, NT, and 3.1, with Mac support coming soon

Fig. 36.4

WebFX lets you view, zoom, and maneuver around 3D VRML objects like this in the Netscape window.



Installing WebFX

You can download WebFX from Paper Inc.'s home page at <http://www.paperinc.com/>. (The current Windows 95 file as this is written is `npwfx32d.exe`, and it's 2.74MB.) This is a self-extracting archive file, so use Windows Explorer to create a new folder, and then drag the file you downloaded into it. Double-click the file in Explorer to self-extract it into several files. Make sure Netscape is not running—if it is, close the Netscape window before proceeding. Then double-click the Setup icon to run WebFX's setup wizard, which installs the plug-in into Netscape for you.

Running WebFX

WebFX runs automatically whenever Netscape encounters a VRML "world" file (which usually have the file name extension `.WRL` or `.FLR`). When this happens, Netscape displays the user interface shown in fig. 36.4.

Controls at the bottom of the screen let you choose to "walk" or "fly" around the 3D model, and pick a preset top, front, or side view. You hold and drag the left mouse button to move in and out and left and right; you hold and drag the right mouse button to spin the world around. Though fairly standard for a VRML viewer, if you're not used to it the user interface can be somewhat tricky. If you get things hopelessly mucked up, you can go back to where you started by selecting reset from the menu.

The right mouse button can also be clicked on the image to access a drop-down menu that duplicates some of the menu commands and adds a few of its own, like turning on or off the "heads-up display" that shows you information about the image you're viewing.

3D objects can also be links. If an object is also a link, its URL will be displayed at the top of the screen, and the mouse pointer will turn into a hand. The VRML language and a viewer like WebFX thus give you the closest thing yet to a sci-fi "cyberspace"-style interface.

Some of the applications you can view with the WebFX plug-in include collaborative virtual worlds, 3D chat rooms, 3D special effects to highlight certain areas of your Web page, virtual walkthroughs of pertinent buildings, and 3D games. Paper Software's Web site at <http://www.paperinc.com/> includes a page of dozens of links to some of the best VRML sites on the Web.

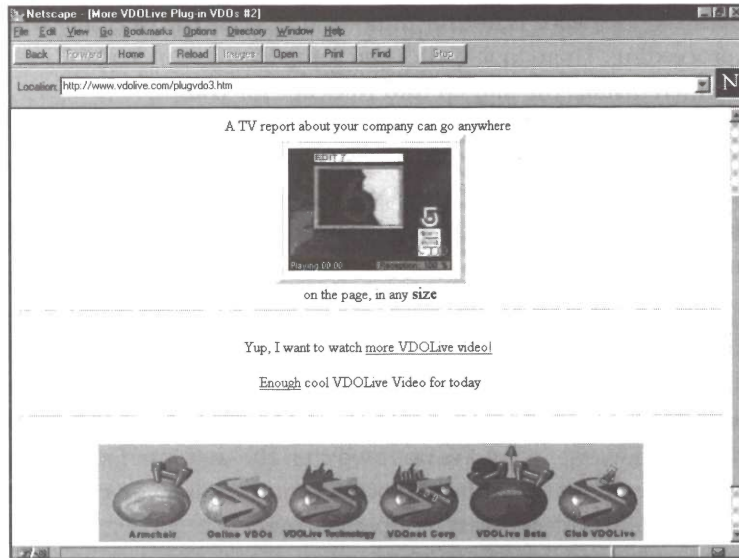
The VDOLive Plug-In

The VDOLive Plug-in for Netscape 2.0 enables inline Video for Windows (.AVI) clips to be included in HTML pages and played back in real time (see

fig. 36.5). If you are operating over a slow connection, VDOLive will intelligently download a video file, skipping over enough information to retain real-time playback. While this can result in jerky playback (especially over a slow modem SLIP or PPP connection), it sure speeds up viewing video over the Web!

Fig. 36.5

VDOLive displays video files inline, and can deliver reasonable performance over even a very slow Internet connection.



Autostart, Stretch, Width, and Height options let HTML designers customize inline Web page video for just about any purpose.

Installing VDOLive

You can download the VDOLive plug-in from the VDOLive home page at <http://www.vdolive.com/newplug.htm>. The file (currently called `vdoplug32.exe`, and only 332KB small) is an executable setup program. Unlike the other plug-ins discussed in this chapter, you don't have to unarchive the VDOLive .EXE file. All you do is double-click it, and it sets up the VDOLive plug-in for you. Things just couldn't be much easier than that. (Other vendors should take a lesson!)

Running VDOLive

VDOLive files automatically play inline when you encounter them. Though not much technical documentation is currently available, a .VDO file is simply a single line of ASCII text, something like this:

```
vdo://URL/filename.avi
```

The only purpose of this file seems to be to let Netscape know that it wants to play a Video for Windows file through VDOLive. The plug-in then takes over, playing the audio and video streams inline in real time, rather than having to download them in their entirety before they can be played.

A single click in the VDOLive display window plays or stops the video, if the autoplay option has not been set by the page designer. If it has been set, the VDOLive file automatically plays when you load the page. (You can restart an autoplay video by clicking the Reload button on the Netscape toolbar.)

There is always a short “preload” of some setup data when you first load a page with a VDOLive video, and then the video and audio start to play. If there is too much data for your connection to handle, VDOLive will intelligently throw enough away to give you as respectable a live feed as possible while maintaining real-time playback. Once you get used to it, viewing VDOLive files over even a very slow Internet feed is not bad. And it’s certainly better than waiting dozens of minutes for a video file to download before you see anything at all! While a VDOLive video plays, a status bar in the lower-right corner of the playback window shows you what percentage of the data in the file you’re actually receiving (refer to fig. 36.5).

The VDOLive Web site at <http://www.vdolive.com/newplug.htm> has some sample VDOLive format videos you can watch online in real time.

The Acrobat and QuickTime Plug-Ins

There are two other very important plug-ins currently available for Netscape—Adobe has created a plug-in for displaying Adobe Acrobat portable document files, and Apple has developed a Netscape plug-in for viewing QuickTime movies. Both are being distributed by Netscape Corporation as part of their Power Pack CD-ROM for Netscape 2.0 (\$54.95).

Complete information on Adobe Acrobat and Apple QuickTime can be found in chapters 19 and 22 of this book.

Other Netscape Plug-Ins

Netscape has announced that there are many other Netscape plug-ins in development. Table 36.1 lists the additional plug-ins that had been announced as of press time.

- ◀ See “Configuring Netscape for Video,” pg. 469
- ◀ “Adobe Acrobat and Other Portable Document Formats,” pg. 551

Table 36.1 Additional Announced Netscape 2.0 Plug-Ins

Company	Plug-In
Asymetrix	Player for Asymetrix multimedia products
Citrix Systems	WinFrame executes Windows applications over the Internet
DSP Group	TrueSpeech player for on-demand audio
Iconovex	AnchorPage automatically indexes and abstracts viewed Web pages
Integrated Data Systems	VRealm VRML viewer
Intervista	WorldView VRML viewer
Johnson-Grace	ART Player decodes *.ART compressed files; compatible with ART Press authoring tool
Kaleida	Kaleida Media Player for ScriptX authoring language
Microsystems Software	Cyber Patrol allows parents and teachers to restrict Internet access by time and URL
Novell	Envoy document viewer
Progressive Networks	RealAudio real-time audio player
RAD Technologies	RAD MediaViewer multimedia player for applications built in RAD PowerMedia
MediaViewer	WebSmart allows new applications to be loaded over the Internet
Sybase	Template Graphics Software (TGS) viewer for Open Inventor 2.x and VRML 1.0
White Pine	CU-SeeMe video conferencing
Xing	MPEG and LBR (low bitrate) audio and full-motion MPEG video

Caution

The principal challenge that multimedia developers need to keep in mind is the speed of the Internet. Most Web users today dial in with modems at speeds between 9600 bps and 28.8 kbps, and these speeds should prevail in the mass market for the next year or two. In addition to these relatively low connection speeds, because the Web is growing so quickly, many users encounter delays caused by unusual network congestion and poor connections at important servers. Many of the most popular Web sites also slow down considerably during peak usage times. And considering all these potential delays, a multimedia application still must deliver the greatest amount of multimedia without making the user wait so long that frustration takes hold.

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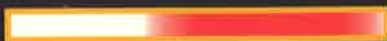
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- **Audio Helpers**—Mod4Win, WPLANY, MidiGate
- **VRML**—Fountain and other world builders and browsers
- **Video**—VDOLive for live video on the web
- **Dozens of other valuable programs and utilities** for e-mail, FTP, SGML, file compression and encoding, and more



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