Email 101

Note: This Is A Copyrighted Etext, Please See Below

Released now as Alpha Test by popular demand for Email Tutorial **Welcome To The World of Free Plain Vanilla Electronic Texts**

Etexts Readable By Both Humans and By Computers, Since 1971

These Etexts Prepared By Hundreds of Volunteers and Donations

Information on contacting Project Gutenberg to get Etexts, and further information is included below. We need your donations.

July, 1993 [Etext #75]

The ***Copyrighted*** Project Gutenberg Etext of:

EMAIL 101 by John Goodwin, this is an Alpha test version, your suggestions will be included in the Beta test versions, and in the final editions.

****This file should be named email025.txt or email025.zip****

For information on taking the internetworking course, contact

John Goodwin (jgoodwin@adcalc.fnal.gov) P.O. Box 6022 St. Charles, IL 60174, U.S.A.

Information about Project Gutenberg

(one page)

We produce about two million dollars for each hour we work. The fifty hours is one conservative estimate for how long it we take to get any etext selected, entered, proofread, edited, copyright searched and analyzed, the copyright letters written, etc. This projected audience is one hundred million readers. If our value per text is nominally estimated at one dollar, then we produce 2 million dollars per hour this year we will have to do four text files per month: thus upping our productivity from one million. The Goal of Project Gutenberg is to Give Away One Trillion Etext Files by the December 31, 2001. [10,000 x 100,000,000=Trillion] This is ten thousand titles each to one hundred million readers, which is 10% of the expected number of computer users by the end of the year 2001.

We need your donations more than ever!

All donations should be made to "Project Gutenberg/IBC", and are tax deductible to the extent allowable by law ("IBC" is Illinois Benedictine College). (Subscriptions to our paper newsletter go to IBC, too)

For these and other matters, please mail to:

David Turner, Project Gutenberg Illinois Benedictine College 5700 College Road Lisle, IL 60532-0900

Phone: 1-708-960-1500 (x3014)

General information: Internet: dircompg@ux1.cso.uiuc.edu

or

Internet: chipmonk@eagle.ibc.edu (David Turner) Compuserve: >INTERNET: chipmonk@eagle.ibc.edu (David Turner) Attmail: internet!chipmonk@eagle.ibc.edu (David Turner) MCImail: (David Turner) ADDRESS TYPE: MCI / EMS: INTERNET / MBX:chipmonk@eagle.ibc.edu

When all other email fails try our Michael S. Hart, Executive Director: hart@vmd.cso.uiuc.edu (internet) hart@uiucvmd (bitnet)

We would prefer to send you this information by email (Internet, Bitnet, Compuserve, ATTMAIL or MCImail).

****** If you have an FTP program (or emulator), please FTP directly to the Project Gutenberg archives: [Mac users, do NOT point and click. . .type]

```
ftp mrcnext.cso.uiuc.edu
login:  anonymous
password:  your@login
cd etext/etext91
or cd etext92
or cd etext93 [for new books]  [now also in cd etext/etext93]
or cd etext/articles [get suggest gut for more information]
dir [to see files]
get or mget [to get files. . .set bin for zip files]
GET 0INDEX.GUT
for a list of books
and
GET NEW GUT for general information
and
MGET GUT* for newsletters.
```

**

Information prepared by the Project Gutenberg legal advisor

** (Three Pages)

***START** SMALL PRINT! for COPYRIGHT PROTECTED ETEXTS *** TITLE AND COPYRIGHT NOTICE:

For information on taking the internetworking course, contact

John Goodwin (jgoodwin@adcalc.fnal.gov) P.O. Box 6022 St. Charles, IL 60174, U.S.A.

This etext is distributed by Professor Michael S. Hart through the Project Gutenberg Association at Illinois Benedictine College (the "Project") under the Project's "Project Gutenberg" trademark and with the permission of the etext's copyright owner.

[A] ALL COPIES: The Project permits you to distribute copies of this etext electronically or on any machine readable medium now known or hereafter discovered so long as you:

(1) Honor the refund and replacement provisions of this "Small Print!" statement; and

(2) Pay a royalty to the Project of 20% of the net profits you derive calculated using the method you already use to calculate your applicable taxes. If you don't derive profits, no royalty is due. Royalties are payable to "Project Gutenberg Association / Illinois Benedictine College" within the 60 days following each date you prepare (or were legally required to prepare) your annual (or equivalent periodic) tax return.

[B] EXACT AND MODIFIED COPIES: The copies you distribute must either be exact copies of this etext, including this Small Print statement, or can be in binary, compressed, mark- up, or proprietary form (including any form resulting from word processing or hypertext software), so long as *EITHER*:

(1) The etext, when displayed, is clearly readable, and does *not* contain characters other than those intended by the author of the work, although tilde (~), asterisk (*) and underline (_) characters may be used to convey punctuation intended by the author, and additional characters may be used to indicate hypertext links; OR

(2) The etext is readily convertible by the reader at no expense into plain ASCII, EBCDIC or equivalent form by the program that displays the etext (as is the case, for instance, with most word processors); OR

(3) You provide or agree to provide on request at no additional cost, fee or expense, a copy of the etext in plain ASCII.

LIMITED WARRANTY; DISCLAIMER OF DAMAGES

This etext may contain a "Defect" in the form of incomplete, inaccurate or corrupt data, transcription errors, a copyright or other infringement, a defective or damaged disk, computer virus, or codes that damage or cannot be read by your equipment. But for the "Right of Replacement or Refund" described below, the Project (and any other party you may receive this etext from as a PROJECT GUTENBERG-tm etext) disclaims all liability to you for damages, costs and expenses, including legal fees, and YOU HAVE NO REMEDIES FOR NEGLIGENCE OR UNDER STRICT LIABILITY, OR FOR BREACH OF WARRANTY OR CONTRACT, INCLUDING BUT NOT LIMITED TO INDIRECT, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES, EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

If you discover a Defect in this etext within 90 days of receiving it, you can receive a refund of the money (if any) you paid for it by sending an explanatory note within that time to the person you received it from. If you received it on a physical medium, you must return it with your note, and such person may choose to alternatively give you a replacement copy. If you received it electronically, such person may choose to alternatively give you a second opportunity to receive it electronically.

THIS ETEXT IS OTHERWISE PROVIDED TO YOU "AS-IS". NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, ARE MADE TO YOU AS TO THE ETEXT OR ANY MEDIUM IT MAY BE ON, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimers of implied warranties or the exclusion or limitation of consequential damages, so the above disclaimers and exclusions may not apply to you, and you may have other legal rights.

INDEMNITY

You will indemnify and hold the Project, its directors, officers, members and agents harmless from all liability, cost and expense, including legal fees, that arise directly or indirectly from any of the following that

you do or cause: [1] distribution of this etext, [2] alteration, modification, or addition to the etext, or [3] any Defect.

This file should be called email025.txt Version 0.2.5 (alpha release) 17 July 1993

This rough version is missing 8 out of 28 chapters and 1 out of 5 appendices.

For information on taking the internetworking course, contact

John Goodwin (jgoodwin@adcalc.fnal.gov) P.O. Box 6022 St. Charles, IL 60174, U.S.A. 1

<title> E-MAIL 101

If you like those little machines that give you 24 hour access to your bank account, you'll love the Internet. I suppose there are still people who, given a choice, will go to a drive-through teller just so they can deal with a "live person" instead of a machine. But even those people will admit that it is nice to have the option of doing things for yourself, on your own schedule, anywhere. Do you remember what it was like before automatic tellers? Banks closed at 3 p.m. on weekdays. Each Saturday you had to guess how much money you would need for the following week. If you were wrong you had to cash a check at a food store (and maybe buy something you didn't want). And if you were out of town? Well, there were always credit cards.

We don't do that anymore. I think many people go to the automatic teller because they like the privacy of handling their own business without having to explain it all to someone else. And we like the illusion of having access to our "own" account anytime we want. There are disadvantages to using an automatic teller card too--you may have to pay a fee each month or even for each transaction--and you have to remember to deduct those fees from your account balance or you will bounce checks. But I'll bet you feel pretty competent using an automatic teller and don't lose much sleep worrying over the fees.

This course is designed to give you that same sense of freedom and competence with the Internet that you have with an automatic teller machine or the telephone. With a home computer, a modem, and communications software, you can connect to other computers over the phone line to exchange electronic mail (E-mail), trade files, or search for information. Many of those computers are connected to the worldwide network called the Internet. Some few of them will--for a fee--let *you* connect to the Internet. From there

you can dial any of 900,000 or more computers, send E-mail to any of 25 million people, and access hundreds of free, informative services.

In short, you are on the verge of a new method of communicating with people and machines called "internetworking." Internetworking lets you:

o Avoid playing phone tag;

o Sign up to receive special interest electronic newsletters and journals;

o Access hundreds of information services and document collections in exactly the same way--no need to have hundreds of sets of different instructions or hundreds of (expensive) special purpose software packages;

o Find and communicate with other people who share your interests.

Internetworking is an essential skill for the '90s. Your children will find it as common as viewing television or using the telephone. It still has a few rough edges--but we'll explain those.

There is actually no single network owned by one company called the Internet. Instead, many medium-sized networks have grown together to create a "phone system" that connects together nearly a million computers. Many hundreds of these computers allow some form of public access. You can get the latest news or weather, download information about Government programs or high-tech products, search on-line library catalogues and databases, download free software, and do many other things, with little or no monetary investment beyond the cost of your home computer.

Using the Internet need not be expensive: you can get on the Internet for as little as $10 a month if you own (1) a home computer, (2) a $50 modem, and (3) some communications software (under $100). There are more expensive ways to connect to the Internet, of course. These ways make sense for businesses or organizations that make heavy use of the network. But in this course we will discuss methods that cost in the $10-$40/month range. These methods are suitable for exploring the net after hours and for casual use. We will provide some basic information about more expensive methods of connecting (Appendix C) so that you can make informed decisions if your networking needs should increase in the future.

Internetworking well means mastering a whole host of skills--connecting two computers together using the Internet is just the beginning. You have to learn methods for transferring information from the remote computer to your own. This is a complex task that may involve using a file transfer protocol and compression techniques.

Because the information world is so vast, your biggest problem will most likely not be connecting to the Internet. It will be finding what you want. Thus, this course covers not only the mechanics of making a connection and transferring files, but techniques for locating material as well. And of course you will want to be savvy about the costs of different connection methods. This means estimating whether it will cost you more per Megabyte to transfer the information or to have it faxed to you by a friendly librarian.

This course is intended for the general public--students, businesspersons, librarians, teachers, writers, journalists--in fact anyone who needs to find information and communicate with others. Whether you are researching a paper, writing an article, or trying to get technical information on a product, you will use these techniques over and over.

Chapters

marked with an asterisk are omitted from this edition.

COURSE CONTENTS

Part II Special Concerns

Part III Research, Organization, and Writing

Part IV Resources

<Chapter 1> The Past and Future of Internetworking

There is an old fashioned way to connect with other computers and share information and there is a modern way. It is helpful to compare the two methods briefly in order to make contact with methods you may already know and to show off the advantages of using the Internet.

The old fashioned (ca. 1980) method of making contact with other computers is through a bulletin board service (BBS). Bulletin board services grew up in the late 70s as a method for sharing software, talking, playing games, etc. with a personal computer. They range in size from small special interest Bulletin Boards with a local following to giant national boards like CompuServe, GEnie, and The Source. You access a bulletin board with a modem and communication software by dialing a telephone number. Of course, if you don't live in the local area of the BBS you have to use a long distance carrier. This may add a couple dollars per hour to the connect fee.

The basic services offered by a Bulletin Board and by the Internet are similar:

(1) Access to a host computer (Internet TELNET command)

(2) File transfer capability (Internet FTP command)

(3) The ability to contact other BBS members individually (Internet E-mail)

(4) The ability to post messages for general consumption in any of several catagories. (Usenet Newsgroups)

The difference is that whereas each BBS has its own dialup procedure, menu interface, file transfer methods, billing policies, and so on, THE INTERNET USES ONE METHOD FOR ALL COMPUTERS IN THE WORLD. The savings in terms of the "learning curve" is staggering. Once you know how to use anonymous FTP you know how to get information from *hundreds* of providers. It is like the difference between using the postal service or using a special courier for each person you write a letter to. Once you know how to address the envelope and put the stamp on, you can write anyone.

The Internet has the added savings that any communications software you buy for it works with all providers. You do not have to buy (or customize) special software for each information provider. Thus you can use one familiar graphical user interface ("windows" program) to connect with any computer. The usual situation where you have to buy a special "client" program to connect to each kind of "server" is replaced with a situation in which you have a single program that any "server" out there has to comply with. This standardization is the main advantage of using the Internet.

Bulletin Boards are still around. In fact, one of the easiest ways to connect to the Internet is through a national bulletin board service. One disadvantage of this method is that--as of this writing--national BBS's like CompuServe offer only E-mail. You can't FTP or Telnet from them. And they often charge per message for E-mail, so using them can be quite expensive. There are better ways.

<Chapter 2> What is the Internet?

The best way to think of the Internet is as a communications medium like the Telephone, Television, or the Postal Service. Using the Internet you can send a any written text by E-mail. This is rather like mailing a letter and having it arrive in seconds--three days in the most backwards parts of the world. Using a special protocol called File Transfer Protocol you can transfer text files that are too long to mail (over about 50 pages) or even transfer graphics and programs. If E-mail is the equivalent of "talking" to a person, then Telnet, the third main Internet service, is equivalent to telephoning a computer. As long as you know the password for logging on to a computer, you can access and search any of nearly a million computers. Details of E-mail, FTP, and Telnet are contained in Chapter 5, Internet Basics.

This chapter puts the Internet into context. Rather than concentrating on the trees that will occupy us in later chapters, it paints a big picture of the computing world in which the Internet has evolved. When you pick up a telephone receiver you know you can dial households, businesses, or government offices. You can dial 800 numbers or 411 for information. You know how to get the time or weather, get your credit card balance, or leave a message on an answering machine. In short, you have a good idea of what might possibly be at the other end of the line and a great deal of experience with negotiating their various intricacies. But you are new to the Internet. Some sense of "what's out there" in this new world is necessary to avoid getting lost in the thickets of acronyms, numbers, and procedures developed by different vendors.

As we approach the middle of the 90s, the normal working situation in offices is approaching something like this: there is a Local Area Network (LAN) connecting together personal computers, workstations, and mainframes of different makes. The LAN (pronounced like "land" without the "d") may be connected to other LANs as part of a Wide Area Network (WAN). The WAN may or may not be part of the global network called the Internet. In colleges, universities, and research laboratories it likely is part of the Internet; in the commercial world, except for a few high-tech companies, it likely is not. But the difference between academia and the commerical world is rapidly becoming blurred.

In addition to the LANs and WANs there are many, many home and office computers that *could* be part of

the global network using a modem-to- host connection. These computers can be the portable computers of outside salespersons connecting to the central office to file a report, a computer in a home-operated desktop publishing company connecting briefly to the Internet to get a graphic for a newsletter, or a parent sending E-mail to their child at college.

<Section 2.1> Getting Over Shell-Shock

Let's face it. Not many members of the public--even the computer literate public-are on the Internet. There are three reasons that using the Internet for the first time can be rather intimidating, even though it is actually rather simple to use, when you get down to the nitty- gritty of internetworking:

o Getting on to the Internet can be a little bit complicated;

o The capability of logging on to computers you've never used before by its very nature means facing unfamiliar--and hence uncomfortable-- situations; and

o The world is a very big place.

I like to think of the first problem--getting on to the Internet--by remembering what it was like using an "alternative" long distance service before the breakup of the Bell monopoly. People who used the alternative carriers had to dial all sorts of access codes--very often a local access number, a credit card number, a security code, *and* the number of the party they were calling. They knew that whatever came after that was going to be easier.

That's what getting on the Internet is like. You may have to dial a local access number, get your modem settings right, and type the right magic combination of words; but after all that, actually *using* the Internet is simple. We'll talk you through the initial steps--after a while (and some frustration) it will be as unconscious as unlocking your front door or tuning a television set.

The second problem is a little more substantial. Using the Internet, you can get yourself into situations that are, well, experimental. Because the Internet gives you the freedom to "go anywhere" and "do anything"--at least if you know the passwords--you can uncover strange incompatibilities and unfamiliar systems. I call this experience "shell shock". At some point you will likely find yourself face to face with a computer program that expects you to type a command you don't happen to know.

You can mostly avoid such situations by only trying things about which you have good information. The situation is not much different from using a telephone: if you stick to well-worn paths like dialing local numbers or simple long distance calls, you will have little trouble; but if you start dialing other countries or special numbers you may be in for a surprise or two.

When you do log on to a new (previously unknown) computer, you can expect to come face to face with something called a "shell prompt". Shell prompts look like this:

% (or some other obscure symbol, like a dollar-sign)

or this:

mail> (a favourite--means you're in some sort of mail program)

or like this:

prez23:

(means 23rd command since you logged into computer "prez").

A prompt means the other computer expects you to type a command for its "shell", or "command interpreter". The shell is the outer layer that you, the user, interact with.

Two other types of "user interfaces" you might encounter are:

o menu systems that give you choice of numbers

o "window" systems or graphical user interfaces (GUIs, pronounced "gooey").

Menu systems are popular on bulletin board services, and usually present no problem to the novice. Their weakness is that they get cloying after about five minutes. Most menu systems that are designed to be used for that length of time or longer have a "command mode", where you get--you guessed it--a shell prompt.

Even windowing systems (you know if you have one of these) very often give you a window that "emulates a terminal", i.e. that gives you a shell prompt inside.

So, you see, in each of the three common user interfaces--command line, menu-driven, or graphical user interface--you will likely encounter, at some time in your life, a shell prompt. Advice on things that will likely work to get you started is given here and in Appendix A. Some experience of other kinds of computers, especially computers that use the UNIX operating system is useful. Some tips about using UNIX and other operating systems you may not have encountered before is given in Appendix D.

If you do get stuck, whether by being experimental or just by accident, it is helpful to remember a few points:

o You can always disconnect from a remote service by using your communications software to "hang up".

o If the computer gives you a strange symbol like a percent sign or a dollar sign and just sits and stares at you, you can try "help" or "?" to try to find out what the computer expects, or else try "exit", "quit", "bye", "logoff", or something similar, to return to where you were before.

o Many times, when you log on to a system, you will get instructions on how to get further help or how to "escape" back to your own system. You should remember these or write them down!

o As a last resort, exit the communications program (and all other active programs) and shut off your computer, turn off your modem, and disconnect it from the phone line. Be sure to do these steps in the order prescribed. It is unwise (though tempting) to simply turn your computer off and on, or to pull the plug on your modem with your computer running.

More suggestions for the inexperienced are given in Appendix A.

The final hurdle to using the Internet is that the world, even the world of the Internet, is indeed a very large place. When using the Internet you have to decide:

o where to go;

o what information you want (and where it might be); and

o how to get to it (and get it back home intact).

For a system as vast as the Internet, these are hard decisions. Often, the only strategy that works is to explore

and try different things. This course is designed to get you over the initial hurdles, give you a fair grounding in methods that work, and point you in the right direction. The exploration is up to you. As an initial orientation, we describe the "three worlds of the known Internet" in the next section.

<Section 2.2> The Three Worlds of the Known Internet

The Internet, like ancient Gaul, is divided into three parts. These parts are not so much territories as worlds, each with their own sets of assumptions, favorite dialects, and favored equipment. We may conveniently refer to them as the "PC world", the "UNIX world", and the "Mainframe world". Here's a dossier on each of the three worlds:

World: Personal Computer (PC) Typical Equipment: IBM PC and clones (85%) , Macintosh (15%) Conventional Operating Systems: MS-DOS, OS/2 Windowing Systems: Windows, MacOS Typical Size: PC ($1k to $5k typical; few $100 used) Clientele: Mixed--Business, Home users, just about everybody

World: (mostly UNIX) workstation Typical Equipment: Sun Workstation, VAXStations, other vendors Conventional Operating Systems: UNIX (two major dialects), VMS Windowing System: X Windows Typical Size: Workstation ($5k and up) Clientele: Engineering/Scientific users; more and more businesses

World: Mainframe or Minicomputer Typical Equipment: IBM (various), Digital Equipment VAXes Conventional Operating Systems: VM, VMS, UNIX Windowing Systems: X Windows, if available Typical Size: Minicomputer or Mainframe ($10k to millions) Clientele: Big Business, Universities, Government

The neat picture of three worlds is distorted somewhat by a tendency for each of the worlds to have two (or a few) major options, either in choice of equipment, operating system, or vendor. So, for example, the PC world is split into two camps, the MS-DOS people and the Mac people. Similarly, the UNIX world is split into the "BSD" workstations and "System V" (i.e. "5") workstations.

The three worlds are reflected somewhat in networking. The Internet is dominated by minicomputers and workstations running UNIX and VMS, with an ever increasing influx of PCs running MS-DOS and Macs. Machines running other operating systems often put a "UNIX-like" foot forward, so the user can almost believe he or she is dealing with UNIX machines. There is a certain sense that the UNIX software is the standard for the Internet. Software tends to appear on UNIX machines first and then be "ported" to other machines.

What makes it possible for all these disparate machines to talk to each other is the "Internet Protocol" (known more formally as TCP/IP, for Transport Control Protocol/Internet Protocol). TCP/IP can be thought of as a set of rules for two computers to use when they communicate with each other, even if they are not from the same vendor.

We are used to thinking of computer systems as having "software" and "hardware", but it is closer to the truth to say that complicated systems like the Internet have many levels--in the case of the Internet as many as seven--ranging from "very software" to "very hardware". Each level has its own set of rules, called its protocol. The TCP/IP protocol belongs to two of the middle levels. At the moment, the most common protocol for the two most "very hardware" levels is "Ethernet" (looks rather like the coaxial cable used for cable TV), while the "very software" levels are completely dependent on the vendor. In fact, it is this profusion of levels which lets the Internet work on just about any kind of hardware and with software from many different vendors.

Anyway, the Internet grew up as several medium-sized networks, all having diffent "very hardware" and "very software", but using the TCP/IP protocol for their middle layers, were connected together. Two of the first, and biggest, nets to adopt the Internet Protocol were ARPAnet-- Internet was first designed for this

one--the network for what used to be called DARPA (the Defense Advanced Research Projects Agency of the U.S. Department of Defense), and NSFnet, a network connecting universities and government laboratories for the U.S. National Science Foundation. These and other large networks form the "backbone" of the Internet. But today there are hundreds of smaller nets hooked on to the backbones.

There *are* big networks that don't use TCP/IP. For example, in the context of IBM mainframes at large universities and research institutions, BITnet (The "Because It's Time" Network) emerged. This large worldwide network does not use the Internet protocol. BITnet can be reached from the Internet through special translators called gateways, but it is definitely a different network. Occasionally one encounters problems that can be traced to this fact.

<Section 2.3> The Future of the Internet

The future of any technology is difficult to forcast, and I do not profess to know what the future holds for the Internet. Some predictions that various forcasters have made for internetworking (and telecommunications in general) are:

o A proposal for a data "superhighway" called the NREN (National Research and Education Network) will pass the U.S. Congress. This is an upgrade for the Internet.

o Commercial use of the Internet will become more common and new schemes for charging for its use will emerge.

o The Internet will be handed by the government over to AT&T and the other "telecoms", who will charge so much to access it that the whole scheme will collapse.

o Optical Fiber will replace Coaxial Cable (Ethernet protocol) as the most common standard for LANs.

o The Internet will enter the home over ordinary phone lines.

o The Internet will enter the home over existing Cable TV coaxial cable.

o The Internet will enter the home through newly strung optical fiber as part of a unified system for Telephony, Cable TV, and the data communication, using [insert your favorite protocol here] as a standard.

o Personal Computers will replace telephones, answering machines, stereos, CD players, and VCRs--maybe even TV!--as a single, universal device for home use. Sounds like a good thing to connect to the NREN.

o Computer and telephone technology will become so intertwined that it is hard to tell the difference. One product, already on the market, is described as "[a handheld] alphanumeric pager, an XT-compatible computer with a backlit screen and PCMCIA Type III slot, a fax/modem, a cellular and land-line phone, and a voice recorder"!

You are welcome to believe all or none of these predictions.

<Chapter 3> How Do I Connect To the Internet?

Connecting to the Internet involves several steps:

(1) Getting your modem and communications software working together

(2) Connecting to a provider over the phone lines (or a LAN)

(3) Using Internet services

For the first step you will have to rely on the manuals that came with your modem and software. Appendix B contains a discussion of some of the obscurer terminology associated with modem settings. You might want to read it if your manual is not well written.

Actually, you do not have to know about the second step in great detail. Mostly it is a matter of knowing enough to intellegently choose a provider. Each provider will have a specific set of steps--modem settings, access numbers, passwords, etc.--that you need to follow in order to get from you to the provider. Don't lose hope! Once you get there you've finished the hardest part. Chapter 6 contains very explicit instructions for connecting to one particular service, DELPHI.

Step 3 is the subject of the rest of this course--what you can do once you're on. The basics are discussed in the next chapter.

<Section 3.1> Connection Methods

In theory, there are three ways to connect to the Internet from a personal computer or workstation:

(1) Your PC may have a direct connection. This means that it is part of a Local Area Network (LAN) that is in turn connected to one of the component Wide Area Networks of the Internet. Your computer will have its own Internet Protocol (IP) Address. This type of connection is common in offices, especially of high-tech firms, but definitely not for home use.

(2) You may have a connection to a "host" computer that is directly connected to the net. If you can use a modem to connect your home PC to the mainframe at the office and the mainframe is on the net, then you can get an Internet connection that way. But what if your office doesn't have a mainframe on the net? You can still subscribe to a service that makes a host computer available to the public. This is presently the cheapest and most common method for public access to the net.

(3) There is a connection method in between cases (1) and (2) called a Serial Line Internet Protocol (SLIP) connection. You dial up a special host computer--just like case (2)--called a SLIP-server. The difference is that the SLIP server gives you a temporary IP address and talks to your computer using the Internet Protocol. This requires your computer's software to speak SLIP. Your computer thinks it is using case (1) even though your actual connection is closer to step 2. The advantage of fooling your terminal into thinking it has a direct connection is that it can use all the fancy, free software developed for computers with direct connections.

The software for a SLIP connection is being built into all new communications software. If you just bought or upgraded your software, you probably have SLIP capability already. The catch? SLIP is too slow on a cheap 2400 baud modem. But if you buy a fast FAX modem it works fine. That's one reason that a $350 FAX modem is a good investment. It is fast enough for SLIP and gives you the ability to send and receive FAXes as well.

SLIP technology is still rather new and somewhat experimental, so this discussion will focus on the old reliable--method 2. How do you find a service that will give the public access to the Internet?

Depending on where you live, you may have a provider you can call in your local area code. If not, then most of your problem will be finding the cheapest way to make a long distance phone call. This book does not have a list of providers, since such a list will get out of date rapidly. Instead, it gives you one cheap way to get on the Internet, then gives you instructions on how to find out who the providers are and what their rates are. I would rather teach you how to look out for yourself than just give you some outdated advice. This method also has the advantage that one set of instructions works for everybody. That wouldn't be true if I listed 20 or

30 providers. Instructions are given in "Gettin on the Internet Step by Step."

<Section 3.2> Types of Internet Providers

As I said, most of the problem of getting on the net occurs when you live in an area that doesn't have a LOCAL provider. Basically there are three kinds of providers and three ways to get to them:

(1) Providers of direct connections. If you are setting up a business and need a high volume direct connection for your office Local Area Network and can afford several thousand a year at least, you will want to consider these high-end providers. They are not relevant to our discussion. (But see Appendix C for more information).

(2) There are several regional networks and one national one that specialize in low cost PC-to-host or SLIP connections. Costs range from $20-40 a month to $2000 a year, depending on the services you need. Performance Systems International (PSI) is a major provider of this kind of service. Other networks offer services similar to PSI, although PSI has the most extensive nationwide service at this time. This service can be very competitive with BBS type service (see below) if you are a frequent user of the net or need to send more than an occasional E-mail message. It is definitely worth a look.

(3) Many computer bulletin board services offer E-mail or even Internet connections for around $10-20 per month. Be very careful to check out the connection charges. If you are not careful you could be charged for using the bulletin board (per hour), using the Internet, the long-distance connection, a surcharge for daytime use, and a per message charge for E-mail! One of the purposes of this book is to explain the minefield of charges so you don't get burned. The service recommended bundles all the charges up front so there are no surprises.

Generally speaking, connecting to the Internet through a BBS is the best method for the explorer. Once you've determined that you need the Internet on a regular basis, one of the regional networks or PSI is probably the most economical route.

Unless you are fortunate enough to live in an area where an Internet provider is a local call away, you will have to contend with long distance charges. Actually, these can be as low as $2 an hour and are sometimes bundled in with the network connection charge.

<Section 3.3> Finding the Cheapest Long Distance Method

There are three basic methods of paying for long distance:

(1) You just pay for a call to another area code. This is very expensive and not recommended.

(2) You use a provider with a toll free (800) number and pay for the call in a higher connect charge. This is also very expensive.

(3) You use a Public Data Network after hours and pay around $2 an hour (may be included).

Actually, the last method is the only workable one. There are a number of PDN's.

CompuServe has a data network. You do not have to join CompuServe to use it.

PSI has its own data network with many points of presence around the US and abroad. These are divided into Class A and Class B, depending on the level of service provided.

Tymenet and SprintNet are two other public data networks. You may have heard of the SprintNet service PC

Pursuit. For a monthly fee this gives you many BBS nationwide as well as any computer that can be reached by SprintNet.

In general, for a first experiment we recommend the DELPHI BBS and SprintNet. DELPHI includes the SprintNet surcharge in its $13/month bill (after hours use only--daytime is expensive everywhere). At this writing you get 5 free hours the first month and 4 hours per month after that. Additional hours are $4 each. There is also a 20 hours for $20 plan. Additional hours are $2 each with this plan. Detailed instructions on how to sign up are given in "Connecting to the Internet Step by Step."

<Chapter 4> Who Pays for the Internet?

All this talk of cost may be making you edgy. Eventually, everyone using the Internet must face the fear--if I am calling up a computer in Switzerland won't I be billed for the call? The marvelous thing about the Internet is that although there is plenty of expense involved in getting on it, there is no additional expense associated with what you do after you are connected. THE WHOLE WORLD IS ON LOCAL. Thus, you may have to pay for a $2 an hour call to Massachussetts, for your PC, your modem and software, and a connect fee to your internet provider. But you DO NOT HAVE TO PAY FOR EACH AND EVERY INTERNET CALL.

Since most people find it hard to believe that you can send mail anywhere in the world or dial up a computer on the other side of the globe without paying a special charge, I will spend some time explaining who does pay for the Internet and how those costs are reflected back to the user. One way or another you do pay for network usage, but these payments are not in the form of a direct billing for each call.

First, you already know that there is no Internet, Inc. that monitors all the calls and bill customers. Instead there are hundreds of smaller networks that act as relays. Those networks *could* charge their customers for each call, based on how much time it takes and where it goes, but since no one is charging them, they have no real incentive to pass on costs. Instead they charge a flat fee--usually based on connect time, but for a 24 hour connection just a flat yearly fee.

Now network traffic does use up resources. Basically, the Internet works like a potluck supper. Everyone with a direct connection allows some of their system resources to be used by messages that are just "passing through". They allow this because other systems allow them the same privilege. Thus, it is in everyone's interest to allow some of their resources to be consumed by other persons' messages, because everyone comes out ahead.

So, sites with direct connections pay real costs in terms of lost computing cycles, extra cabling, fancier equipment, and lost disk space. These costs are passed on to their customers or shouldered by government subsidy. But there are no direct charges associated with using the system.

In the early days of the Internet, Government subsidy of the backbone networks was crucial. The backbone was built with government funds and it was government funds that paid for the extra equipment needed by the universities and laboratories that carried more traffic than they generated. With the development of commercial nets alternatives to the Government-sponsored backbone arose. The Government subsidy is still important, but becomming less so every year.

So, the short answer is that you pay for the network. You either pay your provider a flat fee or you pay as a taxpayer for Government subsidized network resources. Most of the cost you actually see will be in your own equipment, the cost of placing a phone call, and whatever your provider charges you.

<Chapter 5> Internet Basics

We've talked a lot about the Internet, but how do you actually use it? There are three basic skills on which all Internet use is based:

Electronic Mail (E-mail)

File Transfer Protocol (FTP)

Telnet

All three commands rely on the Internet addressing scheme. An Internet "telephone number" of another computer is its Internet Protocol (IP) address, a number that looks like this:

225.225.12.38

This form, called "dotted decimal," is still required by some computers. But, to make IP addresses easier for humans, this telephone number has another form which is easier to remember:

hoople.usnd.edu

This means that computer ("node") named "hoople" is located at the University of Southern North Dakota. The last component, ".edu", means that the institution is in the educational domain. . Other domain names look like this:

.edu : educational institutions

.gov : government (research laboratories and

.com : commercial businesses

.org : nonprofit organizations

.mil : military installations

In addition to these domain names, there are many two-letter country codes, e.g.

.ca : Canada

.jp : Japan

.uk : United Kingdom

.us : United States

and many more.

To send electronic mail to someone over the Internet, all you need to know is their "username", or "handle". This is followed by an at-sign, the node name, and any domain names. Thus

joe@locoweed.chi.il.us

donotes a private citizen in Chicago, Illinois, in the U.S. Joe's computer is called "locoweed".

As another (real) example,

president@whitehouse.gov

is the E-mail address of the U.S. President.

In the examples that follow we will give details for a typical character-oriented computer. Windowing systems with menus, dialog boxes, and so on will hide many of these details, but they are happening behind the scenes. Also, once you are connected, you may be faced with an old-fashioned command-line system.

<Section 5.1> Electronic Mail (E-mail)

The details of using the mail system depend on your system, but basically it looks like this:

% mail <enter the mail program with the MAIL command, or whatever>

Welcome to Mail, Version 99.3 . . .

mail> send

To: president@whitehouse.gov Cc: vice.president@whitehouse.gov <or return if you don't want a carbon sent to anyone> Subj: I'm on Internet

Type your message. Control-Z to exit

Bill--

I just got my Internet connection today. My address is pdq@hoople.usnd.edu.

Give my best to Al,

PDQ

<type control-Z or do whatever your system needs to signal an end of the message>

% <your system is now ready for your next command>

<Section 5.2> Telnet

In addition to using an Internet address to send E-mail, you can use it to call a computer. This is rather like dialing up a computer with a modem, except that the local computer (the one you called with *your* modem) is calling up the remote computer:

your PC or Mac --> "local computer" --> "remote computer"

The example assumes that "home>" is the shell prompt given by your local computer and that "%" is the prompt given by the remote computer (see Section 2.2 on "shell prompts"). So remember, you don't type them.

home> telnet hoople.usnd.edu <type this on your "home" computer>

Welcome to node HOOPLE. Now running Opus 2.0

username: pdq password: <type your password here>

Last login 23:14:55 15-JUN-1752 You have mail.

% <now type whatever commands you like until . . . >

% logoff <or bye or quit or exit or whatever>

Session with hoople.usnd.gov terminated at 21:19.

home> <now continue issuing commands on your home computer>

This method of connecting to another computer is called "telnetting". In effect, you have used the local computer to telephone the remote computer. You can now do anything on the remote computer (with certain restrictions) you could do if you were "actually" logged on.

SPECIAL PROBLEMS WITH TELNETTING

Sometimes telnetting will put you into a menu-type program or even a "screen oriented" program. A special problem here is getting the other computer to recognize what type of screen you have. Since most communications software "emulates a terminal", this amounts to telling the other system what type of terminal your communications system is emulating.

E.g., on a UNIX system you might type:

% set term vt100

to tell the other system that your communications software thinks it is a VT100 terminal (a very common choice for emulation programs).

If you don't get this exactly right, your telnet session will "sort of work". It's probably not worth spending a lot of time on this problem for a brief contact with the other computer. If you are going to work on the remote computer every day, however, you will want to get it right. Most "flaky" behavior can be traced to this problem.

<Section 5.3> File Transfer Protocol (FTP)

It is easy to transfer files over the Internet using a special protocol called FTP. FTP takes the place of programs like XModem or Kermit that may be familiar to you if you use a bulletin board service. Now, you might ask, if FTP transfers a file, what is the differnce between sending E-mail and FTP; why prefer one over the other?

First of all, FTP avoids certain restrictions on the type of file sent; in particular, you can send binary (non-text) files like programs and pictures; and you are not restricted to any particular length, as is often the case with mail programs.

Not only that, with FTP you can "browse" a directory of files before choosing one. You can move up and down the directory hierarchy and list files, looking for the one you want.

Finally, FTP lets you get places that you may not have an account (or a friend to send you mail). The method for doing this, called "anonymous FTP", is described in the next section. There are several hundred "anonymous FTP sites" worldwide, with large collections of programs, textfiles, and graphics. Anonymous

FTP is the Internet equivalent of publishing--a very important topic indeed.

<Section 5.4> Anonymous FTP

Further facility with Anon. FTP requires a little knowledge of the UNIX operating system. See Appendix D for an introduction.

<Chapter 6> Getting on the Internet Step by Step

This course takes a different approach to . Rather than

In particular, you should contact the following for information.

STEP 1. SIGN UP WITH A PROVIDER (example DELPHI)

To get on the Internet you need:

1. a home computer,

2. a 1200 or 2400 baud modem that understands AT commands ("Hayes Command Set Compatible"),

3. communications software, and

4. a credit card.

This example assumes that you are signing up with the bulletin board service DELPHI. DELPHI has no commercial relationship with the author. It was chosen for an example because its rates are typical of the low end of the market, it offers nationwide service, it includes afterhours access by SprintNet in its basic fee, and because at this time it offers 5 free hours of Internet access to new subscribers.

You should definitely consider other providers. You can get information about other providers once you're on the Internet. In fact, that will be one of your first steps below.

1. Set your modem to 2400 (or 1200) baud, 8 bits, NO parity, 1 stop bit, full duplex, local echo and auto linefeeds off, XON/XOFF on, VT100 emulation. (see the manual for your modem, the manual for your communications software, and Appendix A if you need help)

Don't worry if some of the options are missing. Usually, for example, full duplex implies local echo off and vice versa, so your software may not list these as separate options.

2. Use your communications software to issue (or type directly to your modem) the command ATDT 1 800 365 4656. If you have a pulse-dial phone your will use ATDP instead of ATDT.

3. DELPHI will give you explicit instructions, but for reference they will look like this:

A. Make sure it is after 6 or 7 p.m. or on a weekend--unless you want a $9 surcharge for daytime access.

B. Dial your local SprintNet access number (local call!): ATDT 123 4567.

C. After "CONNECT 2400", type @D ("D" must be capital)

D. After "terminal=" type <CR>, i.e. carriage return.

E. At the @-sign type

@C DELPHI

F. After Username: type

Username: YOURNAME Password: OPENSESAME

Type your own username and password of course.

4. If at anytime you forget your Sprintnet access number, or if you are out of town, you can look up SprintNet numbers as follows.

STEP 2. Your First E-mail Get PDIAL, NIXPUB, INTERNET RESOURCE GUIDE, Info on PSI Info on LISTSERV and signing up for E-mail

STEP 3. Your First Anonyomous FTP

Get surfing the internet

STEP 4. Your First Telnet

Getting Public Access UNIX and reading Usenet news

STEP 5. First E-mail Getting Information on PSI Getting Information on LISTSERV

You can do many, many things with the Internet. The information you have retrieved, especially the Internet Guides, will give you other ideas. We will go over some of the retrieval methods in

Part III of

this course. For now, you should experiment and explore, using the information you have as a starting point. The experience you gain will be useful when we come to the more systematic study of Internet research methods later.

<Chapter 7> Programs and Pictures

Evenually, as you gain experience finding and transfering information, you will want to try you hand at transferring binary files containing pictures or free software from one of the large FTP archives like

wustl.edu

sumex-aim.stanford.edu (Macintosh software)

simtel-20.mil (IBM and compatible software)

In fact, some of the first software you will want to get is software for compressing and uncompressing files (see next Chapter), processing graphics ("image files"), and perhaps some games.

First, what is a binary file? A binary file is one that you can't read. Unlike text, which consists of groups of eight bit code letters representing "a", "b", and so on, binary files have bits that are meant to be read only by

programs. You cannot "look" at them by typing them out or with a word processor--unless the word processor understands the format of the file. Expensive word processing programs--including the most popular ones like Word Perfect and Microsoft Word--are increasingly able to read a large variety of binary files.

Frequently encountered binary files include:

1. Files that use proprietary formats, such as word-processing programs, spreadsheets, database programs, etc. These files contain formatting (like italics, underlines, etc.) and perhaps graphics, and other goodies beyond the simple text.

2. "Application Programs". These are programs written in (the binary) machine language that your computer understands. They are "compiled" from text files of "source code" written in a programming language. Vendors almost never make their source code available--except for free software, which you may have to compile yourself.

3. Text files that have been compressed to about half their size with one of the popular compression programs. Compression makes texts files binary. Compression doesn't do much for files that are already binary unless the data they contain is very repetitive.

4. Files containing graphics like GIF, TIFF, PICT, or JPEG files. More on this below.

Transfering binary files is as easy as transfering text files once you understand the potential problems:

1. Most FTP programs start you out in TEXT mode. This means that text files are *translated* when they go from computer to computer on their way to you. This is fatal to binary files because their bit pattern has nothing to do with the groups of eight bits that make up text.

2. Even text files have slight compatibility problems because the three "worlds"--IBM, Macintosh, and UNIX--use a different control character to represent "return", "enter", or "newline." Translation between the different dialects is handled automatically in TEXT mode transfers. It is also the main reason why text files cannot be transfered in BINARY mode.

The two control characters involved are called "linefeed" (LF) and "carriage return" (CR):

IBM PC and compatibles : <LF> <CR>

Macintosh and VAX : <CR>

UNIX : <LF>

3. As mentioned above, text files are often compressed to save space. This means that you need a program to uncompress them before you read them--and that you have to transfer them in BINARY mode.

The most common compression programs and common file extensions are:

IBM PC and compatibles : PKZIP and PKUNZIP (.ZIP)

Macintosh : Stuffit and UnStuffit archives (.sit)

UNIX : compress and uncompress (.Z) and tape archive (.tar) with both together being most common (.tar.Z or .taz). Note capital "Z".

UNIX also has the gzip/gunzip command pair. gzip files usually have the extension ".z" (*small* z) or ".tgz" if they are also tape archive files.

Fortunately you can usually find free software for you computer that will uncompress formats from other computer models. For current information on compression software, see the FAQ for the newsgroup comp.compression (ftp://rtfm.mit.edu/xxx).

4. Conversely, sometimes binary files are converted to a sort of ASCII that looks like gibberish so that they can be mailed or transferred in TEXT mode--but again you need a program that translates them back to binary. Sometimes we encounter the ultimate absurdity, a text file that is compressed then re-encoded as ASCII for mailing. Actually this makes sense if a large number of related text files are stored in a compressed "archive".

The most common programs for this are:

uuencode/uudecode for UNIX (used for Usenet news postings of binary files and for mailing programs) The file extension (rarely encountered because there is little reason to store files in this format) is ".uue".

BinHex for the Macintosh (.hqx) Often combined with Stuffit (.sit.hqx). This is a common method for distributing all the files that come with a program as a single file.

uuencoded files can be recognized by the fact that every line begins with a capital "M" and is exactly the same length. The file starts with the word "begin" and ends with "end" The translating program needs these words, but nothing above or below them. Often a uuencoded file is split into several parts for transmission and must be reassembled (and stripped of mail headers, etc.) in a word processing program before it is decoded. If you do this be sure to save the resulting file as a text file and not in the proprietary format of the word processing program!

<Section 7.2> What To Do With Graphics

The second topic of this chapter is graphic images. Graphics are very important for Desktop Publishers--writers of newsletters, businesses that prepare their own brochures, and small printshops. Pictures can be stored in separate files or, in some cases, embedded in other formats such as the proprietary format of Microsoft Word files. Picture files take up a large amount of space--especially big pictures at high resolution. 1 Megabyte is a typical size for a smallish picture at moderate resolution. Thus, one picture is worth about 500 pages of text!

The lifecycle of a typical graphic goes something like this:

STEP 1. Capturing (scanning) of photograph with optical scanner or with a special "video" camera

The better sort of optical scanner looks like a small xerox machine. There are also cheaper hand-held models. Flatbed scanners cost in the $1000+ range so you are not likely to have one unless you are in the business. Most likely, the casual user will get a graphic from someone else, from a collection of "clip art", or create the graphic from scratch in a drawing program.

STEP 2. Storage in a file using an interchange format

However the image is obtained, it has to be stored on disk before it can be used. There are perhaps twenty or so common formats, but those found most often on the Internet and in the Usenet newsgroups are:

GIF (Graphics Interchange Format) a rather old-fashioned but very commonly found type of graphics file.

Almost any software can read this format. This is the most common format on Anonymous FTP archives.

TIFF (Tagged Image File Format) Technically more versatile than GIF and just about as common. A very good choice for exchanging files between different programs.

JPEG () A special compressed image format that is becoming common in newer software.

EPS (Encapsulated PostScript) Not really a graphics file per say, but a set of instructions for drawing an image. The success of the Postscript page description language for Laser printers has led to a new stategy for including graphics in word processing files. Many high end word processing programs like Microsoft Word allow you to include a reference to an external Postscript file containing the figure.

Desktop publishing and high-end word processing programs can often save and import graphics in any of these formats, especially TIFF and EPS.

In addition, you may find files in proprietary formats like Macintosh PICT files. These formats serve as standards for their line of computers but not across different brands. Fortunately you can find free software that will convert TIFF to PICT or *vice versa*.

STEP 3. Transmission to point of use

Suppose you have a graphics file or a word processing file containing your brochure. How do you send that file to someone?

If you work in an academic environment, it is quite possible that one or the other institutions is an Anonymous FTP site. You may be able to use the Anon. FTP site as a "mailbox" to transfer the file in binary mode-- or you could exchange passwords and transfer the file directly, if both have a direct connection to the Internet.

More commonly, you will have to send the file by E-mail. Say you've just finished a brochure and you want to send it cross-country. Let's suppose that your business has two branches--one in New York and one in Los Angeles, and that both offices have Macintoshes with Microsoft Word and that you both have one of the free "Usenet software kits" for the Macintosh (not necessarily the same one). Then, you proceed as follows:

A. Using UUENCODE (or BINHEX, if you like) you convert the Microsoft Word file to a coded text file.

B. If your mail has a size limit, you may have to break up the file and send it in parts.

C. At the receiving end, reassemble the file and strip any headers and trailers added by the mail system. The file should look like

begin <very first line> M M M

M end <very last line>

and be saved as a TEXT file.

D. Run UUDECODE (or BINHEX) and recover the binary file.

E. Run Microsoft Word, open the binary (MS Word!) file and print.

There may be one slight glitch. Macintosh files have two parts, a "resource" part and a "data" part. The

resource part contains such information as the name of the application to run when you click on the file and how to draw the cute little icon pictures. Some of the simpler programs do not encode the resource part so you may get a generic document that you can't open by clicking on it (the infamous "application busy or missing" message). That's OK. Open it from *within* Word and then save it as a Word document. It should recover the missing parts. And get smarter software.

Certainly this procedure is complicated--and you might want to do a dry run before you try beating a 5 o'clock deadline--but the capability of transfering a computer file cross-country in seconds can be crucial to a business. The fact that it can be done with free software and a casual $10/month E-mail connection is astounding. Play around and learn to do this. In the future, printers may commonly accept submissions by E-mail or by direct transfer over telephone lines. Imagine not having to figure out how to keep your camera-ready copy dry on a rainy day or having to rush across town minutes before your deadline!

STEP 4. Image enhancing and/or color separation

One of the great advantages of having a graphic in a computer file is that you can use free software (or shareware) to play around with the image. Cropping, rotating, streching, zooming, and so on are all common. In addition, you can convert color to black and white or greyscale, enhance the image, make halftones or color separations, and even play with the spatial frequency spectrum if you want. (Color separations are the four images needed by printers--separate ones for Cyan, Yellow, Magenta, and Black ink).

STEP 5. Importing or embedding in a word processing or desktop publishing program

Once you are happy with the picture you import it as a graphic into your DTP or word processing program. If your program reads the format the picture is in, this is easy. If not, you will need to get free software that converts from the format you have to the one you need. This process is very experimental. I've found that I have better results converting from an obscure format to a standard and common format like GIF or TIFF before converting to a proprietary target format. This is even true if the software says it reads the obscure format directly.

STEP 6. Printing on a laser printer or other equipment

If a graphic is not solely intended for display on a (color) monitor, like a slide presentation, it must be printed out. And there it is. Your picture in print.

<Chapter 8> What to Do When You Only Have E-mail

The very first thing to do is to get information on getting a better Internet connection! But barring that, there are many reasons that you might need to know workarounds that only require E-mail: you might be stuck somewhere (like work) where there is no Internet access, or you could be borrowing access from a friend. Since Internetworking is about communicating with others, in many ways this is the most important chapter in this course.

First we consider methods for

<Section 8.1> FTP by Mail Servers

<Section 8.2> Archie by Mail

<Section 8.3> Mailservers and Fileservers

<Section 8.4> Mailing lists and how to find them

<Section 8.5> E-mail to FAX

Fax is not a useful as E-mail, except in regard to one thing.

<Section 8.6> The Top Ten Fun Things to Get by E-mail List

Now that you know the techniques, try getting some of the things on the "Top 10" list, in Appendix E.

<Chapter 9> Employee Development: How to Get Your Employees Internetworking

This short Chapter contains a little advice on how to learn about the Internet. It should be clear from the preceding Chapters that learning how to use the Internet is a survival skill for many businesses. Effective use of the electronic medium

o Saves employee time--time lost in phone tag, lost messages, and they three day time delay of surface mail.

o Avoids circuitous means of transfering data like printing a document, faxing it, and then rekeyboarding the data at the receiving end

o Allows businesses and individuals to self-publish, and distribute their work efficiently, whether or not the text or the graphical appearance is primary.

o Provides access to information, allows communication and distribution of documents in a single, uniform fashion.

It should also be clear that Internetworking is not yet a smooth, easily learned process. It requires knowledge and skills that are not presently taught anywhere except on the Internet itself.

The next section discusses specific needs of different segments of people. The final section contains a fairly systematic exposition of the methods and skills needed to Internetwork effectively. But far from representing these sections as the last word on the subject, I would like to stress that the only way to learn Internetworking is through undirected exploration of the Internet.

This means you have to let your employees play, at least on their own time: play with programs, play with Anonymous FTP, and play with Usenet news. None of these activities are directly productive, but the playing pays off when you need a new program and someone in your office can

o pick the right Usenet newsgroup and retrieve its FAQ

o read the FAQ and learn about free software that will solve your problem and where to find the latest version

o connect to the software archive and (correctly) transfer the program--even though the intervening machine is of the "wrong" make.

o properly decompress and install the software.

When all this is done competently, in less than half an hour, you will have attained the goal of employee development.

A final caveat: *don't neglect Usenet news.* Usenet news is the most difficult of the "Internet basic services" to get because it is not really an Internet service. It is commonly found on Internet computers and commonly transmitted over the Internet, but it does not fit into the E-mail-FTP-telnet scheme of things. If your Internet

provider does not provide the news, you may have to ferret it out by (1) getting an account on a public access UNIX system and (2) learning to use UNIX. Command-line UNIX is no easier than command-line MS-DOS, but it is worth learning how to get on a UNIX system for the "rn" (readnews) command alone. All you need to know to get that far (and more) is contained in Appendix D.

Any guide like this will soon be dated in terms of information sources, techniques, and software. But Usenet is up to the minute. There, hidden among the many diversions of alt., talk., and soc. hierarchies, is the latest information on the computing environment of modern Internetworking. In the opinion of this author, learning to use a newsreader and reading the network news regularly is the *single most important Internetworking skill*. The Usenet newsgroups are Dewey Decimal System of the the true world library. Information can be found in plenty elsewhere, but guides to information are rare and priceless-- and the Usenet news is the guide to the Internet.

<

Part II> Special Concerns

This Part lists briefly some of the ways in which various groups of people can use internetworking skills.

<Chapter 11> Special for Businesses

I wish I had better news for business use of the Internet. I wish I could describe hundreds of free services of interest to *business* and tell you how to use the Internet for profit. But it's not there yet. However, before you turn away with a sad but knowing smile on your face shaking your head over another unlikely technological dream--you've seen it before--consider this: the main potential of the Internet is as a communication medium. Is radio and television important to businesses? What about newspapers and magazines? Or direct mail? Very few businesses make money by selling newspapers or operating radio stations, but many, many businesses use these media for advertising. You and your employees need to become adept at using this medium for the same reasons you've mastered layout of newpaper ads and writing form letters.

It is very important to understand that the Internet is not a broadcast medium but more like the telephone or mail system. It specializes in contacting individuals one at a time. In other words, you are not going to get a list of all 25 million E-mail addresses and bombard them every 10 minutes with a 30 second sound byte. Nor are you going to send 100 people a letter asking them to contact 100 persons each. On the other hand you might use the medium to contact a mailing list of your customers or self-publish a promotional brochure.

The amount of commercial traffic on the Internet is disappointingly small--but important. Mostly this is for historical reasons. The backbone network in the United States, NSFnet (for National Science Foundation) has an "acceptable use" policy for traffic carried over it. This restricts traffic to messages that support the R&D effort of certain government laboratories and universities. Clearly, there is not room for commercial traffic if you are directly connected to the NSFnet.

But nowadays one can get on the Internet without connecting directly to NSFnet, and the amount of commercial traffic is growing. Don't overlook:

o Making product information and brochures available by E-mail as well as by the postal service.

o Allowing customer-support inquiries by E-mail.

o Starting a mailing list for your customers or clients.

o Setting up a "mail-server" to let clients get information about your product automatically, without having to wait for you to log on (required direct connection to the Internet).

o Putting your product information on an anonymous FTP server (requires that you have a fileserver on the net or find an FTP site willing to take the information).

Suprisingly, there are, to my knowledge, no pay-for-advertising services that support mailservers or anonymous FTP sites. It is a fair prediction that this advertising medium will develop as more persons join the net. You could put your information on bulletin boards, of course, but only members will see it there--not the 25 million people with E-mail access.

The fact remains, however, that unless you are in very specific industries that are information or paper intensive (say publishing, computing, information retrieval, and so on), or unless you need access to government information like weather maps, that your use of the Internet will consist of downloading programs or getting the latest technical information.

All of this overlooks the most important aspect of the Internet for businesses. The Internet is evolving very rapidly. It is likely to be an important medium for transacting business, for customer service and for advertising in the very near future no matter what industry you are in. For some industries, like publishing, high-technology industries, and the media, it will be critical. Businesses who have a pool of employees that are adept at using the Internet will have a competitive advantage over firms that don't. Thus you should encourage your employees to get personal Internet connections and learn about the Internet after hours.

<Chapter 12> Special for Students and their Parents

Since the Internet grew up in an academic environment, university students will likely have a level of access that would be the envy of any business. All the services and research tools--not just E-mail, FTP, and telnet, but gopher, WWW, WAIS, and the rest are likely to be available to students from any terminal on the local "cluster" or by dial-up from their dorm rooms.

Students will be especially keen on:

o checking the university library catalogue to see if a book is in before walking to the library.

o finding out about campus events (even at other universities!) through gopher or school bulletin boards

o posting buy and sell notices for computer equipment, cars, housing, and so on.

o contacting potential tutors either at their own university or for help by E-mail. (A netwide "university" of tutors, called Usenet University, is prepared to answer questions in various subjects by E- mail already exists in the Usenet newsgroups. See the alt.uu.* hierarchy).

o using online catalogues of other university libraries to find books for interlibrary loan or to compile bibliographies

o downloading free software and information

o finding scholarship information

Parents can communicate with their children at college by E-mail--and probably get a faster response than waiting for the occasional letter from home. Worried parents will have to refrain, however, from using the "finger" command to find out when their children last logged in or read their mail!

<Chapter 13> Special for Writers, Journalists, Publishers, and Printers

There is probably no industry for which information is so critical as for the media and publishing industries. Journalists who explore the networks will find that they use the tools described in the first part over and over to track down information, conduct prompt "interviews" by mail, and so on. Publishers will be interested in the electronic transmission of manuscripts (though writers soliciting publication will still want to send hardcopy--the equivalent in the electronic age of sending a self-addressed stamped envelope). Publishers will also be interested in sharing or developing free image processing software with other publishers, and transmitting graphics.

As the net develops, libraries research will more and more often involve internetworking. Searching for books is already easy by dial-up or over the Internet. In addition, the amount of information that is never circulated on paper will increase. This is already the case in the scientific and technical community where printing is a luxury rather than a necessity. Given that a single 8 mm videotape can hold 500,000 pages of text, it is possible to hoard (and search) vast amounts of information that you can never possibly print out. Imagine what such technology will do in the hands of Government or any other bureaucracy. Finally, it is not hard to image the day when an editor will receive as many press releases by E-mail as through the postal service.

Internetworking technology allows virtually any business or individual to set up and run their own "wire service", providing information about their business or special interest to a select group of subscribers. This capability is completely analogous to Desk Top Publishing, which put low-end printing in the hands of any business or individual.

Journalists and other writers will not want to overlook the kaleidascopic mixture of technical discussion, product announcements, gossip, and general ranting on Usenet. Usenet already has more channels than a typcial satellite and is growing by ten channels a day or so. It is hard to find, but tucked in among the chit-chat and programs is the only up to the minute information on the Internetworked World. Certainly all writers of scientific or technical columns will want to tap this source of information.

<Chapter 14> Special for Elementary and High School Teachers

There are many special Internet services for Elementary and Secondary School teachers provided by the Government, mostly through the education offices of research laboratories. The best all around refernce for teachers is the *NCSA Guide to the Internet*, put out by the Education Office of the National Center for Supercompter Administration. A paper version is available from:

The network version is located at ftp.ncsa.uiuc.edu. Unfortunately, it is available only in Microsoft Word format (requires binary transfer). If you are unable to use this format directly or convert to a format you can use, you will have to order the paper version.

The NCSA Guide covers all you need to know to connect to the Internet-- both technical details and etiquette--as well as suggested projects to introduce children to the net. You will find out how to get information about the space program or how to access such programs as the Newton Bulletin Board Service for Science and Math. teachers at Argonne National Laboratory.

In addition, Usenet has a k12.* hierarchy which provides a gateway to the K12 network. Besides K12, there are several other regional networks specifically for teachers and students.

One of the more exciting prospects for teachers is that of sharing worksheets, handouts, and other materials with other teachers. Although this type of sharing is routine on bulletin boards and regional networks that cater to teachers, anonymous FTP sites hold out the possibility of a worldwide collection of such materials.

Send contributed materials (in electronic format) to

ftp.cs.city.ac.uk:/freelore/incoming

by following the instructions in Chapter xx for sending a file by anonymous FTP, or mail a floppy disk (and a return mailer with prepaid postage, if you want it back!) to

The FreeLore Project P.O. Box 6022 St. Charles, IL 60174.

Make sure your materials have a copyright notice like this course, allowing anyone to copy and distribute them for free (for educational purposes).

<Chapter 15> Special for Librarians

For many years, of course, libraries have been among the heaviest users of information services--for cataloguing or to fill patron requests. Several companies now specialize in providing Internet access to libraries, e.g. ACCESS or DRAnet. Libraries will increasingly use these services because the promise the following benefits:

o Inexpensive access to hundreds of online library catalogues, worldwide.

o Uniform, and often cheaper, access to information services using telnet rather than a host of special software packages.

o Access to netwide searching tools like WAIS, WWW, and GOPHER.

o Discussion by E-mail with other librarians, conference reports and announcements, and so on.

It is true, as one librarian said to me, that you can tell that librarians didn't set up the Internet. The archives grew piecemeal and their contents are far from uniform in quality. In addition, the whole Internet is so vast it probably can't be catalogued. Nevertheless, rough and ready tools and customs have grown up to provide some sort of access to the information that is "out there". There is a great deal of work to be done by librarians that will doubtless keep them employed into the next millenium.

The main boon to librarians is the hierarchical organization of the net into nodes, directories, and subdirectories. These provide an implicit and universal call number to *everything in the electronic world*. The day is not far away when a cross-reference like

See ota.ox.ac.uk:/pub/HistoricalDocs/Political/US/constitution

will be as common as a bibliographic citation or See reference in a card catalogue.

The Internet also carries a number of hidden expenses and dangers to libraries:

o It will somewhat increase the expense of computer equipment, technical personnel, software, etc. needed by libraries

o Additional phone lines may become necessary, especially if some sort of public access to the Internet is contemplated

o Staff training needs will be greater

o The local computer system will need virus protection software and regular backups (a good idea anyway but seldom practiced by librarians, in my experience. Persons who are trained in book conservation should know better!).

o Some material on the Internet will arouse complaints from the public because it represents the views of unpopular minorities (e.g liberals, homosexuals, feminists, and intellectuals). There is also a great deal of pornographic material (text and graphics) available by E- mail or through the Usenet newsgroups. Issues of censorship, public funding, and access for minors have yet to be played out in the domain of electronic communications.

In addition to the standard package of services from your provider, librarians should not neglect Usenet Newgroups, even if this means getting a special account with a different service (and accessing it by dial-up or telnet through your primary service). Learning to use the Usenet Newgroups and their invaluable FAQs (Frequently Asked Questions) is the *single most important skill for professional development of your staff.* This means that you may want to encourage after-hours "playing" with your computer system. Think of the Usenet Newsgroups as the Reference Section of the Internet.

<Chapter 16> Special for Scholars

It used to be that only scientists and technologists used the academic networks. But no longer. Today there are many humanists and social scientists happily gabbing away with their friends (oops . . . I mean colleagues) at other universities, collaborating by E-mail, subscribing to and writing for E-journals, and so on. This is, of course, in addition to the academic computing environment described in the Chapter for students.

Your main entree to this world is some sort of E-mail access and finding a mailing list or newsgroup for your field. From there you will pick up tips on interesting materials or groups to join--in short you can start networking. The two main sources for such mailing lists are LISTSERVERS (traditional on BITNET) and increasingly Usenet Newsgroups. Actually the newsgroups are not as useful as the lists at the moment *for the humanities*. This is because the academic hierarchy is not as subdivided as the computer science hierarchy. Thus, there is a whole hierarchy for computer science, but all of linguistics fits into sci.lang! These discussion groups either tend to have just a few participants or to be so all-encompassing that they are useless. This does not mean you should ignore Usenet--the computer and networking information is invaluable--just that you will not find it *directly* relevant to your field.

Listservers are another matter. They allow distribution of articles by anyone to the whole list (unless the list is moderated, i.e. refereed by the list's owner), and they allow archiving of articles at a place anyone on the list can access. In short, they form a sort of Electronic Journal with a *very* big reader mail column. To find a list in your field, send the message "INDEX GLOBAL" to any listserver. These usually have an address like "listserv@hoople.usnd.edu". Then send a message like "SUBSCRIBE PDQFAN" to the listserver to join the list PDQFAN. After that you will send messages for publication to "pdqfan@hoople.usnd.edu" and (human) service requests to "pdqfan- request@hoople.usnd.edu".

The best way to use a listserver is to avail yourself of the "SET PDQFAN DIGEST" or "SET <whateverlist> DIGEST" command so that you get the (daily?) mailing as a newspaper and not as a series of fifty or so mail messages interspersed throughout the day. The digest includes *your own* correspondence so that you have a record of this. This is not what happens without the DIGEST option. For full instructions send the message "HELP" to "listserv@whereever.edu".

Ultimately the Humanities will have the same infrastructure of services that already is forming in the Sciences:

o easy access to preprints and collections of journal articles

o archives of data sets, special purpose free software, and text databases.

o collections of E-text source materials, if relevant. These may include "tagged" text for special statistical studies.

o a set of free programming tools for routine scholarly tasks like typesetting papers, creating bibliographic databases, and so on--in the format specific to your field.

Scholars in the humanities should check the list of E-text archives (over 300 of them) at Georgetown University (send E-mail message "" to "" to get started). These archives may well have materials in your field that they will make available for scholarly purposes at a nominal cost. In addition, check the Oxford Text Archives at black.ox.ac.uk. (Login as "anonymous" for information--as of this writing the archives are not searchable online by telnet, but an index is available).

<Chapter 17> Special for Churches, Synagogues, and Mosques

It is suprising that religious organizations have been so slow to recognize the importance of a new communications medium like the Internet. Many religious organizations use computers for producing newsletters or accounting and other office tasks; but very few use them effectively for telecommunication and internetworking.

The Internet is not like Television or Radio--it is not a broadcast medium. In many ways the Internet is a more appropriate communications medium for religions organizations than "the media". It is less expensive, not centrally controlled, and reaches persons who want to receive the information on a case-by-case basis.

There is nothing to prevent a religious organization from setting up a fileserver on one of the commercial nets (admittedly expensive, but you only need one worldwide). From there any member of your organization can upload and download information. Thus you can keep a library of regional or local newsletters, special software, a directory of local groups, listings of job openings, and so on. Many organizations already have this sort of thing on Bulletin Boards, but FTP archives and E-mail provide a less expensive method of disseminating information that can reach anywhere in the world, not just a local region or single area code.

But the promise of internetworking goes beyond the "office environment" of your organization--which I am sure is already well developed--to touch your educational and evangelical mission. You can make information about your organization and its beliefs instantly available to 25 million people if they want it.

In addition, there is a great need for "charity work" in preparing E- texts. Most E-texts are copyrighted or locked up in proprietary databases. This means that they cannot be freely shared. Free E-texts, especially those written in plain "vanilla" ASCII, are in great demand among blind people--who can use special software to convert the text to sound--and by persons in remote areas or the third world.

Distribution of free E-text is not limited to the Internet by any means. Free E-text will find its way onto thousands of bulletin boards and will be passed to non-networked machines by floppy disks. Once printed out it can be disseminated by photocopying or any inexpensive printing method that uses "camera-ready" copy. The Internet is thus the backbone of a worldwide distribution network that can reach anyplace sophisticated enough to have some sort of printing (or delivery) technology.

There are basically two ways to create free E-text: you can type or scan in something in the public domain (75 years old or older) or you can create new text that has a copyright notice like this one allowing anyone to copy and distribute the text. It is not enough merely to sell the information at a nominal cost. Unless you allow others the right to further distribute information it is not really "free", even if you sometimes give it away at no cost on a floppy disk.

In fact, the only *free* religious literature (and typing even this in was quite an accomplishment) consists of: The *King James Bible* (without Apocrypha), the *Quran*, the *Nicene Creed*, The *Book of Mormon* and related texts, the Bible in Hebrew, and the *Kama Sutra*. Certainly the various denominations should consider releasing their basic liturgical texts and a selection of their religious literature in free E-text form. Modern versions of the Bible are a problem because of copyright restrictions. It would certainly be a boon for some organization to make a modern version "free" in the sense that anyone could copy and distribute it.

<

Part III> Advanced Techniques

<Chapter 18> Research Methods I: Basic Navigation Methods

The Internet is certainly a vast place. For the beginner, or for the experienced user who wants to do more than check an occasional bibliographic cross-reference to an FTP site, a navigation tool is almost essential. The three most common navigation tools are discussed here. They represent three different approaches to stategy, target constituency, target materials, and user interface (the part of the program that you see). The three services are known as GOPHER, the WIDE AREA INFORMATION SERVICE (WAIS, pron. "ways"), and the WORLD WIDE WEB (WWW or W3).

All three services are based on client-server technology. To make information *available* to others you need special software called a server. The user then uses a "client" program to access the information. "Clients" are often free--they are written by whoever funded the initial project or by volunteer hackers. The catch to using a client is that you have to have a *direct* (usually expensive) connection to the Internet. This is the main reason that a SLIP connection will become more and more important. It "fools" the net into thinking that you have a direct connection without the expense of hooking your computer to a Local Area Network and then to the Internet. You can use a client program on your own home or office computer if you have a SLIP connection.

Even if you don't yet have a SLIP connection--they're still a bit experimental--you can use the services listed here. As of this writing all three services allow free access to a client for demonstration purposes. There are a number of telnet addresses where you can try out these navigation tools. I expect that, as the traffic on the network increases, these public access sites will close down. But by then communications programs will routinely include SLIP and probably some version of the major "clients" as well.

One word of caution: all the services here are built on top of telnet and FTP. They just provide a different and perhaps more useful way of making Internet connections. Thus, the same service may appear in several guises, depending on the tool you use to connect to it. There are also gateways that let you access one service from the other--but often at a price in terms of useability. Since the software may not tell you that you are looking at, say, a Gopher-based service via WWW, you may have to try all three services to find the one that makes the most reliable connection.

Another factor to consider is that unless you have a direct or SLIP connection, you will be limited to using a command line interface. You will not experience the real power of, at least, WWW or WAIS. Nevertheless they are useful. In general, a beginner should use gopher first, then play with the other two services to see if they are useful to you.

The main problem you will have is *getting* the information you find. If you do not have the client program, this is difficult. You could cut and paste the information from your screen or use your communications program's "buffer" to store it. WAIS will send you the results of your search by E-mail. Often, you will have to resort to FTP to fetch the information once you have located it--if you can figure out where you are. One of

my criticisms of search tools like Gopher or WAIS is that they often give you a very poor indication of where the information you found is physically located. This is especially true of the publically accessible versions.

<Section 18.1> Gopher

Gopher was created by two students, xx and xx, at the University of Minnesota. It provides a menu-like view of that part of the Internet where Gopher servers are found, "gopherspace". Gopher has spread to many universities. You can search student directories and campus calendars, as well as the usual internet resources. It is by far the easiest way to explore the net without entering numerous FTP and telnet commands.

Since Gopher is the oldest and most decentralized of the services, it provides the most extensive access to useful services. Online library catalogues, the Project Gutenberg library, FTP archives, and numerous exits to telnet.

The telnet access to demonstration Gopher systems (and through them to Gopher servers on *any* campus) is through:

xxx.xxx.xxx

Students will of course want to use Gopher directly from their school's system. Try typing "gopher" at any prompt.

<Section 18.2> Wide Area Information Services (WAIS)

WAIS was developed in a very different environment from Gopher. It was developed by a joint collaboration of Thinking Machines, Inc. (Artificial Intellegence technology), Dow Jones News Retrieval (Information systems), and Apple Computer (User interface). Its ability to find information given a plain English description of what you want ("hey, find everthing on Personal Computers and Health) is truely mind-boggling. It returns a list of "hits" together with a likelihood that it contains what you wanted. It can also look for documents that are "something like" a sample document.

The user interface is a pleasure to use--but requires a direct or SLIP connection to the Internet. The line-oriented version that is publically available is a pale imitation of the real thing.

WAIS strength is its ability to retrieve information from almost any source, not just FTP sites. A list of all WAIS sources is maintained in a directory-of-directories (available at think.com). You import a set of instructions on how to access a given information server to create your own personalized list of sources.

This service is probably the one of greatest interest to business (i.e. non-academic and non-library) users. To try out WAIS, telnet think.com and log in as SWAIS.

<Section 18.3> World Wide Web (WWW or W3)

The newest of the three services is the World Wide Web. It was created at the European European Center for High Energy Physics (CERN). It is based on yet another technology (besides FTP and client-server)--hypertext. The World Wide Web views the entire complex of FTP sites as a single "document" with cross-references.

A WWW server lets you read that document and jump to any cross-reference that you find--hence the term "hypertext". The result is rather like a menu driven system but (at least in the graphical interface versions) you stay inside the familiar context of a text editor. If you can imagine clicking on a cross-reference and having your text editor fetch the document from an FTP site you will get the idea.

The documents that can be viewed by WWW are ASCII text with special "tags" that give a addresses of the "hypertext links." The tags use the syntax of the Standard Generalized Markup Language (SGML). SGML is a language used by scholars to mark text for academic research. The WWW vision of the library of the future is a collection of documents spread all over the world, the whole of which can be looked at starting from any one of them. Sort of like having the whole world on your desktop.

There is not "top" node to the Web, but you can find points of entry at:

telnet info.cern.ch (European Center for High Energy Physics in Geneva, Switzerland, the "home" of WWW).

<Section 18.4> Summary of Navigation Tools

To summarize, here are the three systems discussed, together with their underlying technology and "constituency":

Gopher : Simple FTP and Telnet : Campus Info

WAIS : Artificially Intellegent searches : Business

World Wide Web : Hypertext and SGML markup : Ac. Research

<Chapter 19> Research Methods II: Usenet Newsgroups

[This chapter is under construction]

<Chapter 20> Research Methods III: Advanced Techniques

The previous two chapters covered the more or less standard techniques for finding your way around the net. This chapter covers more

There are three basic "problem situation" that every researcher using the Internet will eventually face:

(1) You know who has the information but you don't know their "address".

(2) The information is on the net, only you don't know where.

(3) The desired information is not on the net, but their *is* information on how to get it from a non-network source.

The methods described in this chapter are more tentative than in the preceeding two chapters. They don't always work.

<Section 20.1> Finding Persons and Computers

There are a couple of standard methods for checking and verifying E-mail addresses.

% ping rtfm.mit.edu

(Remember that "%" is the prompt the computer gives you. Your system prompt may look different). You should get back a message saying "rtfm.mit.edu is alive" or something like that.

Many machines support a command called "nslookup" that will return the dotted decimal address given the name of the machine

% nslookup rtfm.mit.edu

returns "xxx" as the dotted decimal address.

If you can guess the name of person or institution--this is not hard-- then you can try to see if you have a valid address by "fingering" your intended victim:

% finger pdq@hoople.usnd.edu

If the system supports the "finger" feature (and many don't), you can try any number of guesses or permutations. If you succeed, you can find out lots of information about the person: their telephone number, when they last logged on, when they last read their mail, what department they work in, etc. Many systems allow you to leave a file called ".plan"--note the initial dot--that contains further contact information.

Good guesses for names:

o last name (bach),

o last name with one or more initials (pbach, pdqbach),

o three (or more!) initials (pdqb)

o nicknames, cute handles, etc. (fluffy,aragorn)

o work ID numbers (bach2378@bigblue.com)

Your last resort is a search program called "netfind". It lets you find a machine or person by keyword. If you know your target is at USND, you can try the keywords PDQ, USND, EDU and find pdq@hoople.usnd.edu. Note that you often have to guess the "domain", but this should not be hard. You can also search with PDQ, "University of Southern North Dakota", EDU, if USND is not sufficiently obvious. City and state names work, too. Try it.

The main short comings of "netfind" are:

(1) it often fails if the target computer does not support the "finger" command; and

(2) it only works on the Internet, not Bitnet or other mail systems.

To use "netfind" you have to telnet to any of several standard locations and log in as "netfind".

If one server is busy it should give you a list of alternate servers to try.

Detailed information on how to find someone on the net is given in the Usenet FAQ (ftp://rtfm.mit.edu/ xxxx). This FAQ is oriented towards helping University students, who flood the networks every Fall looking for the E-mail addresses of their friends.

<Section 20.2> Finding Information and Software

By far the easiest way to

If you do not have Internet access, then you will have to use FTP by E- mail (use the "Archie by E-mail" archive server first to find your target!).

Finding Information and Software Usenet News FAQ Archives Archie

<Section 20.3> Finding References to Paper Documents

This is the last resort, right? Most information is still in paper, although the high cost of paper will mean that less and less is available this way.

(1) Use the Internet to access bibliographic databases, especially library catalogues

(2) Use a document retrieval service like that provided by the Colorado Alliance of Research Libraries (CARL).

(3) Try to get someone to send you a xerox or fax.

<Chapter 21> <Chapter 22> <Chapter 23> <Chapter 24> <Chapter 25> These chapters, which deal more with abstract theory than with specific instructions, has been omitted from this special edition.

<

Part IV> Resources

The main resources on the Internet are to be found on the net itself: especially the Usenet news and its many FAQs including the PDIAL and NIXPUB listings and various Internet resource guides. The resources provided here are second best. Nevertheless, it was felt important to provide a few addresses and a few book titles for the neophyte to get started. The information in this section is a point of departure, not a conclusive summary.

<Chapter 26> The Internet Address Book:

[This Chapter is under construction]

<Chapter 27> Bibliography

Most of the books below do not contain a great deal of how-to information about connecting to the Network. This course is intended to fill the gap. But they do tell you what to do once you are on. The first few, which are available by Internet, are especially useful. They do make the network "self-describing".

AVAILABLE ON THE INTERNET

The Incomplete Guide to the Internet (for Macintosh with Microsoft Word only--for paper version see below)

A very complete guide written by the Education Office of the National Supercomputing Agency (NCSA). It contains a very complete intro- duction to the Internet and classroom Internet projects for K12 teachers. This is the best guide for public school teachers.

For paper version, write: Chuck Farmer, 152 CAB, 605 E. Springfield Ave., Champaign, IL 61820. Cost is around $22.00 for 300 pp.

Polly, Jean Armour. *Surfing the Internet* nysernet.org:/pub/resources/guides (192.77.173.2). This is my all-around choice for best introduction to the Internet. It contains references to most other good sources of information together with instructions on how to get them. It is especially complete in giving information of interest to librarians.

Kehoe, Brendan. *Zen and the Art of the Internet* (1st ed.)

A very good guide for how-to information. Unfortunately, the FTP versions are all marked up in a dialect of the TeX typesetting system. They are still somewhat readable though, even if you don't have the TeX system. A Postscript version is also provided.

ftp.uu.net:/inet/doc (137.39.1.9) ftp.cs.toronto.edu:/pub/zen (147.31.254.132) ftp.cs.widener.edu:/pub/zen (147.31.254.132) files are called zen- 1.0.tar.Z, zen-1.0.dvi, and zen-1.0.PS ftp.sura.net:/pub/nic/zen-1.0.PS

PUBLISHED WORKS

Kehoe, Brendan. (1993). Zen and the Art of the Internet: a Beginner's Guide (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall. ISBN 0-13-010778- 6. Index.

Krol, Ed. (1992). The Whole Internet User's Guide & Catalog. Sebastopol, CA: O'Reilly & Associates. ISBN 1-56592-025-2.

LaQuey, Tracey, & Ryer, J. C. (1993). The Internet Companion: a Beginner's Guide to Global Networking.. Reading, MA: Addison-Wesley. ISBN 0-201-62224-6

Marine, April. (1992). INTERNET: Getting Started. Menlo Park, CA: SRI International. ISBN 0-944604-15-3

Tennant, Roy, Ober, J., and Lipow, A. G. (1993). Crossing the Internet Threshold: An Instructional Handbook. Berkeley, CA: Library Solutions Press. ISBN: 1-882208-01-3 (Library Solutions Institute and Press, 2137 Oregon Street, Berkeley, CA 94705. Voice: 510/841-2636 FAX: 510/841-2926)

<Chapter 28> Glossary

[This chapter is under construction]

<Appendix A> COMPUTER HINTS FOR THE *REALLY* GREEN

1. (turning on) Make sure the computer is plugged in and on. Is something on the screen? Can you hear a fan? Does anything happen when you type or move the mouse? Are lights lit or flashing? The screen may be frozen by a "hold" button (look for a light labelled "scroll lock" or something similar. Try touching the upper left button on the keyboard-- F1, "escape", "hold", "break", whatever). If the computer is not on look for a switch on back or a key labelled "on" or with a triangle on it.

2. (using a mouse) Determine whether you are looking at a character terminal or a window-oriented screen. If window-oriented, then moving the mouse should cause a pointer to appear and move around. Use this pointer to click on windows, buttons, etc. You click the mouse by pressing its button (leftmost one if there are three). If you hold the mouse button down you can "grab" things and drag them around. Clicking on windows makes them active (ready for commands) and brings them forward.

3. (modifier and function keys) Keys labelled "shift", "alt", "meta", "option", "command", "ctrl" or marked with certain funny symbols are modifier keys. They work like shift keys on a typewriter and can change the effect of typing a key or clicking a mouse button. Function keys, labelled F1, F2, etc., do something

immediately--like edit, move to the next page, or quit the program--when you press them. The keys on the keypad (right hand side, looks like a calculator pad) act as function keys in some programs.

4. (popup menus and menubars). If there is a string of words at the top of the screen ("menubar"), touch one of the words with the pointer using the mouse and then hold down the mouse button. A menu should pop up. If you continue holding down the mouse button and drag down the menu, then let go, you will select one of the commands. If you don't want to activate a command, drag the pointer away from the commands (towards the middle of the screen, say) and let go.

5. (getting the computer's attention) No luck? Try hitting "return" or "enter" a few times, look for keys labelled "break" or "escape", try "control-C" (hold down the key labelled "CTRL"--it works like the shift key on a typewriter--and then press "c", then let go of both keys).

6. (carriage return) Once the system is responding you usually have to hit the carriage return key (marked with a hooked arrow or "return" or "enter" or "CR" or "newline") or else click the mouse (left-most button if there are three) before anything permanent happens--like sending a command to the computer.

An exception is in "menu-driven" systems which print a list of options and expect you to type a number or letter (like "y" for yes, "n" for no). Sometimes answering a question with a carriage return gets you a default answer. The default is often indicated in brackets:

Do you really want to quit [n]?

Hitting return here will not quit.

7. (delete key) If you make a typing mistake, there is a key in the upper righthand corner labelled "del", "delete", "backspace", or with a backwards arrow or "x" on it that will erase what you typed.

8. (logging on) If you see a message like this:

Hello. Welcome to FUBAR system. Authorized persons only.

Username: xxx Password:

then the computer wants you to give it a username (nickname, handle) and type a password. Type your last name and hit return; then type your password and hit return. If you are sure the system is meant for the general public--say it is a donor database run by the Red Cross--try obvious names like "redcross", "anonymous", or "public". If the account is meant for general use then: (1) no password will be required, or (2) any password at all will work, or (3) the password will be something easy like "redcross" (again) or "donor" or "guest".

9. (system prompts and help) If the computer prints a funny symbol (called a prompt--often it is a dollar sign, percent sign, question mark, right angle bracket or some such) and sits there blinking at you, it is waiting for a command. Try "help" or "?" to find out what is possible. Or try "man intro" (UNIX systems only) to read the online manual. There might be a help key or help command on a menu.

10. (text buffers) At some point you may be composing a message. You type the message, of course. You may or may not have to type "return" at the end of each line--experiment with this. You can erase any mistakes with the delete key. See if the cursor (blinking marker that marks where you type) can be moved around with arrow keys or a mouse. If there is a mouse, you can select text by "dragging" across it (hold down button, move mouse, release mouse). Once selected a large block of text can be deleted with the delete key or moved by issuing the "cut" command (look for a function key or command on the "edit" menu) and then the "paste" command.

11. (usernames) if you need to know someone's username, try their last name (goodwin) , first initial or both initials and last name (jgoodwin, jegoodwin), or all three initials (jeg). Be warned that many sites add numbers (goodwin21), use serial numbers (g21135), or use cutesy aliases (thumper). Usernames are usually all lowercase.

12. (case sensitivity) if nothing seems to work the way it is supposed to check your caps lock. Most systems are either case-sensitive (like UNIX) or automatically translate commands to all upper case. Thus "help", "HELP", and "Help" are either three differnt commands or one and the same.

13. (saving your work) With most programs, whatever you do or change is not permanent unless you write the changes to disk. You "save" your work by selecting "save" from the "file" menu or some other method. Often there are two commands for exiting--one that saves your work and one that discards it. For example, "exit" might save changes and "quit" ignore them. If your program does not have an "autosave" feature--and even if it does--you should save your work every 15 minutes at least.

14. (quitting or logging off) After you have properly saved your work you can quit your program or system by finding the quit command (look at the bottom of either the first or last menu on the menu bar), or by typing "quit", "exit", "q", "x", "bye", "lo", "logout", "logoff", or something similar.

APPENDIX B. USING A MODEM

Using a modem (modulator-demodulator) is relatively easy if you follow the instructions that come with the modem and the communications software. These instructions cannot

BUYING A MODEM: BASIC FEATURES

You should choose a "Hayes-compatible" modem. This is the industry standard and works with most software. The modem is a small computer that responds to "AT" commands, commands sent by your software beginning with "AT" for "Attention Modem". The most common are "ATDT 1 800 555 1212". This tells your modem

So make sure the modem you buy responds to AT commands. A 2400 baud Hayes-compatible modem will cost about $50 by mail-order. You should consider buying a FAX modem ($350), however. The more expensive modem is faster, has more features, and can turn your computer into a FAX machine. Your connection to the outside world will never be any better than your modem allows, so buy a good one.

The FAXes can be displayed on your computer screen. You only print them if you want to, on an ordinary laser printer. The other features of a top of the line FAX modem include:

(1) Up to 14,440 baud rate (7 times faster than 2400 baud)

(2) Data compression (V.32bis is the name of the standard)

(3) Error correction (V.42bis is the name of the standard)

HOOKING UP THE MODEM

The modem goes between your computers serial (one-bit-at-a-time) communications port and your telephone line. Your modem probably included the right kind of cable. If not, check the manual or call the dealer who sold you the modem.

The modem to phone connection will use standard telephone cable with modular jacks on either end. You unplug your phone from the wall socket and plug in your modem instead. If you want to leave your phone, answering machine, fax machine, and so on plugged in, you can use dual plugs that allow one or more cord to be plugged into the same socket. Look on the bottom of each piece of equipment (including the modem). There should be a little sticker that tells how many ringer equivalents the equipment is worth. Don't exceed eight on any one phone line.

You can also buy inexpensive boxes that will let you use a single phone line for faxes and for voice.

WARNING: usually your modem--and any other "peripherals"--should be wired to your computer before you turn the computer on. This is so the computer can look for the modem and confirm that it is hooked up. Check your computer's and modem's manual for precise instructions on hooking up a modem to your computer.

If you are connecting the computer to an office phone that is part of a Private Branch Exchange (PBX) then ...

MAKING A CONNECTION

Usually you call another computer by dialing its phone number. Either you type an AT command like "ATDT 1 800 555 1212" or your software does this for you when you choose a "connect" command or something like that from a menu.

Before you get the modem's attention you need to set your software to the proper "modem settings". These settings are listed in literature about the service. As a last resort call customer service for the computer you are trying to connect to. Or else you can try different settings until you find one the lets you connect. The most common modem settings today are either 1200 or 2400 baud and "8N1", which means 8 bits, no parity, and one stop bit.

The most important settings are:

The BAUD RATE (300, 1200, and 2400 are typical low speed connections, with 2400 being the most common one for modern equipment; 9600 or 14400 are

Flow control ON or OFF (often labelled XON/XOFF). If your modem is going to talk with your computer at a faster rate than over the phone line, then flow control is essential. Be sure that your software understands that the phone line speed is different from the computer-to- modem speed. The phone line can't go any faster than 14,440 Baud. Your computer can do four times that or more.

Full or half duplex connection (LOCAL ECHO ON or OFF). In a half duplex connection the two computers take turns communicating on the same channel. This means that your computer will be the one to "ECHO" what *you* type on your screen (local echo ON), since it doesn't make sense say something, have the other computer read it, then send it back, just so you can see what you type. In a full duplex connection both computers can talk at once, so local echo is OFF.

7 or 8 bits per character. Many computer systems use the last seven bits of each byte to denote a character (up to 128 characters). The eighth bit is used for parity, flow control, or some other important signal. Nowadays 8 bits is more common.

Even, Odd, or No PARITY. One way to check for errors in transmission is to tag each byte with a bit that means "even or odd", the parity bit. If a bit is transmitted incorrectly, then the parity bit won't agree with byte sent and the software can ask for that byte or block of data again. NO parity is the most common setting today, however.

0,1, or 2 STOP BITS. 1 stop bit is the usual setting these days.

If your modem has its speaker on, you will here a dial tone, then the modem will dial, and then there will be a lot of squeals as the two computers "negotiate" about the transmission. If you are lucky, both computers will establish a "carrier" tone or hum that is then modulated to send data. At this point most modems turn of the speaker, but a "carrier detect" light should be on. As long as you have the carrier you have the connection. The carrier is present--to your modem, at least--even if you tell your software to "go off line" for a while. If you hang up, however, the carrier is dropped.

Now that you have a carrier, whatever you type is sent to the other computer (and the "transmit" light flashes), and you can receive data as well. Pay attention to any banner the service you are connecting to may print. In particular you need to know what "escape character" your system recognizes. Typing this character or sequence of characters allows you to stop tranmitting everything and give your own system a command. This is especially important if are transferring a file and have to "escape back to your own system" to tell it what to do with the incoming data.

FIRST STEPS ON A NEW SYSTEM

Many services let you sign up by connecting your computer to a

TRANSFERRING DATA

Getting data from one computer to another is a matter of running *two* programs--one on each computer. These programs use a common protocol, or procedure, to communicate. The most common protocols are XMODEM, YMODEM, ZMODEM, and KERMIT (for UNIX systems and some others). The steps involved--using KERMIT as an example--are:

1. Run KERMIT on the sending machine

2. Escape to the receiving machine

3. Run KERMIT on the recieving machine

4. Wait for the transfer to finish.

You will have to read your software manual for more specific instructions, unless you have a direct internet connection or SLIP connection. In these cases you can issue a File Transfer Protocol (FTP) command to whichever computer and the details at the other end are automatically taken care of. See Chapter X for more detail on transferring data.

DISCONNECTING

You will want to use whatever "logoff" procedure the remote computer wants. If your manual or other literature doesn't tell you, and you can't get any information by trying "help" or "?", try the following commands: "logout", "logoff", "lo", "bye", "exit", "quit".

If all else fails you can drop the carrier using the "hangup" command (or escape back to your system and send "ATH" to your modem--attention, hangup).

As a last resort pull the plug and your telephone company will disconnect you, then exit your software and turn off your computer.

You may have to get your modem's attention by typing the "escape sequence", which varies from modem to modem or connection to connection.

<Appendix C> Technical Details of Internet Connections

[This chapter is under construction]

<Appendix D> Just enough UNIX

Since the UNIX operating system may be unfamiliar to many of you, and since many workstations on the net use UNIX, it may help some readers to summarize some of the peculiarities of UNIX. One day you may be logged on to a UNIX machine. Nowadays, like many operating systems, UNIX hides behind a graphical user interface like the X Windows system. Occasionally--and networking is unfortunately one of those occasions-- its quirks like file-naming and directory hierarchy peek through.

This Appendix gives you just enough UNIX to avoid some pitfalls and issue commands needed to transfer files. The basic commands you need to know for any system are how to display directories and list the contents of files, how to name files, and how to get help about the system. UNIX commands are just as quirky as MS-DOS, VMS, RSX, VM, or any other operating system that uses a command language. Fortunately, they are no harder.

<Section D.1> Basic Commands for Getting Around

ls : list current directory

ls -l : longer listing, with file length in bytes

cd mydir : move down one level in the hierarchy to directory "mydir"

cd .. : move up one directory in the hierarchy

<Section D.2> Hierarchical File System

Files in UNIX are arranged in a hierarchy or tree structure.

<Appendix E> The Top 10 Things to Get by E-mail

This Appendix may be distributed separately from the rest of this course.

----------(cut here)---------- THE FREELORE PROJECT's LIST OF THE TOP 10 THINGS TO GET BY E-MAIL

Copyright (c) 1993 by John E. Goodwin. All Rights Reserved. You may make and distribute verbatim copies of this document for non- commercial purposes provided this notice is preserved on all such copies.

This is a list of ten fun and useful things you can get by electronic mail. In all cases your request is handled by an automated system that sends the materials by return mail. Systems change frequently, so some commands may be out of date. All were tested and working as of mid-June 1993.

A typical, old-fashioned E-mail system works like this

% mail <type the command to enter the E-mail program>

mail> send <or type "help" to find out what commands work>

To: president@whitehouse.gov <This is an Internet address --may look different on your system> Cc: vice.president@whitehouse.gov

Subj: Your Stance on Nuclear Power

Enter Message. When Done, hit Control-Z, Control-C to quit: Dear Mr. President:

I was disappointed to see that . . . <etc., until you type CTRL-Z>

Message sent 23:05:44 14-JUN-1993.

mail> exit

Modern automated mailservers expect your command in the body of the message. But some old-fashioned ones expect it as part of the *subject* line! I always tell if this is the case.

In most cases you will get a response in a few minutes. For systems that wait to off-peak hours to send responses you may have to wait a day.

Here are some more hints:

o Most automated systems respond to the single command "help".

o People change their directory systems around everyday it seems. If the commands given don't work, try to locate what you want by Archie (see below) before requesting it by mail.

o The Double quotes around some commands aren't part of the command itself (so don't type them!).

With that advice, here's the list. . . .

[10] The CPET (Catalog of Projects in Electronic Text) supplies information about E-text archives for scholars. They have an online database. For detailed instructions, send the message:

connect guvax.acc.georgetown.edu cd cpet_projects_in_electronic_text get cpet_user_guide.txt

to "ftpmail@decwrl.dec.com". [This is a service that provides Internet File Transfer Protocol (FTP) by E-mail. See next entry].

Anonymous FTP reference for CPET user's guide:

"guvax.acc.georgetown.edu:/cpet_projects_in_electronic_text/cpet_user_gu ide.txt"

[9] Instructions for using Archie by Mail and FTP by Mail.

Archie is a lookup service for finding software or documents in Anonymous FTP archives on the Internet. Anonymous FTP is a method for making materials on certain computers available to the public. Anyone is allowed to log in with the username "anonymous" You give your real name as the password. Anonymous FTP is not available if you just have E-mail, not a full Internet connection.

To help E-mail users access Anonymous FTP archives, an FTP by Mail server has been set up at

decwrl.dec.com. It will send you materials you find using Archie. Binary files (pictures and programs) are encoded as text files using the programs "btoa" or "uuencode". You need these freeware programs if you want to get anything besides text files, i.e. ASCII.

A. To get started with Archie, send the message "help" to "archie@archie.rutgers.edu". There are many Archie servers around the world. Any Archie will give you a complete list.

B. To get started with FTP Mail, send the message

help quit

to "ftpmail@decwrl.dec.com".

[8] A list of book-length Public Domain texts Produced by Project Gutenberg.

You may either get these texts from the Almanac server at "oes.orst.edu" or direct from Project Gutenberg at "mrcnext.cso.uiuc.edu".

Send message "help" to "almanac@oes.orst.edu". After reading the guide, send the message "send gutenberg catalog". To get an E-text by mail (e.g. _Alice in Wonderland_), send the message:

send etext alice

To see the contents of project gutenberg archivesj, send the message

connect mrcnext.cso.uiuc.edu cd etext/articles get index quit

to "ftpmail@decwrl.dec.com".

To get the actual texts,

connect mrcnext.cso.uiuc.edu cd etext/etext93 get quit

Anonymous FTP Archive references:

oes.orst.edu:/pub/data/etext

mrcnext.cso.uiuc.edu:/etext/articles (general info)

mrcnext.cso.uiuc.edu:/etext/etext93 (the texts)

[7] A list of E-mail mailing lists, posted to the "Frequently Asked Questions" or FAQ part of the Usenet newsgroups.

A typical mailing list works like this: to join, say, a mailing list on politics, you send the request "subscribe" to "politics- request@whitehouse.gov". Thereafter, any message sent to "politics@whitehouse.gov" will send you message to all members of the list. You get all the postings from other members as well [The Whitehouse list on politics is a fake example].

Aside: Usenet newsgroup FAQ's are archived at "rtfm.mit.edu". They cover every conceivable subject (but are especially good with computers). To access the archive by E-mail, send the message "help" to "mail-server@rtfm.mit.edu". For an index of materials available, send the message "index".

Here are the specific commands for getting the Mailing Lists:

send mail/mailing-lists/part1 send mail/mailing-lists/part2 send mail/mailing-lists/part3 send mail/mailing-lists/part4 send mail/mailing-lists/part5

to "mail-server@rtfm.mit.edu".

Other good publications in the same location:

A Guide to Social Newsgroups and Mailing_Lists:

send social-newsgroups/part1

List of Periodic Informational Postings:

send periodic-postings/part1

(six parts).

For a more complete list of FAQs, send the commands:

send usenet/news.answers/index send usenet/news.announce.newusers/index

Anonymous FTP archive reference:

rtfm.mit.edu:/pub/usenet-by-group/news.answers; and
rtfm.mit.edu:/pub/usenet-by-group/news.announce.newusers.

Also posted as an FAQs to the Usenet newsgroup news.answers.

[6] LISTSERVERS are the best thing going for persons with E-mail but without full Internet service. You can send mail to an entire list and get a digest of "articles" posted on a given day. Lists are espcecially good for anyone with an interest in the Humanities. A list of all listservers known to any one listserver can be obtained by sending a message to that listserver (see below).

Send the message "help" to any listserver address, e.g.

"listserv@brownvm.brown.edu"

to get started.

The listserver at Brown does not respond to the global command (but is worthwhile anyway). Try sending the command "lists global" to one of the other listservers like "listserv@auvm.american.edu".

For lists with lots of traffic you should consider the "set <listname> digest" command to get *one* mail message a day with a compendium of articles.

[5] Automatically supplied information about PSI's Internet service:

Send any message at all to address "all-info@psi.com". There are lots of other files on their service available instantly. E.g., for information on their version of telnet, send any message to "gds- info@psi.com"; for their version of FTP, any message to "psilink- info@psi.com".

[4] Scott Yanoff's list of Internet Resources. At last count, there were 75 free things to do on the Internet.

Send the message:

send usenet/news.answers/internet-services/faq send usenet/news.answers/internet-services/list

to "mail-server@rtfm.mit.edu".

Another method is to request the materials by delayed FTP with the message:

connect csd4.csd.uwm.edu cd pub get inet.services.txt quit

to "ftpmail@decwrl.dec.com".

It is also worth adding the line "get internetwork-mail-guide" to the above request for a file on send E-mail between any two E-mail systems (file is 22k).

Anonymous FTP archive references:

csd4.csd.uwm.edu:/pub/inet.services.txt

rtfm.mit.edu:/pub/usenet-by-group/news.anwsers/internet-services

[3] SURFING THE INTERNET, by librarian Jean Armour Polly. This must- have publication is still the best basic orientation to the Internet. The nearest thing to the "how to use the library card catalogue" speech that opened up that other world for us when we were kids.

Send the message

connect nysernet.org cd pub/resources/guides get surfing.2.0.3.txt <that's a zero not an "oh"> quit

to "ftpmail@decwrl.dec.com". Other interesting files in the same directory are:

ftp.list whatis.internet new.user.guide.v2.2.txt speakers_on_internet.txt

Anonymous FTP archive reference:

nysernet.org:/pub/resources/guides

[2] The NIXPUB listing of public access UNIX systems (so you can read Usenet news!):

Send the message

connect vfl.paramax.com cd pub/nixpub get long quit

to "ftpmail@decwrl.dec.com".

Anonymous FTP archive reference:

vfl.paramax.com:pub/nixpub/long

It is also posted as a FAQ (Frequently Asked Questions) to the Usenet newsgroup alt.bbs.

And the critics' choice is . . .

[1] The PDIAL listing, a listing of dialup methods of connecting to the Internet for the general public.

Send a message to "info-deli-server@netcom.com" with the command "send pdial" in the *subject* line.

Alternatively, send the message "send usenet/news.answers/pdial" to "mail-server@rtfm.mit.edu". ----------

+ + +

"What this country needs is a good 50 cent education."

End of the Project Gutenberg Alpha Edition of EAMIL 101

Email 101

from http://manybooks.net/