

CHAP1

COLLABORATORS

	TITLE : CHAP1		
ACTION	NAME	DATE	SIGNATURE
WRITTEN BY		October 27, 2024	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

Contents

1	CHAP1	1
1.1	Chapter 1: SETTING UP	1
1.2	Chapter 1: Setting Up (1 of 4) -- Getting connected	1
1.3	...Getting Connected (1 of 4) -- The modem	1
1.4	...Getting Connected (2 of 4) -- Terminal software	2
1.5	...Getting Connected (3 of 4) -- Upload/Download/Capture	3
1.6	...Getting Connected (4 of 4) -- Communication protocols	3
1.7	Chapter 1: Setting Up (2 of 4) -- JACKING IN	4
1.8	Chapter 1: Setting Up (3 of 4) -- DIALING IN	5
1.9	Chapter 1: Setting Up (4 of 4) -- Connection problems	6
1.10	PUBLIC-ACCESS INTERNET SITES	6
1.11	Essential Unix commands	13

Chapter 1

CHAP1

1.1 Chapter 1: SETTING UP

Connecting to the Net depends on where you are. If you're a college student or work at a company with its own Net connections, chances are you can gain access simply by asking your organization's computing center or data-processing department -- they will then give you instructions on how to connect your already networked computer to the Internet.

Otherwise, you'll need four things: a computer, telecommunications software, a modem and a phone line to connect to the modem.

```
Getting connected
Jacking in
Dialing in
When things go wrong
>> List of public-access sites.
>> 7 essential Unix commands
```

1.2 Chapter 1: Setting Up (1 of 4) -- Getting connected

Getting connected

The phone line you use to connect to the Net can be your existing voice line -- just remember that if you have any extensions, you (and everybody else in the house or office) won't be able to use them for voice calls while connected to the Net.

```
The modem: your link to the Net
Software: making your computer into a terminal
Capturing from and sending info to the Net
Protocols: Getting the bytes right
```

1.3 ...Getting Connected (1 of 4) -- The modem

A modem is a sort of translator between computers and the phone system. It's needed because computers and the phone system process and transmit data, or information, in two different, and incompatible ways. Computers "talk" digitally; that is, they store and process information as a series of discrete numbers. The phone network relies on analog signals, which on an oscilloscope would look like a series of waves. When your computer is ready to transmit data to another computer over a phone line, your modem converts the computer numbers into these waves (which sound like a lot of screeching) -- it "modulates" them. In turn, when information waves come into your modem, it converts them into numbers your computer can process, by "demodulating" them.

Increasingly, computers come with modems already installed. If yours didn't, you'll have to decide what speed modem to get. Modem speeds are judged in "baud rate" or bits per second. One baud means the modem can transfer roughly one bit per second; the greater the baud rate, the more quickly a modem can send and receive information. A letter or character is made up of eight bits.

You can now buy a 2400-baud modem for well under \$70 -- and most now come with the ability to handle fax messages as well. For \$200 and up, you can buy a modem that can transfer data at 9600 baud (and often even faster, when using special compression techniques). If you think you might be using the Net to transfer large numbers of files, a faster modem is always worth the price. It will dramatically reduce the amount of time your modem or computer is tied up transferring files and, if you are paying for Net access by the hour, save you quite a bit in online charges.

1.4 ...Getting Connected (2 of 4) -- Terminal software

Like the computer to which it attaches, a modem is useless without software to tell it how to work. Most modems today come with easy-to-install software. Try the program out. If you find it difficult to use or understand, consider a trip to the local software store to find a better program. You can spend several hundred dollars on a communications program, but unless you have very specialized needs, this will be a waste of money, as there are a host of excellent programs available for around \$100 or sometimes even less. Among the basic features you want to look for are a choice of different "protocols" (more on them in a bit) for transferring files to and from the Net and the ability to write "script" or "command" files that let you automate such steps as logging into a host system.

When you buy a modem and the software, ask the dealer how to install and use them. Try out the software if you can. If the dealer can't help you, find another dealer. You'll not only save yourself a lot of frustration, you'll also have practiced the second Net Commandment: "Ask. People Know."

To fully take advantage of the Net, you must spend a few minutes going over the manuals or documentation that comes with your software. There are a few things you should pay special attention to: uploading and downloading ; screen capturing (sometimes called "screen dumping"); logging; how to change protocols ; and terminal emulation . It is also essential to know how to convert a file created with your word processing program into ASCII or "text" format, which will let you share your thoughts with others across the Net.

1.5 ...Getting Connected (3 of 4) -- Upload/Download/Capture

Uploading is the process of sending a file from your computer to a system on the Net. Downloading is retrieving a file from somewhere on the Net to your computer. In general, things in cyberspace go "up" to the Net and "down" to you.

Chances are your software will come with a choice of several protocols to use for these transfers. These protocols are systems designed to ensure that line noise or static does not cause errors that could ruin whatever information you are trying to transfer. Essentially, when using a protocol, you are transferring a file in a series of pieces. After each piece is sent or received, your computer and the Net system compare it. If the two pieces don't match exactly, they transfer it again, until they agree that the information they both have is identical. If, after several tries, the information just doesn't make it across, you'll either get an error message or your screen will freeze. In that case, try it again. If, after five tries, you are still stymied, something is wrong with a) the file; b) the telephone line; c) the system you're connected to; or d) you own computer.

From time to time, you will likely see messages on the Net that you want to save for later viewing -- a recipe, a particularly witty remark, something you want to write your Congressman about, whatever. This is where screen capturing and logging come in.

When you tell your communications software to capture a screen, it opens a file in your computer (usually in the same directory or folder used by the software) and "dumps" an image of whatever happens to be on your screen at the time.

Logging works a bit differently. When you issue a logging command, you tell the software to open a file (again, usually in the same directory or folder as used by the software) and then give it a name. Then, until you turn off the logging command, everything that scrolls on your screen is copied into that file, sort of like recording on video tape. This is useful for capturing long documents that scroll for several pages -- using screen capture, you would have to repeat the same command for each new screen.

1.6 ...Getting Connected (4 of 4) -- Communication protocols

Terminal emulation is a way for your computer to mimic, or emulate, the way other computers put information on the screen and accept commands from a keyboard. In general, most systems on the Net use a system called VT100. Fortunately, almost all communications programs now on the market support this system as well -- make sure yours does.

You'll also have to know about protocols. There are several different ways for computers to transmit characters. Fortunately, there are only two protocols that you're likely to run across: 8-1-N (which stands for "8 bits, 1 stop bit, no parity" -- yikes!) and 7-1-E (7 bits, 1 stop bit, even parity).

In general, Unix-based systems use 7-1-E, while MS-DOS-based systems use 8-1-N. What if you don't know what kind of system you're connecting to? Try one of the settings. If you get what looks like gobbledygook when you connect, you may need the other setting. If so, you can either change the setting while connected, and then hit enter, or hang up and try again with the other setting. It's also possible your modem and the

modem at the other end can't agree on the right baud rate. If changing the protocols doesn't work, try using another baud rate (but no faster than the one listed for your modem). Again, remember, you can't break anything.! If something looks wrong, it probably is wrong. Change your settings and try again. Nothing is learned without trial, error and effort.

Those are the basics. Now onto the Net!

1.7 Chapter 1: Setting Up (2 of 4) -- JACKING IN

JACKING IN

Once, only people who studied or worked at an institution directly tied to the Net could connect to the world. Today, though, an ever-growing number of "public-access" systems provide access for everybody. These systems can now be found in several states, and there are a couple of sites that can provide access across the country.

There are two basic kinds of these host systems. The more common one is known as a "UUCP" site (UUCP being a common way to transfer information among computers using the Unix operating system) and offers access to international electronic mail and conferences.

However, recent years have seen the growth of more powerful sites that let you tap into the full power of the Net. These Internet sites not only give you access to electronic mail and conferences but to such services as databases, libraries and huge file and program collections around the world. They are also fast -- as soon as you finish writing a message, it gets zapped out to its destination.

Some sites are run by for-profit companies; others by non-profit organizations. Some of these public-access, or host, systems, are free of charge. Others charge a monthly or yearly fee for unlimited access. And a few charge by the hour.

But cost should be only one consideration in choosing a host system. Most systems let you look around before you sign up. What is the range of their services? How easy is it to use? What kind of support or help can you get from the system administrators?

The last two questions are particularly important because some systems provide no user interface at all; when you connect, you are dumped right into the Unix operating system. If you're already familiar with Unix, or you want to learn how to use it, these systems offer phenomenal power -- in addition to Net access, most also let you tap into the power of Unix to do everything from compiling your own programs to playing online games.

But if you don't want to have to learn Unix, there are other public-access systems that work through menus (just like the ones in restaurants; you are shown a list of choices and then you make your selection of what you want), or which provide a "user interface" that is easier to figure out than the ever cryptic Unix.

If you don't want or need access to the full range of Internet services, a UUCP site makes good financial sense. They tend to charge less than commercial Internet providers, although their messages may not go out as quickly.

Some systems also have their own unique local services, which can range from extensive conferences to large file libraries.

Fortunately, almost all public-access systems let you look around for awhile before you have to decide whether to sign up. Systems that

charge for access will usually let you sign up online with a credit card. Some also let you set up a billing system.

In Appendix B, you'll find a list of public-access Internet sites .

1.8 Chapter 1: Setting Up (3 of 4) -- DIALING IN

DIALING IN

When you have your communications program dial one of these host systems, one of two things will happen when you connect. You'll either see a lot of gibberish on your screen, or you'll be asked to log in . If you see gibberish, chances are you have to change your software's parameters (to 7-l-E or 8-l-N as the case may be). Hang up, make the change and then dial in again.

When you've connected, chances are you'll see something like this:

```
Welcome to THE WORLD
Public Access UNIX for the '90s
Login as 'new' if you do not have an account

login:
```

That last line is a prompt asking you to do something. Since this is your first call, type

```
new
```

and hit enter. Often, when you're asked to type something by a host system, you'll be told what to type in quotation marks (for example, the 'new' above). Don't include the quotation marks. Repeat: Don't include the quotation marks.

What you see next depends on the system, but will generally consist of information about its costs and services (you might want to turn on your communication software's logging function, to save this information). You'll likely be asked if you want to establish an account now or just look around the system.

You'll also likely be asked for your "user name." This is not your full name, but a one-word name you want to use while online . It can be any combination of letters or numbers, all in lower case. Many people use their first initial and last name (for example, "jdoe"); their first name and the first letter of their last name (for example, "johnd"); or their initials ("jxd"). Others use a nickname. You might want to think about this for a second, because this user name will become part of your electronic-mail address (see chapter 3 for more on that). The one exception are the various Free-Net systems, all of which assign you a user name consisting of an arbitrary sequence of letters and numbers.

You are now on the Net. Look around the system. See if there are any help files for you to read. If it's a menu-based host system, chose different options just to see what happens. Remember: you can't break anything. The more you play, the more comfortable you'll be.

1.9 Chapter 1: Setting Up (4 of 4) -- Connection problems

THINGS THAT CAN GO WRONG

* Your computer connects with a public-access site and get gibberish on your screen. If you are using parameters of 8-l-N, try 7- 1-e (or vice-versa). If that doesn't work, try another modem speed.

* You have your computer dial a public-access site, but nothing happens. Check the phone number you typed in. If correct, turn on your modem's speaker (on Hayes-compatible modems, you can usually do this by typing ATM1 in your communications software's "terminal mode." If the phone just rings and rings, the public-access site could be down for maintenance or do to a crash or some other problem. If you get a "connect" message, but nothing else, try hitting enter or escape a couple of times.

* You try to log in , but after you type your password, nothing happens, or you get a "timed out" message followed by a disconnect. Re-dial the number and try it again.

* Always remember, if you have a problem that just doesn't go away, ask! Ask your system administrator, ask a friend, but ask. Somebody will know what to do.

1.10 PUBLIC-ACCESS INTERNET SITES

PUBLIC-ACCESS INTERNET SITES

What follows is a list of public-access Internet sites, which are computer systems that offer access to the Net. All offer international e-mail and Usenet (international conferences). In addition, they offer:

FTP : File-transfer protocol -- access to scores of file libraries (everything from computer software to historical documents to song lyrics). You'll be able to transfer these files from the Net to your own computer.

Telnet : Access to databases, computerized library card catalogs, weather reports and other information services, as well as live, online games that let you compete with players from around the world.

Additional services that may be offered include:

WAIS: Wide-area Information Server; a program that can search dozens of databases in one search.

Gopher: A program that gives you easy access to dozens of other online databases and services by making selections on a menu. You'll also be able to use these to copy text files and some programs to your mailbox.

IRC: Internet Relay Chat, a CB simulator that lets you have live keyboard chats with people around the world.

Clarinet: News, sports, feature stories and columns from Universal Press International; Newsbytes computer news.

However, even on systems that do not provide these services directly, you will be able to use a number of them through telnet . Systems marked "Unix" dump you right into Unix (a.k.a. "DOS with a college degree"). In most cases, this means you can also use the host system's various Unix functions. The other systems use menus, which are generally much easier for beginners to navigate -- they are just like menus in restaurants, in which you decide what you want from a list of options. Any unique features of a given system are noted. Some of these systems require you to use parameters of 7-l-E, so if you get gibberish when you connect, try that. Most let you look around for awhile before you have to sign up.

Several of these sites are available nationwide through national data networks such as the CompuServe Packet Network and PC-Pursuit.

Please note that all listed charges are subject to change.

ALBERTA

Edmonton. PUCNet Computer Connections, (403) 484-5640. Unix. Log on as: guest.

Charges: \$20 a month for 20 hours of connect time, plus \$5 an hour for access to ftp and telnet; \$10 sign-up fee.

Voice help: (403) 448-1901.

CALIFORNIA

Berkeley. Holonet. For free trial, modem number is (510) 704-1058. Boardwatch online news, USA Today. For information or local numbers, call number below.

Charges: \$60 a year for local access, \$2 an hour during offpeak hours.

Voice help: (510) 704-0160.

Cupertino. Portal. Both Unix and menus. (408) 725-0561, 725-1724 or (408) 973-8091.

Charges: \$19.95 set-up fee, \$19.95 a month.

Voice help: (408) 973-9111.

Encinitas. Cyber Station, (619) 634-1376. Unix. Log on as: guest.

Charges: \$20 a month for one hour a day; \$10 setup fee.

Irvine. Dial N' CERF. See under San Diego.

Los Angeles. Dial N' CERF. See under San Diego.

Oakland. Dial N' CERF. See under San Diego.

San Diego. Dial N' CERF USA, run by the California Education and Research Federation. Provides local dial-up numbers in San Diego, Los Angeles, Oakland and Irvine. For more information, call voice (800) 876-CERF or (619) 534-5087.

Charges: \$20 a month plus \$10 an hour, with a one-time installation fee of \$50.

San Jose. Netcom, (510) 865-9004 or 426-6860; (408) 241-9760; (415) 424-0131, up to 9600 baud. Unix. Maintains archives of Usenet postings. Log on as: guest.

New users get a written guide to using Netcom and the Net in general. However, access to Net services beyond Usenet requires signature on a written "Network Agreement Form."

Charges: \$15 start-up fee and then \$17.50 a month for unlimited use if you agree to automatic billing of your credit-card account (otherwise \$19.50 a month for a monthly invoice).

Voice help: (408) 554-UNIX.

San Jose. A2i, (408) 293-9010. Unix. Log on as: guest.

Charges: \$20 a month; \$45 for three months; \$72 for six months.

Sausalito. The Whole Earth 'Lectronic Link (WELL), (415) 332-6106, up to 2400 baud. Uses moderately difficult Picospan software, which is sort of a cross between Unix and a menu system. New users get a written manual. More than 200 WELL-only conferences. Log on as: newuser.

Charges: \$15 a month plus \$2 an hour. Access through the nationwide CompuServe Packet Network available for another \$4.50 an hour.

Voice help: (415) 332-4335. Recorded message about the system's current status: (800) 326-8354 (continental U.S. only).

COLORADO

Colorado Springs. CNS, (719) 570-1700. Local calendar listings and ski and stock reports. USA Today. Users can chose between menus or Unix. Log on as: new.

Charges: \$1 an hour (minimum fee of \$10 a month); one-time \$35 set-up fee.

Voice help: (719) 579-9120.

Golden. Colorado SuperNet. Unix. E-mail to fax service. Available only to Colorado residents. Local dial-in numbers currently available in Ft. Collins, Denver/Boulder and Colorado Springs. For dial-in numbers, call the number below.

Charges: \$2 an hour (\$1 an hour between midnight and 6 a.m.); one-time \$20 sign-up fee.

Voice help: 303-273-3471.

ILLINOIS

Chicago. MCSNet, (312) 248-0900. Unix.

Charges: \$25/month or \$65 for three months of unlimited access; \$30 for three months of access at 15 hours a month.

Voice help: (312) 248-UNIX.

Peoria. Peoria Free-Net, (309) 674-1100. Similar to Cleveland Free-Net (see Ohio, below). Users can "link" to the larger Cleveland system for access to Usenet and other services. There are also Peoria Free-Net public-access terminals in numerous area libraries, other government buildings and senior-citizen centers. Contact the

number below for specific locations. Full access (including access to e-mail) requires completion of a written application.

Charges: None.

Voice help: (309) 677-2544.

MARYLAND

Baltimore. Express Access, (410) 220-0462 or (301) 220-0462.

Unix. Log on as: new.

Charges: \$15 a month or \$150 a year for e-mail and Usenet; \$25 a month or \$250 a year for complete Internet services (FTP, telnet, IRC, etc.). This allows unlimited use between 3 a.m. and 3 p.m. and one hour between 3 p.m. and 3 a.m. Access to Usenet, e-mail and Unix shell only is \$15 a month/\$150 a year.

Voice help: (301) 220-2020.

MASSACHUSETTS

Brookline. The World, (617) 739-9753. Unix, but with a large number of understandable online help files. Huge collection of MS-DOS files, "Online Book Initiative" collection of electronic books, poetry and other text files.

Charges: \$5 a month plus \$2 an hour or \$20 for 20 hours a month. Available nationwide through the CompuServe Packet Network for another \$5.60 an hour.

Voice help: (617) 739-0202.

Lynn. North Shore Access, (617) 593-5774. Unix. Log on as: guest.

Charges: \$10 for a month for 10 hours; \$1 an hour after that.

Voice help: (617) 593-3110.

Worcester. NovaLink, (508) 754-4009. Unix. Log on as: info.

Charges: \$12.95 sign-up (includes first two hours); \$9.95 a month (includes five daytime hours), \$1.80 an hour after that.

Voice help: (800) 274-2814.

MICHIGAN

Ann Arbor. MSEN. Contact number below for dial-in number.

Unix.

Charges: \$5 a month and \$2 an hour, or \$20 a month for 20 hours.

Voice help: (313) 741-1120.

Ann Arbor. Michnet. Unix. Has local dial-in numbers in several Michigan numbers. For local numbers, call voice number below.

Charges: \$35 a month plus one-time \$40 sign-up fee. Additional network fees for access through non-Michnet numbers.

Voice help: (313) 764-9430.

NEW HAMPSHIRE

MV Communications, Inc. For local dial-up numbers call voice line below. Unix.

Charges: \$5 a month minimum plus variable hourly rates depending on services used.

Voice help: (603) 429-2223.

NEW YORK

New York. Panix, (212) 787-3100. Unix or menus. Log on as: newuser.

Charges: \$10 a month or \$100 a year; one-time \$40 fee.

Voice help: (212) 877-4854.

New York. Echo, (212) 989-8411. Unix and conferencing. Log on as: newuser. Local conferences.

Charges: \$19.95 (\$13.75 students and seniors).

Voice help: (212) 255-3839.

New York. MindVox, (212) 988-5030. Log on as: guest. Local conferences.

Charges: \$15 a month; \$10 set-up fee for non-credit card accounts.

Voice help: (212) 988-5987.

NORTH CAROLINA

Charlotte. Vnet Internet Access, (704) 347-8839. Unix. Log on as: new.

Charges: \$25 a month or \$259 a year.

Voice help: (704) 374-0779.

Triangle Research Park. Rock Concert Net. Call number below for modem number. Unix.

Charges: \$30 a month; one-time \$50 sign-up fee.

Voice help: (919) 248-1999.

OHIO

Cleveland. Cleveland Free-Net, (216) 368-3888. IRC. USA Today, Ohio and US Supreme Court decisions, historical documents, many local conferences. Full access (including access to e-mail) requires completion of a written application.

Charges: None.

Voice help: (216) 368-8737.

Cincinnati. Tri-State Free-Net, (513) 579-1990. Similar to Cleveland Free-Net. Full access (including access to e-mail) requires completion of a written application.

Charges: None.

Cleveland. Wariat, (216) 481-9436 (2400 baud); (216) 481-9425 (higher speeds). Unix, menus.

Charges: \$35 a month or \$200 for six months; \$20 sign-up fee.

Voice help: (216) 481-9428.

Lorain. Lorain County Free-Net, (216) 277-2359 or 366-9753.

Similar to Cleveland Free-Net. Users can "link" to the larger Cleveland system for additional services. Full access (including access to e-mail) requires completion of a written application.

Charges: None.

Voice help: (216) 366-4200.

Medina. Medina Free-Net, (216) 723-6732, 225-6732 or 335-6732. Users can "link" to the larger Cleveland Free-Net for additional

services. Full access (including access to e-mail) requires completion of a written application.

Charges: None.

Youngstown. Youngstown Free-Net, (216) 742-3072. Users can "link" to the Cleveland system for services not found locally. Full access (including access to e-mail) requires completion of a written application.

Charges: None.

ONTARIO

Toronto. UUNorth. Call voice number below for local dial-in numbers. Unix.

Charges: \$25 for 20 hours a month of offpeak use.

Voice help: (416) 225-8649.

OREGON

Beaverton. Techbook, (503) 220-0636 (2400 baud); (503) 220-1016 (higher speeds). Unix.

Charges: \$10 a month for 30 hours of "basic" Internet access or \$90 a year; \$15 a month for 30 hours of "deluxe" access or \$150 a year. \$10 sign-up fee for monthly accounts.

Portland. Agora, (503) 293-1772 (2400 baud), (503) 293-2059 (9600 baud). Unix. Log on as: apply

Charges: \$6 a month for one hour per day.

PENNSYLVANIA

Pittsburgh. Telerama, (412) 481-5302. Unix.

Charges: \$6 for 10 hours a month, 60 cents for each additional hour.

QUEBEC

Montreal. Communications Accessibles Montreal, (514) 281-5601. Unix.

Charges: \$25 a month.

Voice help: (514) 923-2102.

RHODE ISLAND

East Greenwich. IDS World Network, (401) 884-9002. In addition to Usenet, has conferences from the Fidonet and RIME networks. Supports QMAIL offline reader, which lets you read and respond to messages while not online.

Charges: \$10 a month; \$50 for six months; \$100 for a year.

VIRGINIA

Norfolk. Wyvern Technologies, (804) 627-1828 (Norfolk); (804)-0662 (Peninsula). Unix.

Charges: \$15 a month or \$144 a year; \$10 sign-up fee.

Voice help: (804) 622-4289.

WASHINGTON, DC

The Meta Network. Call voice number below for local dial-in numbers. Caucus conferencing, menus.

Charges: \$20 a month plus \$15 sign-up fee.

Voice help: (703) 243-6622.

See also: listing under Baltimore, MD for Express Access.

WASHINGTON STATE

Seattle. Halcyon, (206) 382-6245. Users can choose between menus and Unix. Log on as: bbs.

Charges: \$10 a month for Usenet and e-mail; \$15 a month or \$150 a year for these and other Internet services (FTP, IRC, telnet, etc.).

Voice help: (206) 426-9298

Seattle. Eskimo North, (206) 367-3837 (2400 baud), (206) 362-6731 (9600/14.4K baud).

Charges: \$10 a month or \$96 a year.

Voice help: (206) 367-7457.

If you don't live in a city with a public-access site, you'll still be able to connect to the Net. Several of these services offer access through national data networks such as the CompuServe Packet Network and PC-Pursuit, which have dozens, even hundreds of local dial-in numbers across the country. These include Holonet in Berkeley, Calif., Portal in Cupertino, Calif., the WELL in Sausalito, Calif., Dial 'N CERF in San Diego, Calif., the World in Brookline, Mass., and Michnet in Ann Arbor, Mich. Dial 'N CERF offers access through an 800 number. Expect to pay from \$2 to \$12 an hour to use these networks, above each provider's basic charges. The exact amount depends on the network, time of day and type of modem you use. For more information, contact the above services.

Two other providers deliver Net access to users across the country:

Delphi, based in Cambridge, Mass., is a consumer-oriented network much like CompuServe or America On-Line -- only it now offers subscribers access to Internet services.

Charges: \$3 a month for Internet access, in addition to standard charges. These are \$10 a month for four hours of off-peak (non-working hours) access a month and \$4 an hour for each additional hour or \$20 for 20 hours of access a month and \$1.80 an hour for each additional hour. For more information, call (800) 695-4005.

PSI, based in Reston, Va., provides nationwide access to Internet services through scores of local dial-in numbers to owners of IBM and compatible computers. PSILink, which includes access to e-mail, Usenet and ftp, costs \$29 a month, plus a one-time \$19 registration fee. Special software is required, but is available free from PSI. PSI's Global Dialup Service provides access to telnet for \$39 a month plus a one-time \$39 set-up fee. For more information, call (800) 82PSI82 or (703) 620-6651.

Peter Kaminski maintains a list of systems that provide public access to Internet services. It's available on the network itself, which obviously does you little good if you currently have no access, but which can prove invaluable should you move or want to find a new system. Look for his "PDIAL" file in the alt.bbs.lists or news.answers newsgroups in Usenet (for information on accessing Usenet, see the USENET chapter).

1.11 Essential Unix commands

If you connect to the Net through a Unix system, eventually you'll have to come to terms with Unix. For better or worse, most Unix systems do NOT shield you from their inner workings -- if you want to copy a Usenet posting to a file, for example, you'll have to use some Unix commands if you ever want to do anything with that file.

Like MS-DOS, Unix is an operating system -- it tells the computer how to do things. Now while Unix may have a reputation as being even more complex than MS-DOS, in most cases, a few basic, and simple, commands should be all you'll ever need.

If your own computer uses MS-DOS or PC-DOS, the basic concepts will seem very familiar -- but watch out for the `cd` command, which works differently enough from the similarly named DOS command that it will drive you crazy. Also, unlike MS-DOS, Unix is case sensitive -- if you type commands or directory names in the wrong case, you'll get an error message.

If you're used to working on a Mac, you'll have to remember that Unix stores files in "directories" rather than "folders." Unix directories are organized like branches on a tree. At the bottom is the "root" directory, with sub-directories branching off that (and sub-directories in turn can have sub-directories). The Mac equivalent of a Unix sub-directory is a folder within another folder.

`cat` Equivalent to the MS-DOS "type" command. To pause a file every screen, type

```
cat file |more
```

where "file" is the name of the file you want to see. Hitting control-C will stop the display. You can also use `cat` for writing or uploading text files to your name or home directory (similar to the MS-DOS "copy con" command). If you type

```
cat>test
```

you start a file called "test." You can either write something simple (no editing once you've finished a line and you have to hit return at the end of each line) or upload something into that file using your communications software's ASCII protocol). To close the file, hit control-D.

`cd` The "change directory" command. To change from your present directory to another, type

```
cd directory
```

and hit enter. Unlike MS-DOS, which uses a \ to denote sub-directories (for example: \procomm\text), Unix uses a / (for example: /procomm/text). So to change from your present directory to the procomm/text sub-directory, you would type

```
cd /procomm/text
```

and then hit enter. As in MS-DOS, you do not need the first backslash if the subdirectory comes off the directory you're already in. To move back up a directory tree, you would type

```
cd ..
```

followed by enter. Note the space between the cd and the two periods -- this is where MS-DOS users will really go nuts.

cp Copies a file. The syntax is

```
cp file1 file2
```

which would copy file1 to file2 (or overwrite file2 with file1).

ls This command, when followed by enter, tells you what's in the directory, similar to the DOS dir command, except in alphabetical order.

```
ls | more
```

will stop the listing every 24 lines -- handy if there are a lot of things in the directory. The basic ls command does not list "hidden" files, such as the .login file that controls how your system interacts with Unix. To see these files, type

```
ls -a      or      ls -a | more
```

ls -l will tell you the size of each file in bytes and tell you when each was created or modified.

mv Similar to the MS-DOS rename command.

```
mv file1 file2
```

will rename file1 as file2, The command can also be used to move files between directories.

```
mv file1 News
```

would move file1 to your News directory.

rm Deletes a file. Type

```
rm filename
```

and hit enter (but beware: when you hit enter, it's gone for good).

WILDCARDS: When searching for, copying or deleting files, you can use "wildcards" if you are not sure of the file's exact name.

```
ls man*
```

would find the following files:

```
manual, manual.txt, man-o-man.
```

Use a question mark when you're sure about all but one or two characters. For example,

```
ls man?
```

would find a file called mane, but not one called manual.
