

Table of Contents

[What is the Internet?](#)

[Getting an Internet connection](#)

[BITNET](#)

[Campus Wide Information Systems](#)

[Internet tools \(Archie, Cello, Gopher, WWW, Mosaic, etc.\)](#)

[Library Catalogs via the Internet](#)

[Library-oriented Lists and Serials](#)

[A Variety of Internet Destinations](#)

[RFC Documents](#)

[Telnet](#)

[FTP](#)

[BBS systems](#)


[CompuServe](#)

[The WELL](#)

About InfoPop/Windows

InfoPop/Windows uses the WINHELP.EXE program that ships with Windows 3.1 to provide a hypertext guide to the Internet, CompuServe, BBS systems and more.

I hope you find InfoPop a useful educational tool and that it will serve as a resource for identifying (and in some cases, explaining) a number of internet resources. This file (IPWIN.HLP) may be freely distributed, so long as no charge is made (a modest disk-duplication charge is acceptable). If you have suggestions or corrections, please send them to me at the address below and every attempt will be made to incorporate them in the next edition--gotta keep the database growing (18,090+ lines of text at last count).

If you find InfoPop/Windows useful, drop me a note...I love to get  .

Be sure to make liberal use of the ANNOTATE feature (under Edit) to make updates and/or corrections to information contained here. Note, however, that loading a new copy (e.g., an update) of IPWIN.HLP will cause you to lose annotations made to an earlier release.

This file was last updated April 12, 1994



You can obtain future updates to IPWIN.HLP as well as a number of other GMutant Software products from several [sources](#)

[Interested in how the Winhelp file was created?](#)

InfoPop/Windows release 1.22a

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Creating this WINHELP file

The IPWIN.HLP file was developed using RTFGEN--a freeware utility that converts ASCII input files to the RTF format required by Microsoft's Help Compiler. If you're interested in the process, I use the creation of InfoPop as an example in this article that recently appeared: Clyde W. Grotophorst, "Hypertext For Windows: Developing Databases for the Winhelp Engine." *Library Software Review*, volume 12, number 4. Winter 1993.

Entry start

Hypertext for Windows: Developing Databases for the Winhelp Engine

excerpted from: *Library Software Review*, Volume 12, Number 4, Winter 1993

Every copy of Windows comes bundled with a hypertext reader-- Windows Help. Despite a somewhat conservative design, Winhelp nevertheless offers most of the features one associates with the better hypertext platforms: support for linked (jump) terms; sequential browsing; keyword searching; a view history with ability to retrace one's path; support for bitmapped graphics; ability to set bookmarks and/or annotations; and the ability to launch other applications from within the reader. It would seem that such a package might lend itself to many library applications--tutorials, service guides, bibliographies, etc.--much as Apple's HyperCard has been a popular platform for library developers. The problem, of course, is that Windows offers no support for creating the files the Winhelp system uses.

The path to successful creation of a Winhelp file is a winding one. Beyond having to locate a copy of the Windows Help Compiler (it takes a specially formatted input file and renders a binary Windows Help file), you must also track down the documentation. The Help compiler is distributed with most Windows development tools or may be downloaded from [CompuServe](#). While some documentation accompanies the compiler when distributed as part of a development package (the quality varies, depending on which vendor included it) you must generally seek out additional sources to make the fullest use of the compiler's capability. This dispersal of resources is probably familiar to Unix developers, but it is somewhat unusual in the DOS/Windows world-- particularly when you consider the distribution wizardry of Microsoft and the popularity of Windows. It appears that Microsoft's assumption (shared by many Winhelp developers) is that the Winhelp system is not an end-user tool.

If the difficulty assembling the required tools is not a sufficient deterrent, the Help compiler imposes a final (and for many, fatal) requirement--the input file must be stored in Rich Text Format (RTF). Few editors/word-processors support this format which might well mean adding a second editor to your programming tool box. When you realize that a medium-sized help file can require many thousands of lines of source text, and that programmers rank the desirability of changing editors somewhere behind changing languages, it's no wonder that there are not many standalone Winhelp information systems.

Recognizing the power of the Winhelp system and the difficulties it poses for developers, several third-party vendors sell products to ease the development cycle. These products either function as add-ins for an RTF word processor or are proprietary, standalone systems. In either case, they are generally expensive and impose yet another learning curve. There are also several Shareware packages supporting WinHelp development, but most assume you have no interest in exploiting the Help compiler's more advanced features.

This article discusses an alternative route to Winhelp development and one that can be mastered (with just a bit of effort) by non-programmers. Instead of an RTF editor, you use your favorite ASCII editor (e.g., QEdit, the Borland IDE, etc) to write the source file and then use a freeware conversion utility to render it into Rich Text Format. You can avoid the nuisance factor associated with RTF-based word processing and are freed to devote more energy to the structure and content of your Winhelp database.

GO WINSDK

InfoPop/Windows recent revision history

1.22a

Reworked the glossary and added a few new terms
Added excerpts from RFC 1594 on Questions for new internet users
Cleaned up a few odd jumps (there are still some others to fix)
Fixed display problems with HTML and Internet glossary definitions
Added entry for Nat'l Telecommunications & Info Administration BBS
Added info about converting WINCIM 1.1 to an offline processor
Added entry for Los Angeles Free-Net
Added entry for National Distance Learning Center
Added entry for Humboldt State University

1.21d

Corrected display error in CIS <-> Internet email entry
Added entry for University of Alabama-Birmingham
Added entry for Sweet Briar College
Added entry for Greater Detroit FreeNet
Added entry for Global Integrated Pest Management Info System

1.21c

Added entry for Borland International ftp server
Added entry on using the UNIX gopher client
Added entry for Grambling State University library
Added info on the new GMUtan ftp server
Added entry for Leeds Database of Manuscript Verse
Added Internet Timeline

1.21b

Added definition for MPEG
Added 'Entry Start' button to longer entries.
Added entry for Seton Hall
Added entry for Wheaton College
Added more terms to the glossary

1.21a

Updated entry on cello
Updated IP address for University of California library system
Added entry for Slippery Rock University
Added brief entry on America Online
Added brief entry on Prodigy
Added brief entry on GENie
Updated info on OZCIS
Added the Veronica FAQ
Added entry for Albion College
Added address for another microsoft ftp server
Added entry for Bowman Gray School of Medicine
Added entry for JASON ONLINE, an educator's BBS
Added entry for CIAO! Free-Net
Added entry for Youngstown Free-Net
Added sample issue of EDUPAGE

Los Angeles Free-Net

telnet lafn.org

or

telnet 198.211.120.1

Select (2) for visitor

Main Menu

- 1 Administration
- 2 The Post Office
- 3 Communications Center
- 4 Education Center
- 5 Community Center
- 6 Sanford Meisner Arts and Entertainment Center
- 7 Government Center
- 8 NPTN Information and Special Features
- 9 Health center
- 10 Center For Religion and Values
- 11 Help Desk

Youngstown Free-Net

telnet yfn2.ysu.edu

or

telnet 192.55.234.50

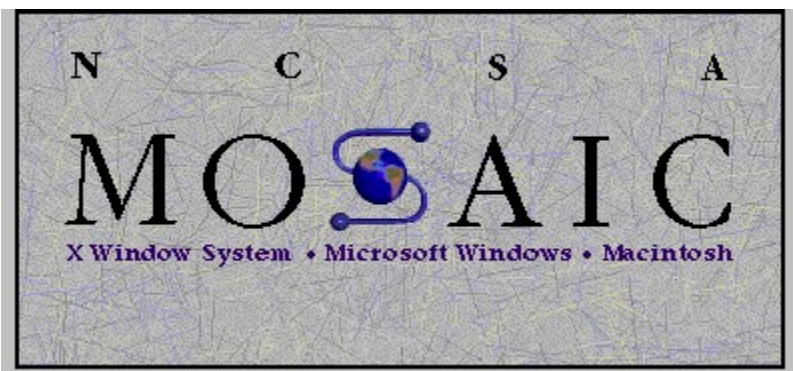
Login: visitor

CIAO! Free-Net

telnet ciao.trial.bc.ca

or

telnet 142.231.5.1 login: guest



Here's an excerpt from announcement on Mosaic availability...since this message appeared, release 1.0 appeared and when last I looked (2/7/94) an alpha release of 2.0 for Windows is now available.

We are happy to announce the second beta release of NCSA Mosaic for Microsoft Windows.

NCSA Mosaic is a distributed hypermedia system designed for information retrieval and discovery over the global Internet. Mosaic provides a unified hypermedia interface to the various protocols, data formats, and information archives used on the Internet and provides powerful new methods for discovering and using information. Mosaic is capable of accessing data via protocols such as Gopher, World Wide Web, FTP and NNTP (Usenet News) natively, and other data services such as Archie, WAIS, and Veronica through gateways.

NCSA Mosaic for Microsoft Windows is a WinSock client program. It requires network (TCP/IP) access through the WinSock DLL interface. If you are using Windows NT, this is built in. If you are using Windows 3.1, you need to obtain a WinSock and install it on your system. There is an alpha version of a shareware WinSock on our FTP server. If you are running a commercial TCP/IP stack, such as FTP Software's, you need to obtain their WinSock DLL directly from your LAN vendor.

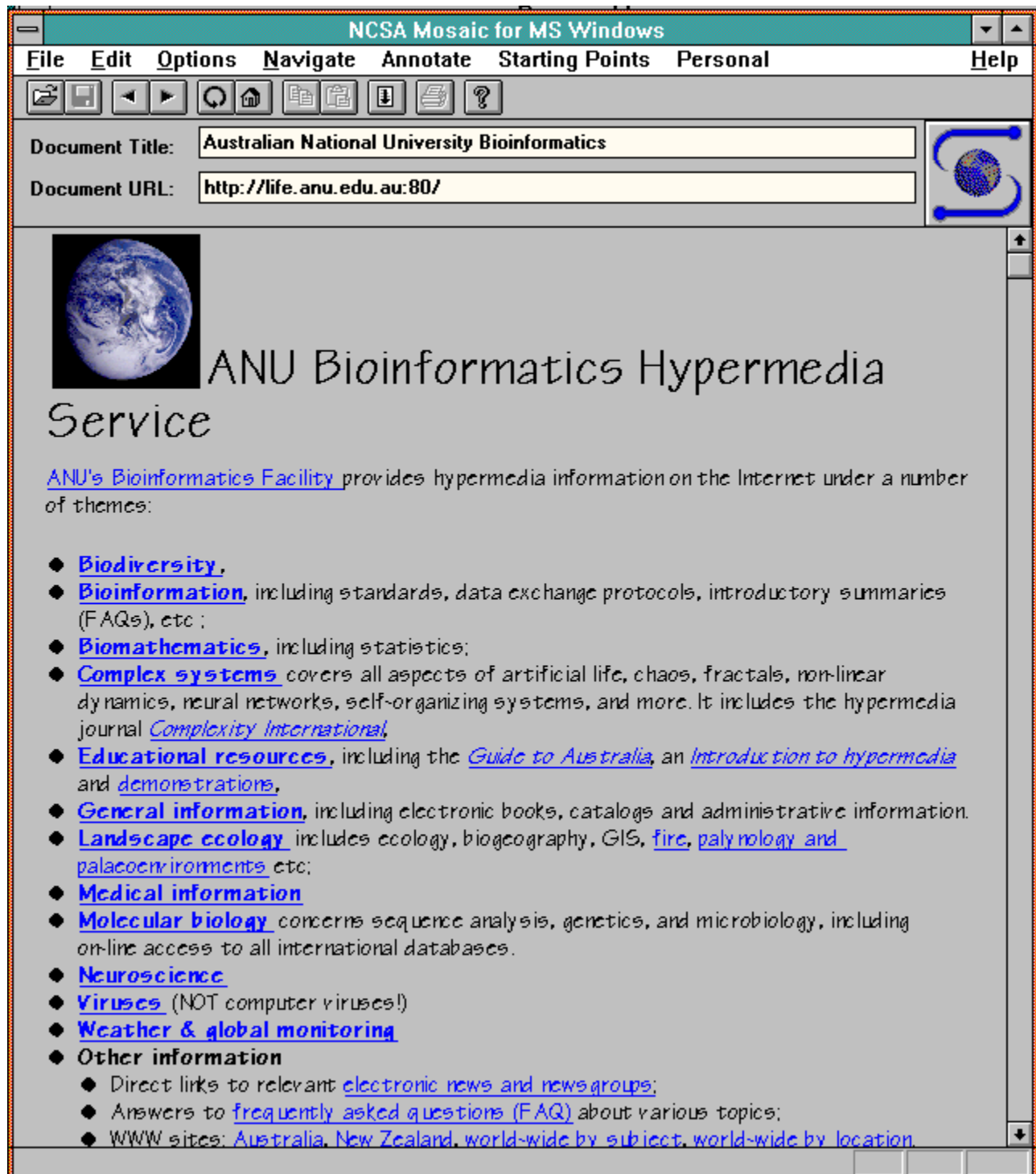
BUG REPORTS AND ENHANCEMENT REQUESTS should be emailed to "mosaic-win@ncsa.uiuc.edu". PLEASE INCLUDE THE VERSION NUMBER YOU ARE USING IN ANY MAIL YOU SEND US. Thank you for your interest and support.

The beta release is via anonymous FTP on NCSA's FTP server, "ftp.ncsa.uiuc.edu" (141.142.20.50), in the directory "PC/Mosaic".

If you do not have your own WinSock1.1, and you want a WinSock that will be useful for programs other than only NCSA Mosaic, then we would suggest trying the alpha release of the Trumpet WinSock, available in the "sockets" subdirectory (although this copy may not be the latest released.)

-Chris Wilson
-Jon Mittelhauser

[sample Mosaic screen](#)



Here is a sample screen showing a Mosaic session (note the blue hypertext links). This example illustrates one form of embedded image support.

Genomic Database of the Mouse (GBASE)

telnet morgan.jax.org

or

telnet 192.43.249.17

login: **guest**

This is a guest account for users, who do not have accounts, to access The Genomic Database of the Mouse (GBASE). Access to GBASE is free. To obtain a personal account, please contact:

Alan Hillyard
The Jackson Laboratory
600 Main Street
Bar Harbor, ME 04609-1500
USA

phone: +(207)288-3371 X-1576

email: alh@jax.org

WELCOME TO THE JACKSON LABORATORY'S GENETIC DATABASES

GENETIC MAPS of the mouse (Enter G)

LOCUSBASE - locus data and references (Enter L)

MATRIX - mouse strains vs locus data (Enter M)

MOUSE LOCUS CATALOG (Enter C)

INTEGRATED OMIM/MOUSE LOCUS CATALOG (Enter I)

FILE TRANSFER (Enter F)

RESPOND - report problems or make suggestions (Enter R)

EXIT (Enter E)

Los Alamos National Laboratory

telnet admiral.lanl.gov

or

telnet 128.165.10.1

Login: **Library**

Exit? Menu Option 2

MATIMOP - Israeli Industry Center for R & D

telnet VMS.HUJI.AC.IL

or

telnet 128.139.4.3

Username: MOP

An experimental server for information on R & D Projects of Israeli firms.

Information available on:

- * High Technology Incubators Projects
- * Opportunities in Lasers and Electrooptics
- * Access to a comprehensive WAIS database of Israeli R & D Projects

IKE: IBM Kiosk for Education (formerly ISAAC)

telnet ISAAC.ENGR.WASHINGTON.EDU

or

telnet 128.95.32.61

IBM Kiosk for Education

Office: (206) 543-5604

E-mail: ike@ike.engr.washington.edu

Welcome to the IBM Kiosk for Education (IKE) User Discussion Forums. These Forums are for the exchange of information among educators about how they are using IBM systems for instruction and research. This system is available for use by faculty, staff, and students in higher education for this purpose.

You must register to use this service. Please enter your access code and password (in lower case) in the spaces provided below. New users should enter 'register' as their access code and follow the on-screen instructions.

National Archeological Database

telnet cast.uark.edu
or
telnet 130.184.71.44

login:

NADB ONLINE SYSTEM
Archeological Assistance Program
Departmental Consulting Archeologist
National Park Service, U.S. Department of the Interior

In Cooperation with the Center for Advanced Spatial Technologies, University of Arkansas Southwestern Division, U.S. Army Corps of Engineers

The National Archeological Database is an archeological information management system developed by the Departmental Consulting Archeologist/Archeological Assistance Program of the National Park Service in cooperation with Federal and State agencies and professional consultants. It has been designed to improve and promote the more efficient management of cultural resources in the United States. The NADB Online System has been established to provide widespread user access to this information.

Newsday's Information Highway Outpost

telnet delphi.com
or
telnet 192.80.63.1

Username: Highway

Welcome to
Newsday and New York Newsday's
Information Highway Outpost
You can visit these areas
of the Information Highway Outpost:

INFORMATION HIGHWAY SERIES

Current stories, updated daily through July 21.

ARTICLE AND FILE LIBRARY

Download graphics, animations and background articles.

MESSAGE NEWSDAY STAFF

Send your comments to Newsday reporters and editors.

PUBLIC FORUM

Share views with other callers and with Newsday staff.

CHAT

Log-on Wednesday, July 21, at 9 p.m. for a real-time conversation with Newsday staff and other callers.

- 1 Information Highway Series
- 2 Article and File Library
- 3 Message Newsday Staff
- 4 Chat and Public Forum
- 5 Exit Service

TSR

Terminate-Stay-Resident

Bypassing a technical explanation, a TSR is a program that loads into your PC's memory then goes to 'sleep'...ready to pop-up and run whenever a particular key sequence is pressed. TSR's serve little purpose in a multitasking environment like Windows.

A simple explanation of multitasking is an operating system or environment in which two things can happen at once (typically two programs can be running simultaneously).

Since time is nature's way of keeping everything from happening at once, it is actually 'impossible' for a computer to do two things simultaneously--it just seems that way since our 'clockspeed' is so much slower. What actually occurs in a multitasking environment is that the various 'ticks' of the computer's processor are allocated to different tasks in turn.. rather than having one task monopolize the system's resources until it finishes.

If you want to see true multitasking on a PC you have to run something like OS/2, LINUX (the freeware UNIX) or Windows NT.

Due to some of the features incorporated into this database (IPWIN.HLP), you may not run InfoPop/Win under the version of WINHELP.EXE distributed with Windows 3.0. If that is a necessity, contact the author for a 3.0 version of the program.

InfoPop/Win editor/author

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Other GMUtant Software Products:



InfoPop/DOS - a TSR guide to the internet. Comes with utility for making your own pop-up help systems. Non-TSR version also included which is great for mounting on a network server.

The latest version of InfoPop (DOS and/or Windows versions) is always available first via: gopher, ftp, or bbs



BIBL (rhymes with nibble). A full-featured system for managing your personal and/or office library on an DOS-based PC. Features include: multiple databases; mouse support; Windows 3.1 clipboard support; 15+ reports; full-text and/or keyword searching; large (700 character) note field for each record (with word wrap); global find & replace; ASCII import/export; link text files (registered version adds PCX image support) to individual records; and more. Network version of the product (BIBL/NET) is also available (specify NOVELL or NETBIOS). Shareware.

Current release of BIBL is 8.59f

Availability: Compuserve, gopher, BBS, and ftp.

GOVDOX - a check-in system for managing U.S. Government Documents. Shareware. Current release: 8.43. Availability: BBS, ftp.



FSD - File Seek & Destroy. A Windows freeware app to collect all files that match a given filespec across your drive...then offers ability to delete them (either individually or as a group). FSD is a Visual Basic product (you need VBRUN300.DLL). One version on the BBS (FSD132VB.ZIP) includes the DLL file, another (without the VB in the file name) doesn't. Availability: BBS, ftp



The GMUtant Editor. A Windows freeware editor for ASCII files. More robust than notepad, the GMUtant Editor supports multiple files of unlimited size. This one's still in a beta release state (current version .012) but it's stable (we just intend to add additional features one of these days). Availability: ftp

ZKWIK - utility for generating KWIC and KWOC indexes. Filename: ZKWIK16.ZIP . Availability: BBS

gmutant.wrlc.org (198.91.36.126)

username: anonymous
password: JustPutYourEmailAddressHere
cd pub/gmutant
binary
get bibl859.zip *to get shareware release of BIBL*
get ipwin121.zip *to get current release of InfoPop/Windows*
get infpop27.zip *to get current release of InfoPop/DOS*
quit

If for some reason, that server is not available, you can try this DOS-based (KA9Q) ftp server we also maintain to host our gopher:

fenwick.gmu.edu (129.174.110.78)

username: anonymous
password: JustPutYourEmailAddressHere
cd software

point your gopher client to fenwick.gmu.edu (129.174.110.78) then access Library Systems Office section.

What are ZIP files?

ZIP is a file extension one encounters on files that have been compressed according to PKWARE's ZIP format. Typically a ZIP file contains within it a number of files which have been compressed and then combined.

To extract the files contained within a ZIP file you need a copy of the utility program PKUNZIP.EXE - available on BBS's (including the [GMUtant BBS](#)).

Note that version 1.x of PKUNZIP *will not* extract files created with version 2.x of the product. Version 2.x of PKUNZIP will decompress (or *unzip*) ZIP files created with version 1. As of this writing, the current SHAREWARE version of PKUNZIP is 2.04g

To 'unzip' a file (assuming PKUNZIP.EXE is on your DOS path):

```
C:>PKUNZIP NameOfZipFile (return)
```

To 'zip' files, creating a ZIP file named MYFILES.ZIP:

```
C:> PKZIP -a MYFILES ListNamesOfFilesToInclude (return)
```

For example, to create a ZIP named MYFILES.ZIP that contains three files (INFO.DOC, MYFILE.EXE and TEST.TXT):

```
C:>PKZIP -a MYFILES INFO.DOC MYFILE.EXE TEST.TXT (return)
```

Single-user: Go IBMAPPS, Library 7: BIBL.ZIP

Network (Novell): Go NOVUSER, file BIBNET45.ZIP



GMutant Online BBS

The BBS focuses on programming (C, C++, Pascal and Visual Basic) as well as files of interest to librarians and/or information professionals. We use the BBS to provide support for various GMutant Software products as well.

phone: (703) 993-2219

speed: 1200,2400,9600 v.32/v.42bis

hours: 24 hours a day

Soundex

An algorithm for translating a text string into a number--the purpose being that text strings that sound alike should yield identical values...and indexes based on SOUNDEX values should yield matches despite minor variations in a term's spelling.

To achieve this, vowels are ignored and consonants with similar phonetic sounds receive the same numeric value. Typically the first letter of a term is retained and numbers are assigned to the remaining letters (up to the predetermined limit of the soundex value being generated).



[a bit more info on soundex](#)

Here is an one soundex algorithm:

AEHIOUW	skip these characters in any term
BFPV	1
CGJKQSZ	2
DT	3
L	4
MN	5
R	6

1. Preserve the first letter of a term.
2. Limit resulting Soundex value to 1 letter and 4 digits.
3. Go through term starting with 2nd character position and assign a number to each letter (unless it is a vowel or w in which case it is ignored).
4. Stop when 4 digits have been assigned.
5. If the resulting SOUNDEX value is less than 5 characters in length, pad the result with 0's.

If you work through this alogrithm with the terms **Agriculture** and **Akhruhkulture** you'll find they both yield: **A2624**.

Wildly different spellings but since they 'sound' the same, they file together.

Hytelnet

A software package much like InfoPop for MS-DOS and Unix machines. You can find the addresses of hundreds of interesting Internet destinations via hytelnet.

To obtain a copy of the MS-DOS version of hytelnet (current version as of this writing is 6.5): ftp
access.usask.ca
username: anonymous
password: your Internet address.

at ftp> prompt, enter: cd pub/hytelnet/pc
at next prompt, enter: dir this will list out the files in the directory.
look for one that follows this naming
convention:

HYTELNxx.ZIP

Where the 'xx' is a number.

at next prompt, enter: binary
at next prompt, enter: get hytelnxx.zip updates to hytelnet

HYTEL-L

Peter Scott, author of the hytelnet database, maintains a mailing list for updates (which I highly recommend as a means of keeping track of the internet explosion). Here's an excerpt from an announcement which describes the list:

This list is for announcements of new versions of the popular HYTELNET program, which gives a user access to all known telnet-accessible sites on the Internet. List members will also receive announcements of new/changed/defunct sites, announced between full versions of the program.

HYTEL-L replaces the LIB_HYTELNET mailing list.

The list is co-moderated by Peter Scott, author of HYTELNET, and Diane Kovacs of Kent State University.

To subscribe, send mail to LISTSERV@KENTVM.BITNET or LISTSERV@KENTVM.KENT.EDU with the body (not the subject!) containing the command: SUB HYTEL-L Your Name

For example: sub hytel-l Bill Clinton

Co-Moderator: Peter Scott aa375@freenet.carleton.ca

Co-Moderator: Diane Kovacs dkovacs@kentvm

TCP/IP

Transmission Control Protocol/Internet Program. A set of protocols developed by the Department of Defense to link dissimilar computers across networks. TCP/IP is an important and established internetworking protocol that works at the third and fourth layers of the OSI model. Developed by the Department of Defense, TCP/IP is designed to be rugged and robust, and to guarantee delivery of data in the most demanding circumstances. TCP/IP is more and more popular with networking and computer vendors who want to connect their equipment to a variety of other systems and protocols. TCP/IP has been implemented on everything from PC LANs to minis and mainframes. FTP and SMTP provide file transfer and e-mail capability. The telnet protocol provides a terminal emulation capability that allows a user to interact with any other type of computer in the network. The TCP protocol controls the transfer of the data, and the IP protocol provides the routing mechanism.

telnet

(verb) establishing a connection to a remote computer connected to the Internet network.

(noun) Two types of programs are used to do this. One, usually called Telnet, establishes a VT100-type terminal emulation to the remote computer. The second, TN3270, establishes a full-screen IBM 3270-type terminal connection.

The telnet protocol has been implemented on a variety of systems. Each is different, so specific commands depend on your version. However, all versions function similarly, so there are a few general guidelines to follow.

The one common element across the disparate environments of the Internet is the TCP/IP software protocol suite, the basis of communications.

telnet, the terminal-handler portion of the TCP/IP protocol suite, is the cornerstone of this communications technology. telnet handles the remote login to another Internet host, so it is useful to know something about the way it works.

Sample Commands

Local vs Remote Commands

Logging On

Logging Off

Telnet escape sequences

open	connect to a site
close	close current connection
escape	set escape character
exit	exit telnet
generic	toggle conversion of control characters to standard NVT codes
localecho	toggle local echo mode
negotiate	negotiate telnet options
options	toggle viewing of options processing
quit	exit telnet
status	print status information
transvt	transmit NVT control functions
usecrnul	toggle sending of CR-NUL and CR-LF for new-line char
xon	toggle local processing of data flow control characters
z	suspend telnet
?	print help information

Local vs Remote telnet commands

Once you have established a remote session, all commands you type will be sent to the Server telnet on the remote host for execution.

If you want a telnet command issued in the remote environment to be acted on locally by your client telnet, on most systems you would normally precede the command with an escape sequence (a predetermined character or combination of characters that signal your telnet software to execute the command that follows locally). For example, in NCSA telnet for pc-compatible microcomputers, the F10 key is the escape character that alerts telnet to execute locally the next command you type (to turn local echo on or off, or to toggle capture on or off, etc.).

The telnet escape sequence by itself followed by `cr` returns you temporarily to your local operating environment. On UNIX systems, the escape sequence is usually the control key and left bracket pressed simultaneously.

Escape Keys (telnet / TN3270)

(MS-DOS)

CUTCP	ALT-X
KA9Q	F10
MD-DOSIP	ALT-(space)
NCSA telnet	ALT-X
PCIP	F10 Q Y
PC/TCP	F10 c
PC-NFS	F10

Macintosh

NCSA	Apple-K
------	---------

VAX/VMS

CMU	CTRL-^ c
Multinet	
telnet	CTRL-^ q
TN3270	CTRL-C q

WIN/TCP	
telnet	CTRL-] q
TN3270	CTRL-Y

Unix1

telnet	CTRL-] q
TN3270	CTRL-C q

Telnet - how to use

To log onto a remote system via telnet, at your system's prompt enter:

telnet host address

or

telnet cr followed by OPEN host at the prompt.

The basic command set is simple. You also need to know either the machine domain name or the machine Internet address (a series of numbers). The numbers will always work; the names will work if they are a software table available to your version of telnet.

IBM systems that use TN3270 may require you to type a carriage return, "DIAL VTAM," or just "VTAM" in response to the first prompt from the remote system.

Telnet - Logging off

LOGOFF or LOGOUT (also try QUIT, END, EXIT, STOP, etc.)

CLOSE, prefixed by the escape sequence.

ABORT, prefixed by the escape sequence--use as a last resort!

To exit the remote system, first try that system's logoff command. To determine the appropriate logoff command, check the menus, help, and welcome screens when you first log on.

Logging off the remote system may return you to your primary operating environment (all the way out of telnet), or you may be left in telnet. If so, type "quit".

A few systems offer no graceful exit for remote users. This leaves two options --- CLOSE or ABORT.

CLOSE should be your next choice after LOGOFF. If you are unable to CLOSE the connection normally (e.g., if your remote session is hung), try the telnet ABORT command to drop your connection locally.

ABORT will return control to you in your local environment, but it may not properly terminate your remote session. Since this can leave the port on the remote machine busy for an indefinite period, ABORT should be your last resort.

In either case, you can also try escaping back to your local environment and then issuing the termination commands.

Break key?

There is no standard BREAK key across versions of telnet. telnet is based on the concept of a network virtual terminal, in which the control functions (breaks, etc.) are communicated with characters regardless of terminal type (rather than line conditions, used in the terminal server environment). Your local telnet receives your break and sends out a character sequence which is reinterpreted on the other end.

Since key sequences can be misunderstood, you should type HELP or > when you begin (at your local telnet prompt) to determine what sequence your version of telnet will send.

Tips:

UNIX: CONTROL-C may work for BREAK.

MAC: BREAK may be a menu option or a character combination.

PC: BREAK is F10 followed by a lower case letter "b".



The procedure of connecting to a remote computer, as an anonymous or guest user, in order to transfer files back to your computer. Basically, you type ftp at your system prompt then login on the remote system, then ask for the file you want to receive. It transfers to your local host machine.

[FTP commands](#)

[FTP how-to-guide](#)

[FTP sites \(selected destinations\)](#)



related topic: [archie](#)

A few popular FTP sites

ftp ocf.berkeley.edu
or
ftp 128.32.184.254

offers: Docs, 5 puritytests, the Bible, Dec. of Ind,lyrics
cd /pub/Library

ftp wuarchive.wustl.edu
or
ftp sunset.cse.nau.edu

offers: Gifs, Sights, & Sounds! ftp sounds.sdsu.edu for the sounds archive.

ftp ftp.uu.net

offers: everything!

ftp archive.umich.edu
or
ftp sumex-aim.stanford.edu

offers: Software for MS-Dos computers, Mac, Amiga,Apple2, Apollo...

ftp oak.oakland.edu

offers: A huge software archive for PCs and UNIX.

ftp ftp.sura.net

offers: How-to's about internet(how to email, ftp, telnet, etc.)
cd /pub/nic

ftp cathouse.aiss.uiuc.edu

offers: All the text/humor files you'd want (tv, sex..) cd misc/fun/humor

Source of above is Scott Yanoff's excellent list of **Special Internet Connections**.
Yanoff's address is @csd4.csd.uwm.edu1. His list is a regular feature on
many gophers.

FTP commands

abort	Terminate current operation
ascii	Set file transfer mode to ascii
bget	Retrieve a file in binary mode
bput	Send a file in binary mode
bell	Ring bell when file transfer completes
binary	Set file transfer mode to binary
bye	Close the connection and exit
case	Toggle mapping of local filenames to lower case
cd	Change current working directory on remote host
chdirup	Change to parent of working directory on remote
commandfile	Execute <u>ftp</u> commands from local file
delete	Delete a file on remote host
directory	Display contents of a directory in long form
disconnect	Close the connection
file	Set file transfer structure to FILE
get	Retrieve a file from remote host
hash	Print # for each packet sent or received
help	Display help messages for all ftp commands
ignore_icc	Ignore implied carriage control for binary transfers
interactive	Prompt with each filename for mget, mput & mdelete
lcd	Change current working directory on local host
login	Log into the remote system
ls	Display contents of a directory in short form
mdelete	Delete a group of files from remote host
mget	Retrieve a group of files from remote host
mkdir	Make a directory on remote host
mput	Transfer a group of local files to remote host
nobell	Don't ring bell when file transfer completes
nohash	Don't print # for each packet sent or received
noignore_icc	Don't ignore implied carriage control for binary transfers
nointeractive	Turn prompting off for mget, mput and mdelete
open	Open a connection to a remote host
put	Transfer a file from local host to remote host
pwd	Print remote host's current working directory
quiet	Do not display transfer statistics
quote	Send the specified string to the remote ftp server
record	Set file transfer structure to RECORD
remotehelp	Display FTP commands implemented by server
rename	Rename a file on remote host
rget	Retrieve a file with record structure from remote host
rput	Transfer a file with record structure to remote host
site	Send site parameter
socket_size	Set data socket receive buffer size
stat	Display contents of a directory in short form
show	Show current status
structure	Set file transfer structure
tenex	Set file transfer mode to tenex
unix	Set system type to UNIX
verbose	Display server replies and transfer statistics
vget	Retrieve a file with RMS structure from remote host
vmode	Set file transfer structure to RMS type file
vms	Set system type to VMS
vput	Transfer a file with RMS record structure to remote host

Here's a sample script for 'ftp-ing' the Internet List done by Art St. George and on Larsen:

If you're on a VAX, at the \$ prompt, begin:

```
$ ftp ariel.unm.edu
login: anonymous      <- this makes you a 'guest'
cd library            <- file's in the 'library' directory
get internet.library
```

The file will (after a short delay) come to your local system where you can view it, print it , depending on your local configuration, download it to your PC.

FTP (How to)

ftp (File Transfer Protocol) allows you to copy files from a remote host to your computer. Many hosts on the Internet freely allow access to some of the documents stored on their computers. This service is generally referred to as anonymous ftp

Anonymous ftp is very simple. Once logged in, you only have four commands available. These are:

cd	change directory
ls	display contents of a directory
get	transfer a file from the remote host
mget	multiple file transfers

Logging on to a Remote host:

At the system prompt, type <host address> example: ftp nic.ddn.mil <enter> will connect with the Department of Defense Network Information Center.

Hosts will require you to log in, i.e., give a user ID and password.

Username: **anonymous** <enter>

Password: type <your e-mail address><enter>

Changing Directories on a Remote Host:

Once you are logged on you may have to change directories on the host computer to access the file(s) you are interested in. To change directories type:

ftp> cd <directory name> <enter>

example: ftp> cd rfc <enter>

The ftp> prompt in front of the examples is not to be typed by the user.
The ftp> prompt represents the Unix prompt at most ftp sites.

individual files using ftp

To transfer a file from a host to your own computer type:

ftp> get <filename> <enter>

example: ftp> get RFC-INDEX.TXT.1211 <ENTER>

multiple files using ftp

To transfer multiple files from a host to your own computer the command is mget.

ftp> mget <filename1> <filename2> <filename3> <ENTER>

> mget <filename1>? yes <ENTER>

> mget <filename2>? yes <ENTER>

> mget <filename3>? yes <ENTER>

The host site will ask you if you would like to transfer the file before the file is actually sent. Reply with a yes or no at the prompt as in the example shown.

To transfer RFCs from nic.ddn.mil the standard command is:

```
ftp> get rfcRFCnnnn.txt  for ASCII files or  
ftp> get rfcRFCnnnn.ps   for Postscript files
```

where nnnn represents the RFC number. However, RFC filename extensions vary slightly for different RFCs.

```
example: > RFC1207.TXT.1 <ENTER>  
> RFC1032.TXT.2 <ENTER>
```

It is best, therefore, to check the RFC filename in the directory. The command for this is ls.

```
example: ftp> ls RFCnnnn* <ENTER>
```

It is also possible to view a document without having to transfer it back to your own system. The, get filename |less, command will allow the user to view the document while still connected to the ftp host. However, not all ftp sites are compatible with this command.

Leaving a host.

When you have finished transferring files from a remote host using ftp, exit from the host by typing quit.

Miscellaneous Internet Destinations

[American Mathematical Society's e-MATH](#)
[American Philosophical Association](#)
[ASK \(German Universities Online Information\)](#)
[ASSET\(Asset Source for Software Engineering Technology\)](#)
[Baseball \(Major Leagues\) Scores/Schedules](#)
[Big Sky Telegraph](#)
[Borland International ftp site](#)
[CENET \(Cornell Extension NETwork\)](#)
[CHAT \(Conversational Hypertext Access Technology\)](#)
[Cleveland Free Net](#)
[Constitutional Documents \(USA\)](#)
[Cyberspace Station](#)
[Dartmouth Dante Project](#)
[Electronic Periodic Table of the Elements](#)
[ERIC \(Educational Resources Info Center\) documents](#)
[E.T. Net at the National Library of Medicine](#)
[FEDIX](#)
[FedWorld BBS](#)
[GENBANK \(DNA sequences\)](#)
[General Accounting Office Documents](#)
[Genomic Database of the Mouse](#)
[Geographic Name Server](#)
[Global Integrated Pest Management Info System](#)
[Greater Detroit FreeNet](#)
[Hewlett-Packard Calculator Bulletin Board](#)
[Hubble Space Telescope, Daily Reports](#)
[HYtelnet \(unix version\)](#)
[IBM \(OS/2\) support](#)
[IEEE Standards Process Automation Systems SPAsystem](#)
[IDS World Network \(formerly IDS DataForum\)](#)
[IKE \(IBM Kiosk for Education\)](#)
[JASON ONLINE BBS](#)
[Knowbot Information Service](#)
[Korea Network Information Center](#)
[KQED Learning Link](#)
[L.A. Free-Net](#)
[Leeds Database of Manuscript English Verse](#)
[LC Marvel \(Library of Congress gopher\)](#)
[Librarian's Yellow Pages](#)
[Libsearch \(One stop access to various library catalogs\)](#)
[Library of Congress \(LOCIS\)](#)
[Lunar & Planetary Institute](#)
[Meeman Archive of Environmental Journalism](#)
[Microsoft Windows NT \(ftp server\)](#)
[NASA Online](#)
[NASA Spacelink](#)
[National Archeological Database](#)
[National Distance Learning Center](#)
[National Freenet \(Ottawa, Canada\)](#)
[National Science Foundation](#)
[National Telecommuncations & Information Administration](#)
[Netfind](#)
[Network Information Center On-Line Aid System \(NICOLAS\)](#)
[Newsday's Information Highway Outpost](#)

[NEWTON - Educational Electronic Bulletin Board System](#)
[NISS Gateway \(London\)](#)
[NOVELL Support \(ftp\)](#)
[NPTN/USA Today Headline News](#)
[Project Gutenberg](#)
[Shakespeare's Plays and Sonnets](#)
[Space Shuttle Earth Observations Project's Photographic Database](#)
[SUPERNET International](#)
[Toledo Free-Net](#)
[U.S. Naval Observatory](#)
[Weather Underground \(Univ of Michigan\)](#)
[Webster's Dictionary](#)
[The WELL](#)
[White House publications](#)
[World Factbook](#)
[ZIB Electronic Library, Germany](#)

National Distance Learning Center

telnet ndlc.occ.uky.edu

or

telnet 128.163.193.10

login: ndlc

The National Distance Learning Center is a centralized electronic information source for distance learning programs and resources. Whether you are a program Producer or User of distance learning, the NDLC will assist you in distributing and accessing available courseware.

The NDLC contains listings of K-12, Higher Education and Continuing Education courses as well as Teleconferences.

Questions?

(502) 686-4556 voice

(502) 686-4558 fax

National Telecommunications and Information Administration (NTIA)

telnet ntiabbs.ntia.doc.gov

or

telnet 198.49.199.202

- A) Who is NTIA?
- O) Openness Program Information
- N) National Information Infrastructure Initiatives
- T) TeleView - Public Notices/Comments
- S) Spectrum Management Activities
- I) International Activities
- G) Grants Administration - PTFP/NECET
- P) Press Releases and Public Notices
- L) Legislation - Existing/Pending/Initiatives
- C) TeleConnect - Gateway Services
- W) White House Documents
- D) Definitions of Key Terms

F) What's new

X) Logout

Questions?

contact Roger Clark (rclark@ntia.doc.gov)

Global Integrated Pest Management Information System

telnet cicp.biochem.vt.edu

or

telnet 128.173.52.243

The Consortium for International Crop Protection (CICP) was established "to contribute to the enhancement of the quality of life, especially in developing countries, through the dissemination of integrated management principles and methodologies for pests affecting humans in their dwellings, and in their agricultural and agroforestry systems."

This is a special purpose Bulletin Board designed to exchange scientific information relevant to integrated pest management.

Greater Detroit FreeNet

telnet detroit.freenet.org

or

telnet 147.240.63.150

Login as visitor

Leeds Database of Manuscript English Verse (BCMSV)

telnet bcmsv.leeds.ac.uk
or
telnet 129.11.128.108

login: bcmsv
password: bcmsv

BCMSV (standing for Brotherton Collection Manuscript Verse) is a database of the individual items of English poetry contained in the 17th and 18th century manuscripts belonging to the Brotherton Collection of Leeds University Library. The items in question range from contemporary copies of poems by writers like Dryden and Pope at one literary extreme to popular tags and epitaphs at the other. Many of the manuscripts are miscellanies and commonplace books which have never been indexed, and their contents have consequently remained largely unknown to scholars.

BCMSV is a free-text database which uses the BRS/SEARCH information retrieval system. It has been in progress for a number of years, and currently contains records for some 2550 separate poems. It is regularly updated. Each record in the database may have up to seventeen fields, including first lines, last lines, attribution, author, title, date, length, verse-form, and content. Further information about any item or manuscript will gladly be supplied on request.

Copies of the BCMSV user guide are freely available. To obtain a copy, please send your name and address to:

Dr O.S. Pickering, Brotherton Library, University of Leeds, Leeds, LS2 9JT
o.s.pickering@leeds.ac.uk

Borland International ftp server

Borland International (makers of Turbo Pascal, Borland Pascal 7.x, C and C++ compilers, Interbase, dBASE, Quattro Pro and other packages) now operates an ftp server for technical information, software patches, sample code, etc.: **ftp.borland.com**

or

143.186.15.10

JASON ONLINE

telnet topcat.bsc.mass.edu

or

telnet 134.241.41.3

Username: Jason

Password: Guest

JASON ONLINE is part of a national teacher in-service training program administered by the JASON Foundation for Education. It is designed to introduce teachers to the world of telecommunications. It provides email and a BBS system

FedWorld: National Technical Information Service

telnet fedworld.gov

or

telnet 192.239.92.201

Offers gateway access to a number (129 at last look) of BBS systems operated by federal agencies:

IEEE Standards Program

telnet stdsbbs.ieee.org

or

telnet 140.98.1.11

login: guest

The SPAsystem has several goals:

to serve as a communications and information hub for standards development and use

to save time and resources for participants in the IEEE Standards Program

to allow flexible electronic data interchange among the IEEE and other organizations

to provide an up-to-the-minute, comprehensive view of the development, history, and status of any Standards project

to facilitate the creation of Standards in an electronic format that matches the electronic format ultimately to be distributed to users

to deliver Standards in flexible forms, according to user needs

to advance the internationalization of IEEE Standards by enabling worldwide access to computer-aided standards development

Novell Support

You can get files related to Netware, Unixware or LAN Workplace for DOS via anonymous [ftp](ftp://ftp.novell.com)

[ftp.novell.com](ftp://ftp.novell.com)

Other Novell information sites include:

bnug.proteon.com

[ftp.rug.nl](ftp://ftp.rug.nl)

[ftp.salford.ac.uk](ftp://ftp.salford.ac.uk)

The Well

The WELL is a computer conference system located in Sausalito, California. The WELL is one of the better known computer conferencing systems in the country. It has a distinct culture to it rooted in its location in the San Francisco Bay Area and its founding by people who created the Whole Earth Catalog and the follow-on publication, The Whole Earth Review. The WELL features over 200 conferences and over 6000 registered users. The WELL also features USENET newsgroup and email access.

Perhaps the most interesting aspect of the WELL is the community of people that use it. Many writers, journalists, and other well-known figures make use of the WELL.

Availability

The basic cost of the WELL is a \$15/month service charge plus a \$2.00/hour usage fee. Your first 5 hours of usage are free so you can get to know the system, though you may want to wait until you get the manual to make the best use of this time.

Any group or organization can have a private conference created at no extra charge.

Access

telnet well.sf.ca.us
or
telnet 192.132.30.5

newuser to register.

The WELL can be reached in 3 ways:

- by direct dial
- through the Internet
- through X.25 connections via CPN (the Compuserve Packet Network)

There is usually a surcharge (of \$4/hr in the conterminous USA) for X.25 access. CPN has local dial-up numbers all over the USA and in many other countries.

Editor's Note: The WELL also maintains a [gopher](#) front-end to many of their services. Point your client at: [gopher.well.sf.ca.us](#)

An electronic mail message to info@well.sf.ca.us will get a list of information files about the WELL.
Mail to: **support@well.sf.ca.us** with other questions.

The WELL
65M Gate 5 Road
Sausalito, CA 94965 E-mail:support@well.sf.ca.us
Phone: (415) 332-6106 (modem)
(415) 332-4335 (voice)



Related: [Small town on the Internet Highway](#)

KQED Learning Link

telnet sierra.fwl.edu
or
telnet 198.49.171.2

login: newuser
Password: newuser

Welcome to KQED LEARNING LINK (tm)

KQED Learning Link is an electronic information and communication service provided by public television station KQED in San Francisco, in partnership with the Science Education Academy of the Bay Area (SEABA), and Far West Laboratory for Educational Research and Development.

By facilitating communication between and among education professionals, KQED Learning Link helps teachers:

- * make better use of educational technologies such as computers and television;
- * locate available resources, including online databases, professional development opportunities, classroom lessons and activities and news related to public broadcasting;
- * learn how to integrate technology resources into the curriculum and implement them in the classroom;
- * network with other educators for enrichment, lesson planning and curriculum sharing;
- * develop classroom projects with other schools.

In the near future, KQED Learning Link will offer a Student Service that offers classrooms and individual students the opportunity to exchange messages via electronic mail, discussion groups and bulletin boards. Also, the Student Service will contain resources for students such as a database of colleges and universities, science clubs and activities and local cultural arts opportunities.

KQED Learning Link is available 24 hours a day, seven days a week. You can access KQED Learning Link from any personal computer equipped with communications software and a modem connected to a telephone line. End users may dial directly to KQED Learning Link or access the service from CORE-California Online Resources for Education. More information on CORE can be obtained from the California Technology Project at 1-800-272-8743.

KQED Learning Link is part of the KQED Center for Education and Lifelong Learning. Additional information can be obtained by writing email to KQED LL Staff or by contacting: KQED Learning Link, CELL, 2601 Mariposa St., San Francisco, CA 94110. Telephone: (415) 553-2476.

Librarian's Yellow Pages

telnet DATABASE.CARL.ORG

or

telnet 192.54.81.76

Select 5 for VT100 emulation

Select 6 for Other Information and Article Databases

Select 45 for Librarian's Yellow Pages

The Librarian's Yellow Pages, published in paper format in January 1993, contains thousands of publications, products, and services for libraries and information centers. The database will be updated monthly as the 1994 print edition is compiled.

Each entry includes the name, address, phone number, fax number, descriptive information (when available), and a specific topical category for the service provider.

Toledo Free-Net

telnet 131.183.4.100

login: visitor

password: visitor

INFOPORT for Toledo Ohio

- 1) About InfoPort
- 2) Administration Center
- 3) Business/Industry Center
- 4) Community Center
- 5) University Center
- 6) Post Office
- 7) Recreation Center
- 8) Science/Technology/Medicine Center
- 9) Government Center
- 10) Teleport Terminal
- 11) UT Gopher Server
- 12) Information sources
- 13) Other Free-Net Systems
- 14) Suggestions

LC Marvel: Library of Congress Gopher

telnet MARVEL.LOC.GOV

or

telnet 140.147.2.15

login: **marvel**

LC MARVEL is the Library of Congress' experimental Campus-Wide Information System which uses Gopher software. LC MARVEL offers access to informational files about the Library of Congress, the ability to search and retrieve information in those files, and connections to a wide variety of Internet resources. Initially, only 10 simultaneous connections will be available for direct TELNET connection from external sites (with the exception of the US Congress). However, it is possible to connect to this system using Gopher client software or through another Gopher server (the 10-user limit does not apply to these access methods). For Gopher access, point to MARVEL.LOC.GOV, port 70. Clearly, the Library of Congress bears no responsibility for the quality of information provided through other sites.

1. About LC MARVEL (Please Read First)
2. Library of Congress: Facilities, Activities, and Services
3. Research and Reference
4. Library of Congress Online Systems
5. The U.S. Congress
6. Federal Government Information
7. Services to Libraries and Publishers
8. Copyright
9. Employee Information
10. The Global Electronic Library (by Subject)
11. Other Internet Resources
12. What's New on LC MARVEL

Electronic Periodic Table of Elements

telnet 131.174.82.239 2034

No login required

Microsoft via ftp

Microsoft operates a Windows NT ftp server at this address. There is a beta Netware client at this address as well as other software that might interest NT users.

rhino.microsoft.com

Another Microsoft-operated ftp server of interest to programmer's looking for patches, updates, and the like for MS Language products:

ftp.microsoft.com

software.watson.ibm.com

IBM operates an ftp server that is an excellent source of code (and information) on OS/2:

ftp software.watson.ibm.com

username: **anonymous**

password: **YourEmailAddressGoesHere**

Files from 'watson' are mirrored at: ftp-os2.mnsu.edu

This site also offers a wealth of OS/2 code and was a distribution site for the OS/2 2.1 beta.

NISS Gateway

telnet niss.ac.uk
or
telnet 193.63.76.2

- A) The NISS Bulletin Board (NISSBB)
- B) The NISS Public Access Collections (NISSPAC)
- C) The NISS Wide Area Information Server (NISSWAIS)
- D) The NISS London Times evaluation service
- R) Library Catalogues (OPACs)
- S) Campus Information Systems
- T) Bibliographic Services (e.g. Melvyl, CARL, STN, BUBL)
- U) Directory Services (e.g. Yellow Pages, Paradise, WAIS)
- V) Archive Services (e.g. HENSA, Mailbase, BIRON)
- W) General Services (e.g. Guest-Telnet, ASK, CONCISE)

(H) Help (Q) Quit (F) Find

Please email comments to: gateway@uk.ac.niss

Korea Network Information Center

telnet garam.kreonet.re.kr

or

telnet 134.75.30.11

login: **nic**

Hubble Space Telescope. Daily Reports

telnet stinfo.hq.eso.org

or

telnet 134.171.8.4

login: **stinfo**

LOCIS

telnet locis.loc.gov
or
telnet 140.147.254.3

no login is required.

sample opening menu:

LOCIS:LIBRARY OF CONGRESS INFORMATION SYSTEM

- 1 Library of Congress Catalog
- 2 Federal Legislation
- 3 Copyright Information
- 4 Braille and Audio
- 5 Organizations
- 6 Foreign Law
- 7 Searching Hours and Basics
- 8 Documentation and Classes
- 9 Library of Congress General Information
- 12 Comments and Logoff

FEDIX

telnet 192.111.228.1

Login: **FEDIX**

FEDIX is an online information service that links the higher education community and the federal government to facilitate research, education, and services. The system provides accurate and timely federal agency information to colleges, universities, and other research organizations. There are no registration fees and no access charges for using FEDIX.

FEDIX provides daily information updates on:

Federal education and research programs (including descriptions, eligibility, funding, and deadlines).

Scholarships, fellowships, and grants.

Used government research equipment available.

New funding for specific research and education activities from the Commerce Business Daily, Federal Register, and other sources.

Minority assistance research and education programs.

News and current events within participating agencies.

General information such as agency history, budget, organizational structure, and mission statement.

For more information, contact the HELPLINE at (301) 975-0103 Monday-Friday, 8:30 am to 4:30 pm EST, except on federal holidays.

Netfind

```
telnet BRUNO.CS.COLORADO.EDU
or
telnet 128.138.243.151
or
telnet ds.internic.net
or
telnet 198.49.45.10
```

login:

Given the name of a person on the Internet and a rough description of where the person works, Netfind attempts to locate information about the person. When prompted, enter a name followed by a set of keywords, such as:

```
university colorado boulder
```

The name argument specifies the person being sought by first name, last name, or login name. The keys describe where the person works. They can consist of any combination of strings describing the name of the institution, the city-state-country, or the type of institution (e.g., "edu", "com", "mil", etc.) If you know the institution's domain name (e.g., "cs.colorado.edu") you can specify it as keys, without the dots (e.g., "cs colorado edu"). The first components of host names (e.g., "brazil" in "brazil.cs.colorado.edu") cannot be used as keys. Keys are case insensitive and may be specified in any order. Using more than one key implies the logical AND of the keys. Because of this, specifying too many keys may cause searches to fail. If this happens, try specifying fewer keys:

```
boulder
```

If you specify keys that match a large number of domains, Netfind will list some of the matching domains and ask you to form a more specific query. Note that you can use any of the words in the organization strings (in addition to the domain components) in forming such queries.

When Netfind runs, it displays a trace of the parallel search progress, less along with the results of the searches. Since output can scroll by quickly, you might want to run it in a window system, or pipe the output through tee(1):

```
<this server name> -l netfind |& tee log
```

A number of options exist for the client version of Netfind, which cannot be invoked via the telnet/rlogin server interface. If you would like to install Netfind locally (which will allow you to run it as a client without the telnet/rlogin interface), you can get it by anonymous FTP from ftp.cs.colorado.edu, in pub/cs/distribs/netfind. More complete docs are also available in that package.



related topic: [InterNIC Directory](#)

Big Sky Telegraph

telnet BIGSKY.BIGSKY.DILLON.MT.US

or

telnet 192.231.192.1

login: **bbs**

TELEGRAPH'S BBS MAIN MENU

(B)eginner's Bulletins
(M)essages...Conferences and Public Postings
(F)iles...Areas for upload and download
(A)ccess to Additional Services
(I)nterest Groups-Subscribers Only
(Z)ipmail...Read ONLY YOUR messages from ALL conferences
(?)...Help Menu and Advanced Commands
(G)oodbye...Exit this system

Baseball Scores

finger jtchern@sandstorm.berkeley.edu

Schedules:

telnet culine.colorado.edu 862

or

telnet 128.138.129.83 862

type help for help

press RETURN for today's game

Weather Underground

telnet wind.atmos.uah.edu 3000

or

telnet 146.229.8.2 3000

At which host? prompt, enter: um-weather

sample menu:

WEATHER UNDERGROUND MAIN MENU

- 1) Forecast for a U.S. city
- 2) National Weather Summary
- 3) Current weather observations
- 4) Ski conditions
- 5) Long-range forecasts
- 6) Latest earthquake report
- 7) Severe weather
- 8) Hurricane advisories
- 9) Canadian forecasts
- X) Exit program
- C) Change scrolling to screen

White House publications

Various sites are archiving the press releases distributed . What follows is an incomplete list of some of the sites containing the documents that have been released to date. Site / Directory

1. SUNSITE.UNC.EDU /HOME3/WAIS/WHITE-HOUSE-PAPERS
2. FTP.CCO.CALTECH.EDU /PUB/BJMCCALL
3. FTP.MARISTB.MARIST.EDU
4. CPSR.ORG /CPSR/CLINTON
5. FedWorld BBS 703-321-8020 8-N-1

American Mathematical Society's e-MATH

telnet 130.44.1.100

login: **e-math**

Password: **e-math**

Terminal = (vt100) vt100

(sample screen)

e-MATH SERVICES

- (0) EXIT
- (1) DIRECTORY INFORMATION (CML)
- (2) PROFESSIONAL OPPORTUNITIES
- (3) SOFTWARE
- (4) DOCUMENT DELIVERY
- (5) MATH REVIEWS CLASSIFICATION SCHEME
- (6) MATH REVIEWS SUBMISSION
- (7) WELCOME MESSAGE
- (8) SUGGESTION BOX
- (9) MATH REVIEWS AUTHOR LOOKUP
- (10) AMS MEETINGS
- (11) BULLETIN OF THE AMS
- (12) DIRECTORY OF LISTS
- (13) HELP

American Philosophical Association

telnet atl.calstate.edu

or

telnet 130.150.102.33

login: apa

California State University Advanced Technology Laboratory

Bulletin Board System

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California State University

Office of the Chancellor

All rights reserved

This system was made possible by a grant from AT&T.

American Philosophical Association: The Electronic Agora

- (1) Purpose
- (2) News: To and from the National Office
- (3) Philosophical Societies
- (4) Grants, Fellowships, and Academic Positions
- (5) Philosophical Calendar
- (6) E-mail Addresses of the Membership
- (7) Directories and Computer Resources
- (8) Committee on Computer Use in Philosophy
- (9) News from the Divisions

ASK: German Universities' Online Information

telnet sun.nsf.ac.uk

login: **janet**

hostname: **uk.ac.niss**

Menu options:

- A :) NISSBB - The NISS Bulletin Board
- B :) NISSPAC - The NISS Public Access Collections
- E :) Information Services in Europe
- H :) Help Information
- Y :) Netcomm Information
- X,Q :) Logoff the Gateway

Select option E above and you'll receive:

- A :) ASK: German Universities' Online Information Services
- D :) * DIMDI: German Biosciences Online Services
- S :) * STN: Scientific and Technical Information Network
- H :) Help Information

Any other key will return you to the main menu

* These services require you to supply a username and password. If you wish to register, select option H for more information.

ASSET

telnet SOURCE.ASSET.COM

or

telnet 192.131.125.10

login: **starsbbs**

Asset Source for Software Engineering Technology, ASSET, is a United States Department of Defense project to promote the reuse of computer software and software-related products. ASSET, being developed by IBM and its subcontractor, SAIC, is organized under the Defense Advanced Research Projects Agency's (DARPA's) Software Technology for Adaptable, Reliable Systems (STARS) program which was chartered for the purpose of achieving dramatic improvements in software productivity while continuing to make incremental improvements in quality and reliability. ASSET strives to be the national clearinghouse for software reuse sources and information.

CHAT

telnet DEBRA.DOC.DA
or
telnet 192.16.212.15

login: **chat**

Welcome to the CHAT natural language information system. CHAT is an information retrieval technology developed by Communications Canada. Please note that your interactions with CHAT are being recorded. This data will be used to evaluate the performance of CHAT, and fine-tune the information files. You will have a chance to leave comments at the end of your session.

For information about CHAT, download the file /pub/chat/info.page from debra.doc.ca using ftp (user name "anonymous"), or contact Andrew Patrick: (613) 990-4675, andrew@debra.doc.ca (Internet, BITNET, UUCP). There are information files available on the following topics:

- AIDS (Acquired Immune Deficiency Syndrome)
- the UNIX C Shell (csh)
- the Canadian Department of Communications (DOC)

Cleveland Free Net

use any one of the following addresses:

telnet freenet-in-a.cwru.edu

telnet freenet-in-b.cwru.edu

telnet freenet-in-c.cwru.edu

129.22.8.32

129.22.8.51

Modem: (216) 368-3888 (9600 v.32)

CLEVELAND FREE-NET DIRECTORY

- 1 The Administration Building
- 2 The Post Office
- 3 Public Square
- 4 The Courthouse & Government Center
- 5 The Arts Building
- 6 Science and Technology Center
- 7 The Medical Arts Building
- 8 The Schoolhouse
- 9 The Community Center & Recreation Area
- 10 The Business and Industrial Park
- 11 The Library
- 12 University Circle
- 13 The Teleport
- 14 The Communications Center
- 15 NPTN/USA TODAY HEADLINE NEWS

h=Help, x=Exit Free-Net, "go help"=extended help

Constitutional Documents (USA)

Available on the [Cleveland Freenet](#)

PRE-CONSTITUTION DOCUMENTS

- 1 - The Magna Carta
- 2 - The Constitution of the Iroquois Nations
- 3 - The Mayflower Compact
- 4 - The Fundamantal Orders of 1639
- 5 - First Thanksgiving Proclamation
- 6 - The Charlotte Town Resolves
- 7 - Declaration of the Causes... of Taking up Arms
- 8 - The Declaration of Independence
- 9 - The Virginia Declaration of Rights
- 10 - The Articles of Confederation
- 11 - Declaration and Resolves of the 1st Cont. Congress
- 12 - The Paris Peace Treaty
- 13 - The Annapolis Convention

POST-CONSTITUTION DOCUMENTS

- 1 - The Northwest Ordinance
- 2 - French Declaration of Rights
- 3 - The Proclamation of Neutrality
- 4 - The Treaty of Greenville
- 5 - Washington's Farewell Address
- 6 - Jefferson's First Inaugural Address
- 7 - The Monroe Doctrine
- 8 - The Emancipation Proclamation
- 9 - The Gettysburg Address
- 10 - Lincoln's Second Inaugural Address
- 11 - German Surrender Documents
- 12 - Japanese Surrender Documents
- 13 - M.L. King's: "I have a dream" Speech

THE CONSTITUTION

- 1 - The Constitutional Transmittal Letter
- 2 - The Constitution of the United States
- 3 - The Bill of Rights
- 4 - 1971 All Amendments

Cyberspace

telnet 192.153.125.1

login: **guest**

The Cyberspace Station is a Public Access Unix host with full Internet services. The Cyberspace Station provides full Unix user account access for ftp, telnet and Usenet news.

Purpose of The Cyberspace Station

The purpose of The Cyberspace Station is to advance research and education in general by assisting in the interchange of information among research, educational and commercial users, by means of high speed data communications and related telecommunications techniques.

Questions? info@cyberspstn.net.

Dartmouth Dante Project

telnet ELEAZAR.DARTMOUTH.EDU.

At the login prompt, enter ddpdemo for the demo account (individual/institutional accounts are available).

When prompted for terminal type, enter vt100.

Exit? type Q followed by two RETURNS.

Database contains 600+ years of commentary on Dante's Divine Comedy.

ERIC

telnet acsnet.syr.edu
or
telnet 128.230.1.21

login with suvm
ENTER TERMINAL TYPE: vt100
At USERID ==> suinfo
Type suinfo once more

Welcome to SUINFO! You will now be able to perform searches on all publicly available databases currently carried by PRISM. Before proceeding, the following may be noted:

This account may be used for PRISM searches only.

Certain databases cannot be searched because of license restrictions. You may search these databases by logging into SUVM the regular way.

PRINTing, SENDing to a userid or the WRITEing to a computer file of your search result(s) has been disabled.

You must type LOGOFF to EXIT PRISM

National Library of Medicine

telnet etnet.nlm.nih.gov

or

telnet 130.14.1.27

login: etnet

The current list of conferences on E.T.Net is:

- * general - discussion on computers in health sciences education
- * cai - computer assisted instruction in all forms
- * avline - a subset of the NLM's AVLINE database
- * hardware - computers, peripherals, etc.
- * shareware - a place to exchange health sciences shareware
- * users_guide - an online tutorial for new users of ETNet
- * digital_images - computing in radiology
- * archive - online archive of ETNet Volume 1
- * nuicare - research in nursing care

All new users are urged to read the 'users_guide' conference once.

If confused at any time, type 'HELP'

To end your session and logoff, type 'BYE'

GeneBank

telnet genbank.bio.net
or
telnet 134.172.1.160

login: genbank
Password: 4NIGMS

Press Return to select vt100, or enter the appropriate terminal

TERM = (vt100) vt100

(sample screen)

Welcome to GenBank

IRX: Information Retrieval Experimental Workbench

Version 2.5.5
June 14, 1988

Developed by Lister Hill National Center for Biomedical Communications of the NLM

Quick Guide to Using New IRX (NIRX)
Using IRX is a simple, three-step procedure -

- Enter a question in plain English.
- Receive a list of documents.
- Select documents from the list for reading or printing.

IRX is designed to be a self-prompting system with menu options displayed at each stage of the retrieval process. Users are encouraged to learn the system by using it and relying on the Help information that is associated with each menu.

What Is IRX?

IRX is an information retrieval system that attempts to find the set of documents that best matches a user's question. The matching is done probabilistically and therefore the set of retrieved documents is not guaranteed to answer precisely the user's question, but is likely to contain relevant information. The retrieved documents are ordered according to their expected relevance and so a user typically needs to review only a few documents even when the retrieval set is large.

Entering A Question

IRX allows a question to be entered in plain English. The system will ignore common words (and, the, for, etc.) and attempt to match the remaining words to words within a document. Although effective results can be obtained by entering free-text questions, there are occasions where features of a special search language might be desirable. Information on the use of such features as Boolean operators, truncation, and field restriction is available within the Question menu. In order to find out if a particular term is in the database, the V (Vocabulary) command can be used to display the term and alphabetically-related terms and their frequencies.

Selecting Documents

If IRX finds documents which match one or more terms in the question, a list of the matching documents

is presented to the user in order of predicted relevance. The list consists of the title of the document and a calculated relevance weight. To choose a document, an arrow cursor is moved up or down in the left margin to align with a document title. That title is then considered the 'current document' and it may be printed or read online.

Reading Documents

Once a particular document has been selected for reading, the title and first 10-15 lines are displayed on the screen. Commands are available for moving forward and backward in the document, skipping to specific fields, or going directly to the lines containing the terms which match terms in the question. Matched terms are highlighted. At any point during document selection or reading, the user may return to the question menu to formulate another request. The cycle of question - retrieval - document selection continues until a request to Exit is made and confirmed.

General Accounting Office Documents

Available on the [Cleveland Freenet](#)

GAO REPORTS

The following U.S. General Accounting Office (GAO) reports are available over the Internet as part of a test to determine whether there is sufficient interest within this community to warrant making all GAO reports available over the Internet.

Geographic Name Server

telnet 141.212.99.9 3000

Direct questions or comments to Tom Libert, libert@eecs.umich.edu,

Hewlett-Packard Calculator Bulletin Board

telnet hpcvbbs.cv.hp.com

or

telnet 15.255.72.16

login: new

The HP Calculator Bulletin Board is a free service to allow for the exchange of software and information between HP calculator users, software developers and distributors.

Unix Hytelnet

telnet herald.usask.ca
or
telnet 128.233.3.1

login: hytelnet

explanation

This is a general hypertext browser, packaged with Peter Scott's database of Internet-accessible telnet sites. Hytelnet lists libraries, Campus-Wide Information Systems, Freenets and more. This version was written for Unix, but should work on any system with a reasonable Curses implementation.

Peter's version uses HYPERREZ (an IBM PC hypertext browser). This program uses the same file format as HYPERREZ, so it should be possible to plug-and-play other databases as well.

The database consists of many more-or-less plain text files, all in a single directory. Any text in angle brackets is a link. Selecting it moves you to the named file. Filenames are mapped to lower case.

IDS Data Forum

telnet 155.212.1.2

(sample screen)

IDSVAX VAX/VMS telnet Service

Welcome to the IDS DataForum!

If you would like an account on the system, and are a new user, enter GUEST as a Username.

If you are experiencing problems with your account and would like assistance, enter GRIPE as a Username.

Welcome to the IDS DataForum, "The Mother Of All Online Information Systems" (C) 1990 IntelCom Data Systems.

7 Dialin Lines (aka Nodes) for your "No Busy Signal" dialing pleasure. 24 Hours a Day, 7 Days a Week.
300-19K bps Supported (V.32, USR/HST, v.42)

IDS DataForum, (C) 1990 IntelCom Data Systems (Version 2.17)

IDS DataForum Main Menu

Choose one:

- 1 ... (B) News/Information/Weather
- 2 ... (E) Electronic Mail
- 3 ... (U) User Information/Configuration
- 4 ... (G) Games & Entertainment
- 5 ... (H) Home Information/Utilities
- 6 ... (S) SIGS/Message Bases and File Areas
- 7 ... (DB) Information DataBase
- 8 ... (CM) Communications Menu
- 9 ... (QM) QMail Offline Reader
- (CARD) ... Online Credit Card Registration

- 80 ... (HELP) Help
- 90 ... (OFF) Log Off

Knowbot Information Service

telnet 132.151.1.1 185

The "Knowbot Information Service" (KIS) is a "white pages" service that allows you to query one service and have it search several other address databases of various sorts for addresses matching your query.

DESCRIPTION

netaddress is an information service that provides a uniform user interface to heterogeneous remote information services. By submitting a single query to netaddress a user can search a set of remote information services and see the results of the search in a uniform format.

EXAMPLES In the following examples, the netaddress prompt.

```
% netaddress droms
  Searches the default list of directory servers for user
```

```
% netaddress
> service profile@nri.reston.va.us
> droms
```

Searches the profile service at NRI.RESTON.VA.US for user

```
% netaddress
> service profile@nri.reston.va.us
> query droms
```

Is identical to the previous example.

```
% netaddress -s profile@nri.reston.va.us droms
```

Is identical to the previous example.

```
% netaddress 'service profile@nri.reston.va.us' droms
```

Is identical to the previous two examples.

```
% netaddress 'alison brown'
```

Searches the default list for a user with first name



[more on finding email addresses](#)

Libsearch

telnet PL122A.EECS.LEHIGH.EDU
or
telnet 128.180.5.52

login: tb06
Password:jia.fu

PL122a% cd /scratch/china.primitive/expect/test/thesis

--- Creators

Terrence Brannon (brannon@jove.cs.caltech.edu)
Janne Himanka (shem@phoenix.oulu.fi)

--- Description

Libsearch does all of the following

- o Automatic connection to library databases
- o Automatic translation from Libsearch's generic query language to the syntax of the particular library database
- o Automatic Logout

It beautifies and exploits the fact that everything in Tcl is a string.

--- To Try it Out

telnet to pl122a.eecs.lehigh.edu
login as tb06 with password jia.fu
cd to /scratch/china.primitive/expect/test/thesis

from the shell type

libsearch NAME KEY SPECIFIC

where NAME is (quotes required):

"Aberdeen University"
"Aberystwth University"
"Bar-Ilan University"
"Ben-Gurion University"
"Haifa University"
"Hebrew University"
"Lehigh University"
"Technion"
"Tel Aviv University"
"Weizmann Institute of Science"
"Arizona State University"
"Aston University"
"Athabasca University"
"Helsinki University Libraries"
"Finnish National Bibliography"
"Karolinska Institutet"

Instead of entering the entire name, you can enter a regular expression, BUT DO NOT FORGET THE DOT. (e.g., if you want to enter "Aberdeen University" you can enter "Aberdeen.*" but NOT "Aber*")

where KEY is (no quotes required)

author
title
subject

In some cases you may be able to enter other keys such as issn, isbn but for this demo, all extras like that are ignored.

where SPECIFIC is (play it safe and use quotes)

whatever you are looking for

Example: Search Athabasca University for books by the author John Steinbeck

libsearch "Athabasca University " author "Steinbeck, John"
or
libsearch "Athaba.*" author "Steinbeck, John"

Lunar & Planetary Institute

telnet LPI.JSC.NASA.GOV

Username: LPI

The Lunar & Planetary Institute has now made available to the Internet community an Index to Planetary Maps and Satellites compiled by J.L. Inge and R.M. Batson of the USGS. This index is complete for both domestic and foreign maps. This is not to be confused with their catalog of maps.

Select Information and Research Services from the main menu, then select Special Indexes from the next menu.

Meeman Archive of Environmental Journalism

telnet hermes.merit.edu

or

telnet 35.1.48.149

Which Host? mirlyn

Hit return for vt100 emulation

At the Database Selection menu type MEEM

The Meeman Archive is a database covering environmental journalism. The Archive has over 1,000 entries and grows yearly. Established by the Scripps-Howard News Service in 1982, MEEM contains articles from 1980 to the present. In addition to the articles indexed in MEEM, the Meeman Archive contains clippings from the Ann Arbor News, several environmental periodicals, and the National Park Service's publication, "Feedback".

The Meeman Archive is located in UM's School of Natural Resources, 2036 Dana Building. All articles are located there and can be copied for five cents per page. Please allow 24 hours for copying. Archive staff can be contacted by calling (313) 763-5327 or by visiting the archive.

National Space Science Data Center (NODIS)

telnet nssdca.gsfc.nasa.gov
or
telnet 128.183.10.4

At username type NSSDC

Overview

The NSSDC Online Data and Information Service (NODIS) is a menu driven system which provides a single entry point for accessing many of the services supported by the National Space Science Data Center (NSSDC). Because this utility is menu driven, the services provided by NODIS are available to all users regardless of their knowledge of the VAX/VMS environment. The NODIS utility is invoked by issuing the following commands from a span network node.

\$ SET HOST NSSDC
or
\$ SET HOST NSSDCA

Username: NSSDC (soon to be changed to NODIS)
Password: (none required)

The NODIS welcome banner is then displayed and the user is prompted to enter his/her name, after which the NODIS main menu appears. The menu instructions are self-explanatory.

Please send any comments or suggestions about this utility to

NSSDCA::NSSDCMGR

by DECmail if you are on SPAN, or contact

Nathan James
Code 633
NASA/GSFC
Greenbelt, Md. 20771
(301)286-9789

NASA Spacelink

telnet 192.149.89.61

W E L C O M E

to

NASA SPACELINK

A Space-Related Informational Database

Provided by the NASA Educational Affairs Division

Operated by the Marshall Space Flight Center

On a Data General ECLIPSE MV7800 Minicomputer

NASA SPACELINK BACKGROUND

NASA Spacelink runs on a Data General ECLIPSE MV-7800 minicomputer at the NASA George C. Marshall Space Flight Center in Huntsville, Alabama. NASA Spacelink software was developed and donated to NASA by the Data General Corporation. The system has a main memory of 14 megabytes (14 million characters), and disk storage space for 708 megabytes. It runs at 300, 1200 or 2400 bps. Data word format is 8 data bits, no parity, and 1 stop bit. The system was made public in February, 1988.

Initial support for NASA Spacelink was provided by the Educational Affairs Division at NASA Headquarters. The NASA Spacelink data base is maintained by the Public Services and Education Branch of the Marshall Space Flight Center Public Affairs Office. Operational support is provided by the Information Systems Office at the Marshall Center. Information on NASA scientific projects and educational programs is provided to NASA Spacelink by education specialists at NASA Headquarters and the NASA field centers.

While NASA understands that people from a wide variety of backgrounds will use NASA Spacelink, the system is specifically designed for teachers. Unlike bulletin board systems, NASA Spacelink does not provide for interaction between callers. However, it allows teachers and other callers to leave questions and comments for NASA.

telnet freenet.carleton.ca

NEWTON: Educational Electronic BBS

telnet newton.dep.anl.gov

or

telnet 130.202.92.50

login: cocotext

Sponsor: Argonne National Laboratory

This bbs is dedicated for educational use. It is open to all teachers and students of any age. Foul or X-Rated material will not be tolerated. Any abuse of this will result in the violator(s) dismissal from this bbs.

Project Gutenberg

[ftp mrcnext.cso.uiuc.edu](ftp://mrcnext.cso.uiuc.edu)
or
[ftp 128.174.201.12](ftp://128.174.201.12)

This excerpt from a recent newsletter describes a few files available from this system.

Project Gutenberg Newsletter :: May 10, 1992

Our Goal, To Give Away One Trillion Etexts By December 31, 2001

We should be at about 2.2 billion with release of the following not counting pre-1991 releases: which are still in the process of being dug out of our archives, new headers attached, and new placement in new directories on our files server.

The current releases are on mrcnext: `cd etext/etext92`

May 10, 1992 in honor of Mothers' Day, we will post "Herland." This book is a "must read" for fans of Dances With Wolves, and feminist literature. . . none of backlash of modern feminism or other -isms. We would certainly appreciate it if someone got a copy to Gloria Steinem, Germaine Greer, and Betty Friedan.

May 6, 1992, in honor of Freud's Birthday, the Oedipus Trilogy.

April 19, 1992 in honor of Easter, biblea10.txt or biblea10.zip (This is a new etext of the King James Version, much proofread)

April 8, 1992, Far From The Madding Crowd, crowd13.txt or .zip.

Nebraska has been included in the US Census (uscen901.xxx).

Also!! Please note new directory structures. . . you may have to look around a little at mrcnext and quake.think.com. We are working on finding all the old readme type files and updating Current instructions for mrcnext are below.

You may subscribe to the paper edition of this newsletter: mail stamps and mailing labels, and/or donations to:

David Turner, O.S.B.
Illinois Benedictine
5700 College Road
Lisle, IL 60532-0900

(Books from earlier years will be available in 1992) (but not yet: to be announced, don't ask yet!!!)

1971 Declaration-Independence	(whenxxx.xxx)
1972 Bill of Rights	(billxxx.xxx)
1973 U.S. Constitution	(constxxx.xxx)
1974-1982 The Bible	(biblexxx.xxx)
1983-1990 Complete Shakespeare	(shakesxx.xxx)

** The newest Project Gutenberg FTP site is the Cleveland Freenet **

We need some Freenet users log in and test the system, hopefully the sessions can be saved as a file

and forwarded to us so they can be a great assistance in the creation of help and readme files.

You can ftp and get at least some files at ftp.cwru.edu (anonymous). You can also call via modem at 1-216-368-3888 (I have not tried it).

Here are the latest updates for FTP downloading of Project Gutenberg etexts and others. These updates will be posted on several listserv locations once a month. We hope we have answered most questions, as new files, new locations, and new users arrive each month. We can't answer queries about nameservers or how your local system runs FTP!!

Please try to help people get text files as we are not well prepared to deal with sending items through the mail.

Please do not access the mrcnext machine from 10:00 AM to 6:00 PM Central Standard Time (Daylight in summer) as this is peak usage, & mrcnext is always the first machine to get the newest editions. Please GET the INDEX, README GUT*.* and NEW.GUT files first.

Current releases are now listed in each newsletter.
Others texts are also available at the various sites.

(if you are not an internet site, you will either have to find one to use or find an FTP emulator program to use at your sites and/or I will have a packet of information sent to you directly as email. (I leave this choice for last because all email is backed up to my disk, so sending out copies to many people creates many backups, but don't hesitate to ask and remind us that you need email sent rather than instructions for FTP))

For further information or to retrieve electronic books:

FTP directly to the Project Gutenberg archives:

ftp mrcnext.cso.uiuc.edu
or
ftp 128.174.201.12

login: anonymous

password: name@login (your email address)

cd etext92 (for 1992 releases) or cd /etext/etext92
cd etext/etext91 (for 1991 releases)
cd etext/articles (for Project Gutenberg articles and newsletters)

dir (to see files)

get or mget (to get files. . .set bin for zip files)

GET INDEX for a list of books
and
GET NEW GUT for general information
and
MGET GUT* for newsletters.

MORE DETAILS

ls -a or dir (This will give you a directory listing, case sensitive) get filename.filetype
(examples . . .)


```
dir      (to see current editions available) (RETURN to see next page)
get alice29.txt
get lglass16.txt
get snark12.txt
quit
```

You may have to get local instructions for linking to FTP, and/or setting memory for FTP. These files also available via disk on request in several formats. Some Bitnet sites have FTP emulators, check with your local guru.

The current FTP sites are: mrcnext.cso.uiuc.edu or (128.174.201.12) cd /etext (details above)
(Please do NOT use the mrcnext between 10AM and 6PM weekdays)

Our newest FTP site is: (and therefore we are in need of testing
of advice for our instruction set)

The Oregon State server. Please send us records of your sessions with them, along with questions you need answered. We will compile sets of instructions similar to those you see below for the other sites.

Named the Almanac information server, located at the Extension Service at Oregon State University, allows text retrieval both through ftp and email (for Bitnet users). Works from To retrieve a file via ftp:

```
ftp oes.orst.edu      (128.193.124.2)
Log in as
cd /pub/almanac/guten
ls
bin
get filename
bye                    (when done)
```

To retrieve a file via e-mail, first send the following line by itself to almanac@oes.orst.edu

```
send gutenber catalog
```

This will instruct you how to send further requests, and will list the available files.

This information provided by Chris Hansen
Internet: hansenc@OES.ORST.EDU
UUCP: uunet!orstext!gouda!hansenc

Space Shuttle Earth Observations Project's Photographic Data Base

telnet SSEOP.JSC.NASA.GOV

or

telnet 146.154.11.34

Username: photos

Password: photos

(opening menu)

MAIN MENU

GENERAL

? - Help for ALL options

BUL - Bulletin Board

EX - EXIT

QUERY

LL - Latitude/Longitude Range

LLM - Latitude/Longitude Range + Mission

GEO - Geographical Location

GLL - Geographical Location + Latitude/Longitude Range

GMS - Geographical Location + Mission

MRF - Mission/Roll/Frame

DOWNLOAD

ALL - Entire Database

MSN - Selected Mission

IMG - Images

SPECIAL REPORTS

GS - Geographical Location Sort (Entire Database)

telnet supernet.ans.net
or
telnet 147.225.1.51

Naval Observatory

telnet tycho.usno.navy.mil
or
telnet 192.5.41.239

login: ads

Bulletin Board Systems

[BBS systems via modem](#)

[BBS systems on the Internet](#)

BBS Systems via modem

The following brief listing of BBS systems focuses on those that serve an information-related function. The list has been sub-divided into several categories:

Agriculture

Business/Economics

Health/Nutrition Legal

Science

Miscellaneous

BBS systems (Agriculture)

301-344-8510 ALF, Nat'l Agriculture Library

314-882-8289 AgEBB, Columbus MO. Agricultural information

402-472-6615 HPRCC, Weather Data, Lincoln NE. Regional weather

BBS systems (Business/Economics)

202-377-3870	Dept. of Commerce
202-377-0433	Dept. of Commerce
202-523-4784	Dept of Labor
202-357-8997	Fed Energy Regulatory Commission
202-377-2870	The Economic BBS (US Commerce Dept)
202 272-1514	COE Manpower BBS. Army Corps of Engineers
202 697-6109	Export License Status Advisor, Dept of Defense
202 697-3632	Export License Status Advisor, Dept of Defense
202 786-3640	Budget/Finance Board
202 537-7475	Fannie Mae BBS
202 477-8500	World Bank
202 376-2184	Info Technology Center BBS. Veterans Admin
202 737-7264	Federal Deposit Insurance Corporation
202 566-4602	Export-Import Bank of the US
800 222-4922	Export-Import Bank
202-626-9853	US Dept of Education
206-924-4102	Labor Mkt. Econ. Anal., Seattle area info
301 948-5718	MEIE National Bureau of Standards
301 948-2048	DMIE National Bureau of Standards
301-763-4576	Census Microcomputer Information Center
301-948-5718	Institute for Computer Sciences and Technology
301 353-5059	Megawatts BBS. Department of Energy
301-763-5225	Federal-State Cooperative for Population Estimates
202-377-1423	Planning and Budget (Washington DC)

BBS systems (Health/Nutrition)

301-436-6346 National Center for Health Statistics
301-436-5078 Nutrient Data Bank, Hyattsville MD. USDA
402-280-3023 National Drug Info. Omaha, Nebraska
404-377-9563 AIDSQUEST Online, Atlanta. AIDS/cancer info
800-624-2723 NBIAP Biotechnology, VA. Genetic engineering

BBS systems (Legal)

415-556-3075 9th Circuit Court, San Francisco CA
513-684-2842 6th Circuit Court, Cincinnati, OH
202-786-3640 Dept. of Justice, INS
718-463-1091 Immigration Law USA, NY
202-325-0748 Judge Advocate General

BBS systems (Science)

202-586-8658 Energy Info Admin, DC. Energy statistics
202-634-1764 Science Resources DC. NSF
301-763-8071 Climate Analysis Center, Nat'l Weather Service
301-454-8700 Nat'l Weather Service, U.S. Dept of Commerce
314-882-3874 SCI-FIND, Columbia, Missouri
205-895-0028 NASA Spacelink, Huntsville AL. NASA news, info
303-494-8446 Space Network, Boulder CO
713-483-5817 NASA JSC, Houston TX. Shuttle schedules
800-358-2663 USGS Earthquake QED, Golden CO
902-566-7390 Energy Centre, Canada. Govt energy info
202-653-1079 Naval Observatory (Washington, Dwntrn)
202-646-6197 NASA
202-634-1764 National Science Foundation

BBS systems (Miscellaneous)

202-707-4887 ALIX. Federal Library & Info Center FEDLINK
202-366-3764 FEBBS, DC. Federal highway information
202 426-2961 Federal Highway Administration BBS
202-529-0140 USA-GDR Databank, DC. East European events
202-775-1237 IDI Job Board. Job opening in DC area
202-475-1973 NANci. U.S. Navy, Naval Aviation News
202 557-3769 Pesticide Programs BBS. EPA
301 725-1072 Public Access Link FCC
202 275-1050 Information Technology Center, GAO
202 535-7661 Information Resources Services, GSA
202 453-9008 Information Technology Center, NASA
202 287-9656 Fed Library Comm BBS, Library of Congress.
216-368-3888 Cleveland FreeNet
612-624-4318 Univ of Minnesota Library BBS
703-243-9696 NewsUSA, VA. Consumer news (7-E-1)

BBS Systems (via the internet)

Advanced Technology Information Network

AfterFive BBS

Bulletin Board for Libraries (BUBL) (Glasgow University)

QM-Net. Public Access UNIX System

National Education BBS

National Information and Technology Administration

NYX (Spirit of the Night)

Skynet BBS

United States Military Academy BBS

University of North Carolina BBS

University of Oulu, Finland

US Military Academy BBS

telnet ranger.usma.edu

or

telnet 129.29.64.24

login:

Advanced Technology Information Network

telnet CATICSUF.CATI.CSUFRESNO.EDU

or

telnet 129.8.100.15

Login: public

**** WELCOME TO THE ATI-NET ****

You have reached the Advanced Technology Information Network. The ATI-Net is a full service information source designed to assist several markets within California. Individual systems provide information for the agri- cultural market, international exporting (ATLS system), and the educational community (CSUPER-Net).

ADVANCED TECHNOLOGY INFORMATION NETWORK (ATI-Net)

- (a) Agricultural Information (including ATIS)
- (b) CSUPER-Net
- (c) Automated Trade Library Service (ATLS)
- (d) ATI-Net Access Information
- (0) Quit and log off
- (8) search, (9) help:

CSUPER-NET Main Menu

- (a) University Admissions
- (b) Degree Programs
- (c) Educational Costs
- (d) Financial Aid Information
- (e) Student Programs and Services
- (f) Campus Calendars
- (g) Campus Profiles
- (h) CSU Phone Directory
- (i) CSU List of Published Resources
- (j) CSU News Bulletins
- (k) E-Mail to CSUPER-Net Managers
- (l) CSUPER-Net System Information
- (m) Individual Campus Components
- (1) return to previous menu

After Five BBS

telnet 128.160.2.249 9999

To connect to your existing character, type "connect name password"
To create a new character, type "create name password"

Our hours are from 5 pm until 8 am CST weekdays, and 24 hours on weekends.

AfterFive BBS Help

COMMANDS

F Read forward
Fortune Your Fortune
L/P Read last five/ten
C Chat with other users (Bourbon St.)
N Read new
W See who is logged on
O Read old, backwards
QUIT Terminate (Must be in all CAPS)

R Read reverse
TIME See the time and date
Read last X messages
@password old = new Change your password
news Read the news
@lastlog (name) When was name last logged on
help This screen
config Toggle message scrolling
info Fetch information files
@whereis Locate a user in the DataBase

BUBL (Bulletin Board For Libraries)

Glasgow Univ.

telnet SUN.NSF.AC.UK

or

telnet 128.86.8.7

login: janet

Hostname: uk.ac.glasgow.bubl

Terminal type: vt100

A--All about BUBL

C--New titles in LIS

D--Directories

E--Current Contents

F--Mailing lists

G--NISS

H--Users' board

J--Glossary

L--British Library R &D News

N--Latest changes to BUBL

O--CONCISE(Pan-European Inf.Serv.)

S--Electronic Journals & Texts

V--Library Systems & Software

Z--CTILIS

National Education BBS

telnet NEBBS.NERSC.GOV

or

telnet 128.55.128.246

login: bbs

Enter userid, 'new' for new user.

HELP SCREEN

(I)nfo	Get Version and Copyright Information
(B)oards	List boards on system
(S)elect	Select current board
(R)ead	Enter multifunction Read Menu
(N)ew	Read all new messages
(V)isit	Make all messages current
(Z)ap	Zap boards from (N)ew search
(P)ost	Post a message on current board
(U)sers	List ALL users of this BBS
(T)alk	Enter Talk Menu
(M)ail	Enter Mail Menu
(F)iles	Enter File Transfer Menu
(X)yz	Misc. utilities (Change passwd, and term type)
(G)oodbye	Leave This BBS
(H)elp	Get this Help Screen

UNC-OIT BBS

telnet BBS.OIT.UNC.EDU

or

telnet 152.2.22.80

Login in with bbs

The University of North Carolina at Chapel Hill Office for Information Technology Bulletin Board System

UNC-OIT Bulletin Board System

1. Message System
2. File Access
3. Network News Access
4. Simple WAIS Client
5. UNC Campus INFO System
6. User Options
7. Bulletins and Additional Information
8. Goodbye
9. On-line Information Systems (LIBTEL)
- ?. Help

University of Oslo

telnet TOLSUN.OULU.FI
or
telnet 128.214.5.6

login: box

Main menu Commands

C - Administration menu
B - Bulletins
I - Show info about BBS
F - File areas, downloading
G - Goodbye
M - Enter conference menu
U - Userlist (long)
Write ? for full help

SkynetBBS

telnet HPX5.AID.NO
or
telnet 128.39.145.225

login: skynet

This system is run out of Grimstad, Norway. As of this writing, it has little more than a message system (1/26/93).

M-Net

telnet HERMES.MERIT.EDU

or

telnet 35.1.48.150

At Which Host?: enter um-m-net

MichNet login: newuser

Over 200 Conferences to talk about anything from Travel to Sex, Cooking to Driving, Flying to Jumping out of a perfectly good airplane, in an almost real-time arena. There is SH, KSH, CSH, BBS & MENU shells for every type of user. We have write/talk/xtalk/chat for those private writes and PARTY for those who like to talk to everyone at once (much like IRC with 5 different channels). Trust me, theres something for everyone!

The NICE thing here is that this "Public Access UNIX System" puts the "Public Access" back onto YOUR terminal! After running the "newuser" program at the login: prompt, you will be given a 100% ACTIVE account right then (not in a day or two, when we can verify you).

NYX

telnet NYX.CS.DU.EDU

or

telnet 130.253.192.68

login: new

Welcome to Nyx -- The Spirit of the Night

Sponsored by the Faculty, Students, and Friends of the University of Denver Department of Math and Computer Science

Major features include:

- 4+ Gb disk space, 16+ lines
- An extensive file download section
- The NetNews worldwide bulletin board
- Access to the Unix system itself
- "Internet FTP" access to 100s of Gb of downloads

WAIS (Wide-Area Information Services)

WAIS (pronounced 'ways') is a networked information retrieval system. WAIS currently uses TCP/IP to connect client applications to information servers. Client applications are able to retrieve text or multimedia documents stored on the servers. Client applications request documents using keywords. Servers search a full text index for the documents and return a list of documents containing the keyword. The client may then request the server to send a copy of any of the documents found.

Although the name "Wide Area" implies the use of the large networks such as the Internet to connect clients to servers distributed around the network, WAIS can be used between a client and server on the same machine or a client and server on the same LAN.

WAIS uses the Z39.50 query protocol to communicate between clients and servers. WAIS does not, at this time, implement the full Z39.50-1992 specification. In particular, WAIS does not permit boolean searches but instead is restricted to relevance feedback.

There are a large number of servers running currently (over 400 databases). Topics range from recipes and movies to bibliographies, technical documents, and newsgroup archives.

WAIS was developed as a project of Thinking Machines, Apple Computer and Dow Jones. WAIS is a free product available with full source to the server, indexing software, and many clients.

Thinking Machines has announced that they will stop support for the publicly distributed WAIS as of WAIS-8-b5.1. Future support and development of WAIS has been taken over by CNIDR (Clearinghouse for Networked Information Discovery and Retrieval). Future CNIDR releases will be called FreeWAIS, to help reduce confusion. To obtain freeWAIS (unix) server software:

ftp to: [ftp.cnidr.org](ftp://ftp.cnidr.org)
path to file(s): [pub/NIDR.tools/freeWAIS-0.1.tar](ftp://pub/NIDR.tools/freeWAIS-0.1.tar)

To obtain an MS-DOS WAIS client:

ftp to: [sunsite.unc.edu](ftp://sunsite.unc.edu)
path to file(s): [pub/wais/clients/ms_dos/pcdist.zip](ftp://pub/wais/clients/ms_dos/pcdist.zip)

WAIS sites:

NNSC.NSF.NET
Think.com



related topic: [freewais](#)

FreeWAIS

Here is the text of a recent announcement on the availability and features of FreeWAIS:

CNIDR is pleased to announce the release of freeWAIS-0.1 (beta). freeWAIS-0.1 is a compilation of many features and additions never included in the original b5 release of WAIS.

freeWAIS-0.1 is designed to be a "backwards compatibility" module for freeWAIS-1.0, which will provide full Z39.50-92 support and is nearing completion.

We have tried to keep up with the most recent patches in the course of creating freeWAIS, but we may have missed a few. We will correct any problems as soon as we are made aware of them.

Expect to find a few (or more than a few) bugs in this release. We do.

Please send bug reports to:

freeWAIS@cnidr.org

We will release various incremental upgrades to fix bugs as we find/are made aware of them.

You may need to re-index current databases before using the freeWAIS server. Be certain that things work to your satisfaction before deleting old code.

Some features:

- Boolean searches (AND,OR,NOT)
- Stemming (optional - may be turned on/off at compile time)
- Better content in source structures - the top 20 or so words in a database are included in the .src file to improve location.
- Dual directory-of-servers registration - quake.think.com and cnidr.org to provide some redundancy.
- Literal and partial word searches
- Access control
- Thesaurus support for individual databases
- Better intermediate file merging
- Better document scoring

Plus others. Please see the RELEASE-NOTES file for credits and details.

You will note the absence of clean documentation. This will be remedied in freeWAIS-1.0.

We particularly want to thank Francois Schiettecatte for his hard work in bringing this first freeWAIS release together!

Future improvements:

- Z39.50-92 support with info-1 generic records and es-1 element sets
- Greatly reduced memory requirements (freeWAIS-0.1 still uses a lot)
- Removal of various search engine constraints
- Integration of Dynamic WAIS and Essence code
- automatic directory-of-server update agents
- URL/URN support
- generalized directory service support

Any volunteers?

Here is the official announcement:

freeWAIS 0.1 is now available via anonymous ftp:

```
ftp to ftp.cnidr.org
cd pub/NIDR.tools
file: freeWAIS-0.1.tar.z
```

Comments and bug fixes should be addressed to freewais@cnidr.org.

freeWAIS 0.1 is a beta release for testing purposes only. Bug fixes will be incorporated on a weekly basis until the version stabilizes.

Many enhancements and fixes to the current wais-8-b5 release have been incorporated into freeWAIS 0.1. freeWAIS 0.n is designed to be the drop-in backwards compatibility module for freeWAIS 1.0. freeWAIS 1.0, currently in development, will include support for Z39.50-92.

The current WAIS protocol extensions to Z39.50-88 are incompatible with Z39.50-92, but freeWAIS 0.1 will provide the necessary backwards compatibility so queries may be answered from either client set.

A summary of fixes and enhancements may be found in

<ftp://ftp.cnidr.org/pub/NIDR.tools/freeWAIS-0.1/RELEASE-NOTES>

If you are interested in discussing wais, freeWAIS, or Z39.50, three discussion lists exist for these purposes:

wais-talk@think.com - Z39.50-88 compliant versions
zip@cnidr.org - freeWAIS 1.0 (Z39.50-92 compliant versions)
z3950iw@nervm.bitnet - Z39.50 protocol

Send standard subscription requests (subscribe listname Firstname Lastname) to:

listname-request@site.domain

as in

zip-request@cnidr.org

Clearinghouse for Networked Information Discovery and Retrieval (CNIDR)
Center for Communications at MCNC
PO Box 12889, 3021 Cornwallis Road
Research Triangle Park, NC 27709-2889
E-mail: cnidr@cnidr.org Phone: 919-248-1499

Clearinghouse for Networked Information Discovery and Retrieval

telnet hub.nnsc.nsf.net
Username: wais

```
telnet quake.think.com  
or  
telnet 192.31.181.1  
login: wais  
terminal: vt100
```

Z39.50

Name of the national standard developed by the National Information Standards Organization (NISO) that defines an applications level protocol by which one computer can query another computer and transfer result records, using a canonical format. This protocol provides the framework for OPAC users to search remote catalogs on the Internet using the commands of their own local systems. Projects are now in development to provide Z39.50 support for catalogs on the Internet. SR (Search and Retrieval), ISO Draft International Standard 10162/10163 is the international version of Z39.50.

TN3270

A version of telnet providing IBM full-screen support

National Science Foundation

telnet master.stis.nsf.gov
or
telnet 128.150.195.40

login: **public**

STIS supports the following terminal types:

vt100
vt100nkp
vt100nes
sunkbd3
sunkbd4

Enter your terminal type, or ? for help (blank=vt100):

Science and Technology Information System
Type up to eight letters as your personal ID, and then Enter.

Network Information Center On-Line Aid System (NICOLAS)

telnet dftnic.gsfc.nasa.gov

or

telnet 128.183.10.3

Username: DFTNIC

This is the ADFTO's Network Information Center On-Line Aid System

THIS SYSTEM IS FOR NASA EMPLOYEES, CONTRACTORS AND AFFILIATED RESEARCHERS
ONLY

USA Today

Cleveland Free-Net

USA TODAY Headline News is brought to you by the hundreds of Cleveland Free-Net users who have joined the National Public Telecomputing Network (NPTN). As part of the NPTN membership plan, 15% of all full-member dues are rebated back to the user's home system to bring you features such as this. (For more information on NPTN membership type: go nptn at any arrow prompt.)

This feature is produced five days a week (Mon-Fri) by the USA TODAY: Gannett National Information Network. Each day the information is placed on a USA TODAY computer in Greensboro, North Carolina, downloaded, processed, and uploaded to the Cleveland Free-Net1 by NPTN.

You will find this service to be a little different than other online news services you may have experienced. It does NOT consist of full text articles. Rather it consists of headlines followed by one paragraph summaries. This design is quite intentional.

One of the things we have found over the years is that computer screens are a pretty bad way of reading high-volume full-text of ANYTHING. They simply do not allow you the flexibility of eye-scanning and cognitive movement that the print medium does. As a result, few people are willing to "Press Return to Continue" their way through a large file for very long.

What these files do is allow you to get a quick four or five screen summary of the news in over 18 different areas. Items of special interest--items that you WANT more information on--can be noted so that you can later obtain a newspaper (hopefully USA TODAY) or go to some other source for more details. We think you will find that, after reading this service, you come away with a pretty good feel for what's going on in the world. And THAT is our intent.

Finally, this news service is being viewed as an experiment. Both NPTN and USA TODAY would like to know what you think about it and how you think it could be improved to better meet your information needs. (Send your thoughts and ideas to aa583 - NPTN Cybercasting Services.)

It is also a part of a larger program by NPTN to develop the whole area of online news delivery. If you would like to be a part of that program, AND HAVE SUBSTANTIVE EXPERIENCE in either the print, radio, or television news media, please contact NPTN via e.mail at aa622.

Shakespeare's Plays and Sonnets

telnet lib.dartmouth.edu

or

telnet 129.170.16.11

terminal type:

Consists of the full text of thirty-three of Shakespeare's plays, taken from Arthur Bullen's Stratford Town Edition. The plays included are:

Macbeth	Twelfth Night
As You Like It	The Two Gentlemen of Verona
Othello	King Henry V
A Comedy of Errors	A Midsummer Night's Dream
King Lear	Julius Caesar
Antony and Cleopatra	King Henry IV (Part I)
King John	Timon of Athens
Measure for Measure	King Henry IV (Part II)
Cymbeline	Romeo and Juliet
Troilus and Cressida	Much Ado About Nothing
Pericles	Titus Andronicus
Love's Labour's Lost	The Taming of the Shrew
Hamlet	King Richard III
The Merchant of Venice	King Henry VI (Part III)

Webster's Dictionary

telnet decoy.uoregon.edu 2627

or

telnet 128.223.32.19 2627

NeXT Websterd 2.0 beta

Still under development - some commands described below haven't been implemented yet.

This daemon works in much the same way as the standard Webster daemon, plus it can access both the NeXT's on-line dictionary and thesaurus. Commands are in the same format as the old websterd, with the addition of an INDEX command.

Comments and suggestions to sahayman@iuvax.cs.indiana.edu .

CIA World Factbook

Available at the [Cleveland Freenet](#)

Type go nations at the Your Choice prompt

The World Factbook is produced annually by the Central Intelligence Agency for the use of United States Government officials, and the style, format, coverage, and content are designed to meet their specific requirements. Comments and queries are welcome and may be addressed to:

Central Intelligence Agency
Attn: Public Affairs
Washington, DC 20505
(703) 351-2053

There are 249 entities in the Factbook that may be categorized as follows:

NATIONS:

157 UN members (there are 159 members in the UN, but only 157 are included in The World Factbook because Byelorussia and Ukraine are constituent republics of the Soviet Union)

15 nations that are not members of the UN--Andorra, Federated States of Micronesia, Kiribati, Liechtenstein, Marshall Islands, Monaco, Namibia, Nauru, North Korea, San Marino, South Korea, Switzerland, Tonga, Tuvalu, Vatican City

OTHER:

1 Taiwan

DEPENDENT AREAS:

6 Australia--Ashmore and Cartier Islands, Christmas Island, Cocos (Keeling) Islands, Coral Sea Islands, Heard Island and McDonald Islands, Norfolk Island

2 Denmark--Faroe Islands, Greenland 16 France--Bassas da India, Clipperton Island, Europa Island, French Guiana, French Polynesia, French Southern and Antarctic Lands, Glorioso Islands, Guadeloupe, Juan de Nova Island, Martinique, Mayotte, New Caledonia, Reunion, St. Pierre and Miquelon, Tromelin Island, Wallis and Futuna

2 Netherlands--Aruba, Netherlands Antilles

3 New Zealand--Cook Islands, Niue, Tokelau

3 Norway--Bouvet Island, Jan Mayen, Svalbard

1 Portugal--Macau

16 United Kingdom--Anguilla, Bermuda, British Indian Ocean Territory, British Virgin Islands, Cayman Islands, Falkland Islands, Gibraltar, Guernsey, Hong Kong, Isle of Man, Jersey, Montserrat, Pitcairn Islands, St. Helena, South Georgia and the South Sandwich Islands, Turks and Caicos Islands

15 United States--American Samoa, Baker Island, Guam, Howland Island, Jarvis Island, Johnston Atoll, Kingman Reef, Midway Islands, Navassa Island, Northern Mariana Islands, Palmyra Atoll, Puerto Rico, Trust Territory of the Pacific Islands (Palau), Virgin Islands, Wake Island

MISCELLANEOUS:

7 Antarctica, Gaza Strip, Iraq-Saudi Arabia Neutral Zone, Paracel Islands, Spratly Islands, West Bank, Western Sahara

OTHER ENTITIES

4 oceans--Arctic Ocean, Atlantic Ocean, Indian Ocean, Pacific Ocean
1 World

ZIB Electronic Library, Germany

telnet elib.zib-berlin.de

or

telnet 130.73.108.11

login: elib

Hello and Welcome at the ZIB Electronic Library

This is the Version 1.1 of eLib, making available to the public:

1. a set of libraries with routines classified by GAMS-index
2. a "hot link" to the famous "netlib" of AT&T containing ca. 5000 routines - you must be registered at eLib, to access them by "e-Mail out" service
3. some abstracts of scientific papers and software distribution documents and a set of introductory documents on eLib itself and the ways to reach it.

Glossary

We've broken our glossary into several sections to reduce the amount of scrolling required...

[A-F](#)

[G-O](#)

[P-Z](#)

Glossary (A - F)

Non-alphabetic terms

802.X

10BaseT

A

AIX

analog

Appletalk

Archie

ASCII

Asynchronous Transfer Mode (ATM)

B

BBS

bandwidth

bounce

bridge

broadband

C

Clarkson drivers

Client/server

Coalition for Networked Information (CNI)

Corporation for Research and Educational Networking (CREN)

CCITT

CSMA/CD

D

DLL

Domain

E

Ethernet

F

FAQ

Fast Ethernet

Fiber Distributed Data Interface (FDDI)

File server

finger

firewall

flame

Free Software Foundation

FTP

Fully Qualified Domain Name

Glossary (G - O)

G

[Gateways](#)

[Gopher](#)

[Gopher+](#)

H

[HTML](#)

I

[IEEE](#)

[IETF](#)

[Internet](#)

[IP address](#)

[IPX](#)

[ISDN](#)

[ISO](#)

L

[lurking](#)

[Listserver](#)

M

[MIME](#)

[MPEG](#)

N

[NFS](#)

[NREN](#)

O

[OPAC](#)

Glossary (P - Z)

P

[Packet drivers](#)
[Packet switching](#)
[PING](#)
[PPP](#)

R

[Request For Comments \(RFC\)](#)
[RTF files](#)
[RTFM](#)

S

[Serial Line IP \(SLIP\)](#)
[Smiley](#)
[SMTP](#)
[Soundex](#)

T

[T1](#)
[T3](#)
[TCP/IP](#)
[Telnet](#)
[Token ring](#)
[topology](#)
[twisted pair](#)

U

[Unix](#)
[URLs](#)
[USENET](#)

V

[Veronica](#)
[VT100](#)

W

[WAIS](#)
[WINSOCK.DLL](#)

X

[X.500](#)

MIME

Multipurpose Internet Mail Extensions

The MIME format provides extensions to the SMTP protocol and allows mail messages to carry multiple forms of data (binary, audio, video, etc). Multimedia mail, if you like.

IPX

Internet Packet Exchange. Novell NetWare's native LAN communications protocol, used to move data packets between the server and/or workstations.

IPX packets do not guarantee delivery of the complete message. For that level of reliability, an SPX (Sequenced Packet Exchange) protocol layer must also be used.

IETF

Internet Engineering Task Force

One of the two technical working groups of the Internet Activities Board. The IETF is primarily charged with developing new TCP/IP standards for the Internet

Analog

Derived from "analogous," which means "like" or "similar to." In telephone transmission, the signal being transmitted -- voice, video, or image -- is "analogous" to the original signal. In other words, if you speak into a microphone and see your voice on an oscilloscope and you take the same voice as it is transmitted on the phone line and ran that signal into the oscilloscope, the two signals would look essentially the same. The only difference is that the electrically transmitted signal (the one over the phone line) is at a higher frequency.

Traditionally, audio and video recording has been analog. Sound (continuously varying air vibrations) is converted to 'analogous' electrical vibrations. With video, it's varying intensities of light into analogous electrical signals.

Despite advances in electronics, analog signals can not be copied perfectly. Third and fourth generations of audio and video recordings show marked degradation.

By contrast, when these analog signals are converted to digital (the variations represented by numbers), they can be reproduced and transmitted without loss. The key to making this conversion (analog to digital) is the time interval between samples of the analog source...the more frequent the sample and the more data recorded from that sample, the better. Of course, increases in sampling rate and amount of data recorded significantly increases the size of the resulting digital product.

One increasingly common example of analog->digital conversion illustrates why the process requires lots of disk space (and robust networks):

Since a computer can't deal with analog information like a video clip, it must be represented in digital form. Here's what happens when that inch or so of video tape is converted to a digital form: A 640 by 480 frame (VGA resolution) requires 307,200 pixels (picture elements--basically bits of phosphor that can glow) to represent. If each pixel is stored with 24 bit color information (3 bytes), we're quickly up to 900,000+ bytes needed to store that single frame. Add the 30 frames that must be displayed in one second for true, full-motion video and you find you need 27 megabytes (27,000,000 bytes) of disk space to store that one second digital film clip. That's why folks are interested in things like MPEG and other compression schemes.

PPP Point-to-Point Protocol

PPP supplies router-to-router and host-to-network links over synchronous and asynchronous connections. It is pretty much replacing SLIP as the means of sending IP packets over an asynchronous telephone line.

Gopher

The Internet Gopher is a client/server protocol that supports a distributed delivery system for documents, links to terminal sessions (e.g., telnet), and other files.



[jump to a deeper discussion of Gopher](#)

Firewall

A barrier set up to contain designated network traffic within a specified area. Routers and other internetworking devices use their access control capabilities to build firewalls that can, for example, keep problems from expanding throughout the entire internet.

DLL - Dynamic Link Library

DLL's offer another method of including code for a program without embedding it the executable file itself (which is the traditional approach).

With DLL's a program can call functions in the DLL as needed--the benefit being that multiple programs can share the same DLL simultaneously. It also simplifies updating of software (since the DLL can be updated while the application code remains unchanged).

Windows, OS/2 and DOS (when running a program compiled in protected mode with a DOS extender) can use DLL's.

FSF

Non-profit organization founded in 1985 by Richard Stallman, dedicated to eliminating restrictions on copying and modifying programs by promoting the development and use of freely re-distributable software. It is developing the GNU computing environment, including kernel, utilities, editor, compiler and debugger. GNU programs, X Windows and others are available for a transaction charge.

Address:

675 Mass. Ave.
Cambridge, MA 02139
(617) 876-3296
email: gnu@prep.ai.mit.edu.

AIX : Advanced Interactive eXecutive

IBM's implementation of UNIX. The Open Software Foundation (OSF) based its first operating system (OSF-1) on AIX. The next revision of the OSF operation system (OSF-2) will also be based on AIX with a Mach kernel (Mach was developed by Carnegie Melton University).

UNIX (defined)

UNIX was developed in 1969 by Ken Thompson at AT&T, who scaled down the sophisticated MULTICS operating system for the PDP-7. The name was coined for a single-user version (un) of MULTICS (ix). More work was done by Dennis Ritchie, and, by 1974, UNIX had matured into a state-of-the-art operating system primarily on PDPs. UNIX became very popular in scientific and academic environments. Considerable enhancements were made to UNIX at the Univ. of California at Berkeley, and versions of UNIX with the Berkeley extensions became widely used. By the late 1970s, commercial versions of UNIX, such as IS/1 and XENIX, became available.

In the early 1980s, AT&T began to consolidate the many UNIX versions into standards which evolved into System III and eventually System V. Before divestiture (1984), AT&T licensed UNIX to universities and other organizations, but was prohibited from outright marketing of the product. After divestiture, it began to market UNIX aggressively.

In 1989, UNIX Software Operation (USO) was formed as an AT&T division. USO introduced System V Release 4.0 (SVR4), which incorporated XENIX, SunOS, Berkeley 4.3BSD and System V into one UNIX standard. System V Interface Definition (SVID) was introduced, which defines UNIX compatibility. In 1990, USO was turned into UNIX System Laboratories, Inc., (USL) an AT&T subsidiary. Although every major hardware vendor has a version of UNIX, UNIX International (UI) and the Open Software Foundation (OSF) each promote software for universal adoption. X/Open and POSIX also govern UNIX standards.

UNIX has evolved into the archetype environment for distributed processing and interoperability. TCP/IP communications protocols are used in the Internet, the world's largest network. SMTP provides e-mail, NFS allows files to be distributed across the network, NIS provides a "Yellow Pages" directory, Kerberos provides network security, and X Windows allows a user to run applications on other machines in the network simultaneously.

source:

Electronic Computer Glossary
(c) The Computer Language Co. Inc. 1993.

MPEG

A moving image compression standard devised by the Motion Picture Experts Group. Using mosaic you'll likely encounter MPEG movies. To play them under Windows on an Intel platform, you'll likely need additional hardware--unix workstations manage the task with software only.

Unlike the Motion JPEG (Joint Photographic Experts Group) compression scheme (which primarily condenses information within each frame), MPEG compresses information between frames--for example, a background that doesn't change much (only the changes between frames needs to be encoded). This lets you compress video sequences at ratios as high as 160:1 while still retaining the video quality of standard VHS. Coming soon, MPEG-2 (which promises even higher compression).

By way of comparison, INDEO (developed by Intel) offers about a 10:1 compression ratio while Motion JPEG comes in at around 20:1 (higher ratios possible but image degradation occurs).

ASCII

Has two meanings. ASCII is a universal computer code for English letters and characters. Computers store all information as binary numbers. In ASCII, the letter "A" is stored as 1000001, whether the computer is made by IBM, Apple or Commodore. ASCII also refers to a method, or protocol, for copying files from one computer to another over a network, in which neither computer checks for any errors that might have been caused by static or other problems.

source: *Big Dummy's Guide to the Internet*

RTFGEN

RTFGEN is a freeware DOS utility written by David Baldwin (Compuserve ID 76327,53) which takes a labelled ASCII text file and renders from it an RTF file, suitable as input for the Microsoft Help Compiler. With RTFGEN, you can write a database like InfoPop with an ASCII editor and avoid the gymnastics and frustration that typically accompanies creation of RTF files with a word processor.

RTFGEN release 1.0 is a DOS utility.

RTFGEN release 2.0 is a Windows program (written in Turbo Pascal for Windows).

RTFGEN is available from Compuserve (GO WINSKD), ftp, or the GMutant OnLine BBS.

Rich Text Format (RTF)

An ASCII text format used by several word processors (where formatting codes are embedded in the document). The Microsoft Help Compiler--which generated the IPWIN.HLP file you're using now--requires an RTF file as input...rendering from it a Windows .HLP file.

X.500

The CCITT and ISO standard for electronic directory services.

**Corporation for Research and
Educational Networking (CREN)**

This organization was formed in October 1989, when Bitnet and CSNET (Computer + Science NETwork) were combined under one administrative authority. CSNET is no longer operational, but CREN still runs Bitnet.

IEEE

Institute of Electrical and Electronic Engineers

ISO International Organization for Standardization

A voluntary, nontreaty organization founded in 1946 which is responsible for creating international standards in many areas, including computers and communications. Its members are the national standards organizations of the 89 member countries, including ANSI for the U.S.

10BaseT

A type of wiring scheme for Ethernet, using unshielded twisted pair (UTP). 10BaseT uses 2 pair of wires, one pair for sending data and one pair for receiving.

802.x

The set of IEEE standards that govern various LAN protocols. Ethernet, for example, is governed by standard 802.3

Smileys

There are hundreds of these things in existence. They're generally used in e-mail messages to convey the mood of the writer...if you can't see the connection between the term and the symbol, tilt your head sideways and look again...

: -)	smile
: - (frown
; -)	wink
: - o	oh, no!

CSMA/CD

Carrier Sense Multiple Access/Collision Detection

Under CSMA/CD, when a device (workstation, server, whatever) wants access to the network, it checks to see if the network is free (can it carry a packet?). If not, it waits a random amount of time before trying again. If the network is free and two devices attempt to gain access at the same time, they both back off to avoid a collision and wait a random amount of time before retrying.

Ethernet uses the CSMA/CD approach.

Fast Ethernet

A technology which provides 100M-bps speeds over traditional 10BaseT wiring--with the addition of new network interface cards. It is positioned as a lower-cost alternative to high speed technologies such as CDDI (Copper Distributed Data Interface) and/or FDDI (Fiber Distributed Data Interface). 100BaseVG, the Fast Ethernet standard proposed by Hewlett-Packard and AT&T also uses twisted pair, but unlike 10BaseT, 100BaseVG uses 4 pairs of wire (instead of two) and does not rely on CSMA/CD so some would argue it is not 'true' ethernet.

Domain Name System

The Internet naming scheme which consists of a hierarchical sequence of names, from the most specific to the most general (left to right), separated by dots, for example nic.ddn.mil.

The domain is most often one of the following:

com Usually a company or other commercial institution or organization, like Convex Computers (convex.com).

edu An educational institution, e.g. New York University, named nyu.edu

gov A government site; for example, NASA is nasa.gov

mil A military site, like the Air Force, af.mil

net Gateways and other administrative hosts for a network (it does not mean all of the hosts in a network). One such gateway is near.net

org This is a domain reserved for private organizations, who don't comfortably fit in the other classes of domains. One example is the Electronic Frontier Foundation, named eff.org

The proper terminology for a site's domain name is it's FQDN (Fully Qualified Domain Name). It typically reflects the site's organization or sponsoring institution.

Editor's note: excerpted from RFC 1206

Fully Qualified Domain Name (defined)

A Fully Qualified Domain Name (FQDN) is a domain name that includes all higher level domains relevant to the entity named. If you think of the DNS as a tree-structure with each node having its own label, a Fully Qualified Domain Name for a specific node would be its label followed by the labels of all the other nodes between it and the root of the tree. For example, for a host, a FQDN would include the string that identifies the particular host, plus all domains of which the host is a part up to and including the top-level domain (the root domain is always null). For example, PARIS.NISC.SRI.COM is a Fully Qualified Domain Name for the host at 192.33.33.109. In addition, NISC.SRI.COM is the FQDN for the NISC domain.

topology

A network topology shows the computers in the network and the links between them. Typically the topology of a network describes the physical layout of both the machines on the net and the underlying infrastructure (e.g., wiring).

An AT&T term for a digital carrier facility used to transmit a formatted digital signal at 1.544 megabits per second.'

Digital carrier facility used to transmit a formatted digital signal at 44.746 megabits per second.

Simple Mail Transfer Protocol (SMTP)

A protocol, defined in STD 10, RFC 821, used to transfer electronic mail between computers. It is a server to server protocol, so other protocols are used to access the messages.

The Internet uses SMTP, unlike most commercially-available email services which use X.400 (MCI mail, AT&T EasyLink, CompuServe and Sprint). X.400 services are more functional, much more complex, and much more expensive to implement. For a very good discussion of the differences between SMTP and X.400 (discussed within the context of linking LAN-based email packages with the rest of the world), see: "Looking before you Leap", *Infoworld*, Vol 16, number 9, February 28, 1994, pp. 47-48.

Network File System (NFS)

A protocol developed by Sun Microsystems, and defined in RFC 1094, which allows a computer system to access files over a network as if they were on its local disks. This protocol has been incorporated in products by more than two hundred companies, and is now a de facto Internet standard.

FAQ

Frequently Asked Question.

finger

A program that displays information about a particular user, or all users, logged on the local system or on a remote system. It typically shows full name, last login time, idle time, terminal line, and terminal location (where applicable). It may also display plan and project files left by the user.

lurking

No active participation on the part of a subscriber to an mailing list or USENET newsgroup. A person who is lurking is just listening to the discussion. Lurking is encouraged for beginners who need to get up to speed on the history of the group.

flame

A strong opinion and/or criticism of something, usually as a frank inflammatory statement, in an electronic mail message. It is common to precede a flame with an indication of pending fire (i.e., FLAME ON!). Flame Wars occur when people start flaming other people for flaming when they shouldn't have.

FDDI

A high-speed (100Mb/s) LAN standard. The underlying medium is fiber optics, and the topology is a dual-attached, counter-rotating token ring.

twisted pair

A type of cable in which pairs of conductors are twisted together to produce certain electrical properties. Unshielded twisted pair (or UTP) is used for telephones and certain LAN wiring topologies (e.g., 10BaseT).

Request For Comments (RFC)

The document series, begun in 1969, which describes the Internet suite of protocols and related experiments. Not all (in fact very few) RFCs describe Internet standards, but all Internet standards are written up as RFCs. The RFC series of documents is unusual in that the proposed protocols are forwarded by the Internet research and development community, acting on their own behalf, as opposed to the formally reviewed and standardized protocols that are promoted by organizations such as CCITT and ANSI.

Packet InterNet Groper (PING)

A program used to test whether a destination is 'reachable' by sending them an ICMP (Internet Control Message Protocol) echo verb ('Ping site A to see what's up').

SLIP

A protocol used to run IP over serial lines, such as telephone circuits or RS-232 cables, interconnecting two systems.

RTFM

Read The Freakin' Manual. You might receive this in response to a net-posted question that was answered in the system documentation you neglected to read before querying others.

Asynchronous Transfer Mode (ATM)

Very high speed telecom transmission technology. ATM is a high bandwidth, low-delay, packet-like switching and multiplexing technique. Usable capacity is segmented into fixed-size cells, consisting of header and information fields, allocated to services on demand. The CCITT has selected ATM as the basis for the future broadband network in view of its flexibility and suitability for both transmission and switching.

source;
Newton's Telecom Dictionary
(c) Harry Newton 1993.

Appletalk

A networking protocol developed by Apple Computer for communication between Apple Computer products and other computers. This protocol is independent of the network layer on which it is run. Current implementations exist for Localtalk, a 235 kilobits per second local area network; and Ethertalk, a 10 megabits per second local area network.

Bandwidth

Technically, the difference, in Hertz (Hz), between the highest and lowest frequencies of a transmission channel. However, as typically used, the amount of data that can be sent through a given communications circuit.

bounce

The return of a piece of mail because of an error in its delivery.

bridge

A device which forwards traffic between network segments based on datalink layer information. These segments would have a common network layer address. See also: [gateway](#)

broadband

A transmission medium capable of supporting a wide range of frequencies. It can carry multiple signals by dividing the total capacity of the medium into multiple, independent bandwidth channels, where each channel operates only on a specific range of frequencies.

Bulletin Board System (BBS)

A computer, and associated software, which typically provides electronic messaging services, archives of files, and any other services or activities of interest to the bulletin board system's operator (sysop). Although BBS's have traditionally been the domain of hobbyists and accessible via modem (dial up), an increasing number of BBS's are connected directly to the Internet, and many BBS's are currently operated by government, educational, and research institutions.

Coalition for Networked Information (CNI)

A consortium formed by American Research Libraries, CAUSE, and EDUCOM to promote the creation of, and access to, information resources in networked environments in order to enrich scholarship and enhance intellectual productivity.



GMU
Editor

Sample of EDUPAGE

Comite Consultatif International de Telegraphique et Telephonique

This organization is part of the United National International Telecommunications Union (ITU) and is responsible for making technical recommendations about telephone and data communications systems. Every four years CCITT holds plenary sessions where they adopt new standards; the most recent was in 1992.

ISDN

An emerging technology which is beginning to be offered by the telephone carriers of the world. ISDN combines voice and digital network services in a single medium, making it possible to offer customers digital data services as well as voice connections through a single "wire". The standards that define ISDN are specified by CCITT.

Some say that ISDN stands for "It Still Does Nothing"

(USEr NETwork) Public access network on the Internet that provides user news and e-mail. It is a giant, dispersed bulletin board that is maintained by volunteers willing to provide news and mail feeds to other nodes. It began in 1979 as a bulletin board between two universities in North Carolina



GMUtant
Editor

[a bit more about UseNet](#)

Ethernet - from *Newton's Telecom Dictionary*

A local area network used for connecting computers, printers, workstations, terminals, etc., within the same building. Ethernet operates over twisted pair and over coaxial cable at speeds up to 10 Mbps. Ethernet LANs are being promoted by DEC, Intel and Xerox. For LAN interconnection, Ethernet is a physical link and data link protocol reflecting the two lowest layers of the DNA/OSI model. The theoretical limit of Ethernet, measured in 64 byte packets, is 14,800 packets per second (PPS). By comparison, token ring is 30,000 and FDDI is 170,000.

(InfoPop note: the PPS figure translates to 10 Megabits per second. For token ring, the figures are 4 Mbps and 16Mbps. 100 Mbps Ethernet, called 'fast ethernet' is currently under development by several firms and is predicted to be a 'standard' in late '93 or early '94).

Ethernet specifies a CSMA/CD approach.

The first personal computer Ethernet LAN adapter was shipped by 3Com on September 29, 1982 using the first Ethernet silicon from SEEQ Technology. Bob Metcalfe who created the original Ethernet specification at Xerox PARC and later went on to found 3Com. Thin Ethernet cable and silicon dropped from about \$5,000 to \$750 and 3Com went off like a rocket ship.

token ring

A ring type of local area network (LAN) in which a supervisory frame, or token, must be received by an attached terminal or workstation before that terminal or workstation can start transmitting. The workstation with the token then transmits and uses the entire bandwidth of whatever communications media the token ring network is using. A token ring is a baseband network. Token ring is the technique used by IBM, Arcnet, and others. A token ring LAN can be wired as a circle or a star, with all workstations wired to a central wiring center, or to multiple wiring centers. The most common wiring scheme is called a star-wired ring. In this configuration, each computer is wired directly to a device called a Multi-station Access Unit (MAU). These are usually grouped together in a wiring closet for convenience. The MAU is wired in such a way as to create a ring between the computers. If one of the computers is turned off or breaks or its cable to the MAU is broken, the MAU automatically recreates the ring without that computer. This gives token ring networks great flexibility, reliability, and ease of configuration and maintenance.

Despite the wiring, a token ring LAN always works logically as a circle, with the token passing around the circle from one workstation to another. The advantage of token ring LANs is that media faults (broken cable) can be fixed easily. It's easy to isolate them. Token rings are typically installed in centralized closets, with loops snaking to served workstations. Some other LANs require your going up in the ceiling or into walls and finding coax taps. All the work on a token ring can be done on one or several panels. These panels allow you to isolate workstations, and thus isolate faults.

Token Ring LANs can operate at transmission rates of either 4M bits per second or 16M bits per second. The number of computers that can be connected to a single Token Ring LAN is limited to 256. The typical installation is usually less than 100. Large installations connect multiple token ring LANS with bridges. The theoretical limit of Ethernet measured in 64 byte packets, is 14,800 packets per second (PPS). By comparison, Token Ring is 30,000 and FDDI is 170,000. See FDDI-II and FDDI TERMS.

Help on this definition courtesy Tad Witkowicz of Crosscom, Marlboro, MA, Tim Becker, Lanquest Group, Santa Clara, CA and Elaine Jones, VP Marketing, Coral Network Corporation, Marlborough, MA.

from Newton's Telecom Dictionary

Client/Server

In a communications network, the client is the requesting machine and the server is the supplying machine. It implies that software is specialized at each end. For example, in a network-ready database system, the user interface would reside in the workstation, and the storage and retrieval functions would reside in the server.

The gopher protocol is one implementation of a client/server architecture.

listservers

Electronic discussion of technical and nontechnical issues conducted by electronic mail over BITNET using LISTSERV protocols. Similar lists, often using the UNIX readnews or rn facility, are available exclusively on the Internet. Internet users may subscribe to BITNET listservers. Participants subscribe via a central service, and lists often have a moderator who manages the information flow and content.

Note that once you subscribe to a list, you receive all the 'mail' anyone sends to the list.

There are lists for nearly every topic having to do with computers. For example, if like me, you're interested in developing WINHELP files, consider a subscription to winhlp-l@humber.bitnet

NREN

The National Research and Education Network is a proposed computer network to be built upon the foundation of the NSF backbone network, NSFnet. NREN would provide high speed interconnection between other national and regional networks. SB 1067 is the legislative bill proposing NREN.

Packet Switching

Sending data in packets through a network to some remote location. The data to be sent is subdivided into individual packets of data, each having a unique identification and carrying its destination address. This way each packet can go by a different route. It may also arrive in a different order than it was shipped. The packet ID lets the data be reassembled in proper sequence. Packet switching is a very efficient method of moving digital data around. It is not useful for voice, yet, though experiments are underway.

File Server

A file server is a device which "serves" files to everyone on a network. It allows everyone the network to get to files in a single place, one one computer. It typically is a combination computer, data management software, and large capacity hard disk drive. A file server directs all movement of files and data on a multi-user communications network. It allows the user to store information, leave electronic mail messages for other users on the system and access application software on the file server -- e.g. word processing, spreadsheet. A file server should also stop more than one user accessing (and potentially changing) a file at the same time -- a capability called file locking. This means that certain files are "locked" to certain users, i.e. those users cannot access those files.

Internet (defined)

The Internet is a worldwide collection of thousands of interconnected computer networks, which is used by approximately one million people daily. The networks in the Internet use either the TCP/IP protocol suite or the OSI protocol suite. Gateways exist that translate between the two protocols.

A history of the Internet by Bruce Sterling

A history of the Internet by Ed Krol

A timeline of the Internet by Robert Hobbes Zakon



an internet bibliography

Internet Bibliography

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Institute for Academic Technology

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Internet, by Bruce Sterling

source: *THE MAGAZINE OF FANTASY AND SCIENCE FICTION*, February 1993. F&SF, Box 56, Cornwall CT 06753 \$26/yr USA \$31/yr other

Some thirtyyears ago, the RAND Corporation, America's foremost Cold War think-tank, faced a strange strategic problem. How could the US authorities successfully communicate after a nuclear war?

Postnuclear America would need a command-and-control network, linked from city to city, state to state, base to base. But no matter how thoroughly that network was armored or protected, its switches and wiring would always be vulnerable to the impact of atomic bombs. A nuclear attack would reduce any conceivable network to tatters.

And how would the network itself be commanded and controlled? Any central authority, any network central citadel, would be an obvious and immediate target for an enemy missile. The center of the network would be the very first place to go.

RAND mulled over this grim puzzle in deep military secrecy, and arrived at a daring solution. The RAND proposal (the brainchild of RAND staffer Paul Baran) was made public in 1964. In the first place, the network would *have no central authority*. Furthermore, it would be *designed from the beginning to operate while in tatters*.

The principles were simple. The network itself would be assumed to be unreliable at all times. It would be designed from the get-go to transcend its own unreliability. All the nodes in the network would be equal in status to all other nodes, each node with its own authority to originate, pass, and receive messages. The messages themselves would be divided into packets, each packet separately addressed. Each packet would begin at some specified source node, and end at some other specified destination node. Each packet would wind its way through the network on an individual basis.

The particular route that the packet took would be unimportant. Only final results would count. Basically, the packet would be tossed like a hot potato from node to node to node, more or less in the direction of its destination, until it ended up in the proper place. If big pieces of the network had been blown away, that simply wouldn't matter; the packets would still stay airborne, lateralled wildly across the field by whatever nodes happened to survive. This rather haphazard delivery system might be "inefficient" in the usual sense (especially compared to, say, the telephone system) -- but it would be extremely rugged.

During the 60s, this intriguing concept of a decentralized, blastproof, packet-switching network was kicked around by RAND, MIT and UCLA. The National Physical Laboratory in Great Britain set up the first test network on these principles in 1968. Shortly afterward, the Pentagon's Advanced Research Projects Agency decided to fund a larger, more ambitious project in the USA. The nodes of the network were to be high-speed supercomputers (or what passed for supercomputers at the time). These were rare and valuable machines which were in real need of good solid networking, for the sake of national research-and-development projects.

In fall 1969, the first such node was installed in UCLA. By December 1969, there were four nodes on the infant network, which was named ARPANET, after its Pentagon sponsor.

The four computers could transfer data on dedicated high- speed transmission lines. They could even be programmed remotely from the other nodes. Thanks to ARPANET, scientists and researchers could share one another's computer facilities by long-distance. This was a very handy service, for computer-time was precious in the early '70s. In 1971 there were fifteen nodes in ARPANET; by 1972, thirty-seven nodes. And it was good.

By the second year of operation, however, an odd fact became clear. ARPANET's users had warped the computer-sharing network into a dedicated, high-speed, federally subsidized electronic post-office. The main traffic on ARPANET was not long-distance computing. Instead, it was news and personal messages. Researchers were using ARPANET to collaborate on projects, to trade notes on work, and eventually, to downright gossip and schmooze. People had their own personal user accounts on the ARPANET computers, and their own personal addresses for electronic mail. Not only were they using ARPANET for person-to-person communication, but they were very enthusiastic about this particular service -- far more enthusiastic than they were about long-distance computation.

It wasn't long before the invention of the mailing-list, an ARPANET broadcasting technique in which an identical message could be sent automatically to large numbers of network subscribers. Interestingly, one of the first really big mailing-lists was "SF- LOVERS," for science fiction fans. Discussing science fiction on the network was not work-related and was frowned upon by many ARPANET computer administrators, but this didn't stop it from happening.

Throughout the '70s, ARPA's network grew. Its decentralized structure made expansion easy. Unlike standard corporate computer networks, the ARPA network could accommodate many different kinds of machine. As long as individual machines could speak the packet-switching lingua franca of the new, anarchic network, their brand-names, and their content, and even their ownership, were irrelevant.

The ARPA's original standard for communication was known as NCP, "Network Control Protocol," but as time passed and the technique advanced, NCP was superseded by a higher-level, more sophisticated standard known as TCP/IP. TCP, or "Transmission Control Protocol," converts messages into streams of packets at the source, then reassembles them back into messages at the destination. IP, or "Internet Protocol," handles the addressing, seeing to it that packets are routed across multiple nodes and even across multiple networks with multiple standards -- not only ARPA's pioneering NCP standard, but others like Ethernet, FDDI, and X.25.

As early as 1977, TCP/IP was being used by other networks to link to ARPANET. ARPANET itself remained fairly tightly controlled, at least until 1983, when its military segment broke off and became MILNET. But TCP/IP linked them all. And ARPANET itself, though it was growing, became a smaller and smaller neighborhood amid the vastly growing galaxy of other linked machines.

As the '70s and '80s advanced, many very different social groups found themselves in possession of powerful computers. It was fairly easy to link these computers to the growing network-of-networks. As the use of TCP/IP became more common, entire other networks fell into the digital embrace of the Internet, and messily adhered. Since the software called TCP/IP was public-domain, and the basic technology was decentralized and rather anarchic by its very nature, it was difficult to stop people from barging in and linking up somewhere-or-other. In point of fact, nobody *wanted* to stop them from joining this branching complex of networks, which came to be known as the "Internet."

Connecting to the Internet cost the taxpayer little or nothing, since each node was independent, and had to handle its own financing and its own technical requirements. The more, the merrier. Like the phone network, the computer network became steadily more valuable as it embraced larger and larger territories of people and resources.

A fax machine is only valuable if *everybody else* has a fax machine. Until they do, a fax machine is just a curiosity. ARPANET, too, was a curiosity for a while. Then computer-networking became an utter necessity.

In 1984 the National Science Foundation got into the act, through its Office of Advanced Scientific Computing. The new NSFNET set a blistering pace for technical advancement, linking newer, faster, shinier supercomputers, through thicker, faster links, upgraded and expanded, again and again, in 1986, 1988, 1990. And other government agencies leapt in: NASA, the National Institutes of Health, the Department of Energy, each of them maintaining a digital satrapy in the Internet confederation.

The nodes in this growing network-of-networks were divvied up into basic varieties. Foreign computers, and a few American ones, chose to be denoted by their geographical locations. The others were grouped by the six basic Internet "domains": gov, mil, edu, com, org and net. (Graceless abbreviations such as this are a standard feature of the TCP/IP protocols.) Gov, Mil, and Edu denoted governmental, military and educational institutions, which were, of course, the pioneers, since ARPANET had begun as a high-tech research exercise in national security. Com, however, stood for "commercial" institutions, which were soon bursting into the network like rodeo bulls, surrounded by a dust-cloud of eager nonprofit "orgs." (The "net" computers served as gateways between networks.)

ARPANET itself formally expired in 1989, a happy victim of its own overwhelming success. Its users scarcely noticed, for ARPANET's functions not only continued but steadily improved. The use of TCP/IP standards for computer networking is now global. In 1971, a mere twenty-one years ago, there were only four nodes in the ARPANET network. Today there are tens of thousands of nodes in the Internet, scattered over forty-two countries, with more coming on-line every day. Three million, possibly four million people use this gigantic mother-of-all-computer-networks.

The Internet is especially popular among scientists, and is probably the most important scientific instrument of the late twentieth century. The powerful, sophisticated access that it provides to specialized data and personal communication has sped up the pace of scientific research enormously.

The Internet's pace of growth in the early 1990s is spectacular, almost ferocious. It is spreading faster than cellular phones, faster than fax machines. Last year the Internet was growing at a rate of twenty percent a *month.* The number of "host" machines with direct connection to TCP/IP has been doubling every year since 1988. The Internet is moving out of its original base in military and research institutions, into elementary and high schools, as well as into public libraries and the commercial sector.

Why do people want to be "on the Internet?" One of the main reasons is simple freedom. The Internet is a rare example of a true, modern, functional anarchy. There is no "Internet Inc." There are no official censors, no bosses, no board of directors, no stockholders. In principle, any node can speak as a peer to any other node, as long as it obeys the rules of the TCP/IP protocols, which are strictly technical, not social or political. (There has been some struggle over commercial use of the Internet, but that situation is changing as businesses supply their own links).

The Internet is also a bargain. The Internet as a whole, unlike the phone system, doesn't charge for long-distance service. And unlike most commercial computer networks, it doesn't charge for access time, either. In fact the "Internet" itself, which doesn't even officially exist as an entity, never "charges" for anything. Each group of people accessing the Internet is responsible for their own machine and their own section of line.

The Internet's "anarchy" may seem strange or even unnatural, but it makes a certain deep and basic sense. It's rather like the "anarchy" of the English language. Nobody rents English, and nobody owns English. As an English-speaking person, it's up to you to learn how to speak English properly and make whatever use you please of it (though the government provides certain subsidies to help you learn to read and write a bit). Otherwise, everybody just sort of pitches in, and somehow the thing evolves on its own, and somehow turns out workable. And interesting. Fascinating, even. Though a lot of people earn their living from using and exploiting and teaching English, "English" as an institution is public property, a public good. Much the same goes for the Internet. Would English be improved if the "The English Language, Inc." had a board of directors and a chief executive officer, or a President and a Congress? There'd probably be a lot fewer new words in English, and a lot fewer new ideas.

People on the Internet feel much the same way about their own institution. It's an institution that resists institutionalization. The Internet belongs to everyone and no one.

Still, its various interest groups all have a claim. Business people want the Internet put on a sounder financial footing. Government people want the Internet more fully regulated. Academics want it dedicated

exclusively to scholarly research. Military people want it spy-proof and secure. And so on and so on.

All these sources of conflict remain in a stumbling balance today, and the Internet, so far, remains in a thrivingly anarchical condition. Once upon a time, the NSFnet's high-speed, high-capacity lines were known as the "Internet Backbone," and their owners could rather lord it over the rest of the Internet; but today there are "backbones" in Canada, Japan, and Europe, and even privately owned commercial Internet backbones specially created for carrying business traffic. Today, even privately owned desktop computers can become Internet nodes. You can carry one under your arm. Soon, perhaps, on your wrist.

But what does one *do* with the Internet? Four things, basically: mail, discussion groups, long-distance computing, and file transfers.

Internet mail is "e-mail," electronic mail, faster by several orders of magnitude than the US Mail, which is scornfully known by Internet regulars as "snailmail." Internet mail is somewhat like fax. It's electronic text. But you don't have to pay for it (at least not directly), and it's global in scope. E-mail can also send software and certain forms of compressed digital imagery. New forms of mail are in the works.

The discussion groups, or "newsgroups," are a world of their own. This world of news, debate and argument is generally known as USENET. "USENET is, in point of fact, quite different from the Internet. USENET is rather like an enormous billowing crowd of gossipy, news-hungry people, wandering in and through the Internet on their way to various private backyard barbecues. USENET is not so much a physical network as a set of social conventions. In any case, at the moment there are some 2,500 separate newsgroups on USENET, and their discussions generate about 7 million words of typed commentary every single day. Naturally there is a vast amount of talk about computers on USENET, but the variety of subjects discussed is enormous, and it's growing larger all the time. USENET also distributes various free electronic journals and publications.

Both netnews and e-mail are very widely available, even outside the high-speed core of the Internet itself. News and e-mail are easily available over common phone-lines, from Internet fringe- realms like BITnet, UUCP and Fidonet. The last two Internet services, long-distance computing and file transfer, require what is known as "direct Internet access" -- using TCP/IP.

Long-distance computing was an original inspiration for ARPANET and is still a very useful service, at least for some. Programmers can maintain accounts on distant, powerful computers, run programs there or write their own. Scientists can make use of powerful supercomputers a continent away. Libraries offer their electronic card catalogs for free search. Enormous CD-ROM catalogs are increasingly available through this service. And there are fantastic amounts of free software available.

File transfers allow Internet users to access remote machines and retrieve programs or text. Many Internet computers -- some two thousand of them, so far -- allow any person to access them anonymously, and to simply copy their public files, free of charge. This is no small deal, since entire books can be transferred through direct Internet access in a matter of minutes. Today, in 1992, there are over a million such public files available to anyone who asks for them (and many more millions of files are available to people with accounts). Internet file-transfers are becoming a new form of publishing, in which the reader simply electronically copies the work on demand, in any quantity he or she wants, for free. New Internet programs, such as "archie," "gopher," and "WAIS," have been developed to catalog and explore these enormous archives of material.

The headless, anarchic, million-limbed Internet is spreading like bread-mold. Any computer of sufficient power is a potential spore for the Internet, and today such computers sell for less than \$2,000 and are in the hands of people all over the world. ARPA's network, designed to assure control of a ravaged society after a nuclear holocaust, has been superseded by its mutant child the Internet, which is thoroughly out of control, and spreading exponentially through the post-Cold War electronic global village. The spread of the Internet in the 90s resembles the spread of personal computing in the 1970s, though it is even faster and perhaps more important. More important, perhaps, because it may give those personal computers a means of cheap, easy storage and access that is truly planetary in scale.

The future of the Internet bids fair to be bigger and exponentially faster. Commercialization of the Internet is a very hot topic today, with every manner of wild new commercial information- service promised. The federal government, pleased with an unsought success, is also still very much in the act. NREN, the National Research and Education Network, was approved by the US Congress in fall 1991, as a five-year, \$2 billion project to upgrade the Internet "backbone." NREN will be some fifty times faster than the fastest network available today, allowing the electronic transfer of the entire Encyclopedia Britannica in one hot second. Computer networks worldwide will feature 3-D animated graphics, radio and cellular phone-links to portable computers, as well as fax, voice, and high- definition television. A multimedia global circus!

Or so it's hoped -- and planned. The real Internet of the future may bear very little resemblance to today's plans. Planning has never seemed to have much to do with the seething, fungal development of the Internet. After all, today's Internet bears little resemblance to those original grim plans for RAND's post- holocaust command grid. It's a fine and happy irony.

How does one get access to the Internet? Well -- if you don't have a computer and a modem, get one. Your computer can act as a terminal, and you can use an ordinary telephone line to connect to an Internet-linked machine. These slower and simpler adjuncts to the Internet can provide you with the netnews discussion groups and your own e-mail address. These are services worth having -- though if you only have mail and news, you're not actually "on the Internet" proper.

If you're on a campus, your university may have direct "dedicated access" to high-speed Internet TCP/IP lines. Apply for an Internet account on a dedicated campus machine, and you may be able to get those hot-dog long-distance computing and file-transfer functions. Some cities, such as Cleveland, supply "freenet" community access. Businesses increasingly have Internet access, and are willing to sell it to subscribers. The standard fee is about \$40 a month -- about the same as TV cable service.

As the Nineties proceed, finding a link to the Internet will become much cheaper and easier. Its ease of use will also improve, which is fine news, for the savage UNIX interface of TCP/IP leaves plenty of room for advancements in user-friendliness. Learning the Internet now, or at least learning about it, is wise. By the turn of the century, "network literacy," like "computer literacy" before it, will be forcing itself into the very texture of your life.

For Further Reading: *The Whole Internet Catalog & User's Guide* by Ed Krol. (1992) O'Reilly and Associates, Inc. A clear, non-jargonized introduction to the intimidating business of network literacy. Many computer- documentation manuals attempt to be funny. Mr. Krol's book is *actually* funny.

The Matrix: Computer Networks and Conferencing Systems Worldwide. by John Quarterman. Digital Press: Bedford, MA. (1990) Massive and highly technical compendium detailing the mind-boggling scope and complexity of our newly networked planet.

The Internet Companion by Tracy LaQuey with Jeanne C. Ryer (1992) Addison Wesley. Evangelical etiquette guide to the Internet featuring anecdotal tales of life-changing Internet experiences. Foreword by Senator Al Gore.

Zen and the Art of the Internet: A Beginner's Guide by Brendan P. Kehoe (1992) Prentice Hall. Brief but useful Internet guide with plenty of good advice on useful machines to paw over for data. Mr Kehoe's guide bears the singularly wonderful distinction of being available in electronic form free of charge. I'm doing the same with all my F&SF Science articles, including, of course, this one.

RFC 1462

Here is RFC 1462, basically a reprint of Chapter 2 of E. Krol's *Whole Internet User's Guide & Catalog*

Network Working Group
Request for Comments: 1462
FYI: 20

E. Krol
University of Illinois

E. Hoffman
Merit Network, Inc.
May 1993

FYI on "What is the Internet?"

Status of this Memo

This memo provides information for the Internet community. It does not specify an Internet standard.
Distribution of this memo is unlimited.

For this 'InfoPop' edition, we've added a small bit of hypertextualization...'

Abstract

Introduction

An overview of Internet history

What Makes Up the Internet

Who Governs the Internet?

Who Pays for It?

What Does the Future Hold?

International Connections

Commercialization of the Internet

Privitization

Acknowledgements, etc.

Abstract

This FYI RFC answers the question, "What is the Internet?" and is produced by the User Services Working Group of the Internet Engineering Task Force ([IETF](#)). Containing a modified chapter from Ed Krol's 1992 book, "The Whole Internet User's Guide and Catalog," the paper covers the Internet's definition, history, administration, protocols, financing, and current issues such as growth, commercialization, and privatization.

Introduction

A commonly asked question is "What is the Internet?" The reason such a question gets asked so often is because there's no agreed upon answer that neatly sums up the Internet. The Internet can be thought about in relation to its common protocols, as a physical collection of routers and circuits, as a set of shared resources, or even as an attitude about interconnecting and intercommunication. Some common definitions given in the past include:

- * a network of networks based on the TCP/IP protocols,
- * a community of people who use and develop those networks,
- * a collection of resources that can be reached from those networks.

Today's Internet is a global resource connecting millions of users that began as an experiment over 20 years ago by the U.S. Department of Defense. While the networks that make up the Internet are based on a standard set of protocols (a mutually agreed upon method of communication between parties), the Internet also has gateways to networks and services that are based on other protocols.

To help answer the question more completely, the rest of this paper contains an updated second chapter from "The Whole Internet User's Guide and Catalog" by Ed Krol (1992) that gives a more thorough explanation. (The excerpt is published through the gracious permission of the publisher, O'Reilly & Associates, Inc.)

The Internet (background info)

The Internet (excerpt from "The Whole Internet User's Guide and Catalog")

The Internet was born about 20 years ago, trying to connect together a U.S. Defense Department network called the ARPAnet and various other radio and satellite networks. The ARPAnet was an experimental network designed to support military research--in particular, research about how to build networks that could withstand partial outages (like bomb attacks) and still function. (Think about this when I describe how the network works; it may give you some insight into the design of the Internet.) In the ARPAnet model, communication always occurs between a source and a destination computer. The network itself is assumed to be unreliable; any portion of the network could disappear at any moment (pick your favorite catastrophe--these days backhoes cutting cables are more of a threat than bombs). It was designed to require the minimum of information from the computer clients. To send a message on the network, a computer only had to put its data in an envelope, called an Internet Protocol (IP) packet, and "address" the packets correctly. The communicating computers--not the network itself--were also given the responsibility to ensure that the communication was accomplished. The philosophy was that every computer on the network could talk, as a peer, with any other computer.

These decisions may sound odd, like the assumption of an "unreliable" network, but history has proven that most of them were reasonably correct. Although the Organization for International Standardization (ISO) was spending years designing the ultimate standard for computer networking, people could not wait. Internet developers in the US, UK and Scandinavia, responding to market pressures, began to put their IP software on every conceivable type of computer. It became the only practical method for computers from different manufacturers to communicate. This was attractive to the government and universities, which didn't have policies saying that all computers must be bought from the same vendor. Everyone bought whichever computer they liked, and expected the computers to work together over the network.

At about the same time as the Internet was coming into being, Ethernet local area networks ("LANs") were developed. This technology matured quietly, until desktop workstations became available around 1983. Most of these workstations came with Berkeley UNIX, which included IP networking software. This created a new demand: rather than connecting to a single large timesharing computer per site, organizations wanted to connect the ARPAnet to their entire local network. This would allow all the computers on that LAN to access ARPAnet facilities. About the same time, other organizations started building their own networks using the same communications protocols as the ARPAnet: namely, IP and its relatives. It became obvious that if these networks could talk together, users on one network could communicate with those on another; everyone would benefit.

One of the most important of these newer networks was the NSFNET, commissioned by the National Science Foundation (NSF), an agency of the U.S. government. In the late 80's the NSF created five supercomputer centers. Up to this point, the world's fastest computers had only been available to weapons developers and a few researchers from very large corporations. By creating supercomputer centers, the NSF was making these resources available for any scholarly research. Only five centers were created because they were so expensive--so they had to be shared. This created a communications problem: they needed a way to connect their centers together and to allow the clients of these centers to access them. At first, the NSF tried to use the ARPAnet for communications, but this strategy failed because of bureaucracy and staffing problems.

In response, NSF decided to build its own network, based on the ARPAnet's IP technology. It connected the centers with 56,000 bit per second (56k bps) telephone lines. (This is roughly the ability to transfer two full typewritten pages per second. That's slow by modern standards, but was reasonably fast in the mid 80's.) It was obvious, however, that if they tried to connect every university directly to a supercomputing center, they would go broke. You pay for these telephone lines by the mile. One line per campus with a supercomputing center at the hub, like spokes on a bike wheel, adds up to lots of miles of phone lines. Therefore, they decided to create regional networks. In each area of the country, schools would be connected to their nearest neighbor. Each chain was connected to a supercomputer center at

one point and the centers were connected together. With this configuration, any computer could eventually communicate with any other by forwarding the conversation through its neighbors.

This solution was successful--and, like any successful solution, a time came when it no longer worked. Sharing supercomputers also allowed the connected sites to share a lot of other things not related to the centers. Suddenly these schools had a world of data and collaborators at their fingertips. The network's traffic increased until, eventually, the computers controlling the network and the telephone lines connecting them were overloaded. In 1987, a contract to manage and upgrade the network was awarded to Merit Network Inc., which ran Michigan's educational network, in partnership with IBM and MCI. The old network was replaced with faster telephone lines (by a factor of 20), with faster computers to control it.

The process of running out of horsepower and getting bigger engines and better roads continues to this day. Unlike changes to the highway system, however, most of these changes aren't noticed by the people trying to use the Internet to do real work. You won't go to your office, log in to your computer, and find a message saying that the Internet will be inaccessible for the next six months because of improvements. Perhaps even more important: the process of running out of capacity and improving the network has created a technology that's extremely mature and practical. The ideas have been tested; problems have appeared, and problems have been solved.

For our purposes, the most important aspect of the NSF's networking effort is that it allowed everyone to access the network. Up to that point, Internet access had been available only to researchers in computer science, government employees, and government contractors. The NSF promoted universal educational access by funding campus connections only if the campus had a plan to spread the access around. So everyone attending a four year college could become an Internet user.

The demand keeps growing. Now that most four-year colleges are connected, people are trying to get secondary and primary schools connected. People who have graduated from college know what the Internet is good for, and talk their employers into connecting corporations. All this activity points to continued growth, networking problems to solve, evolving technologies, and job security for networkers.

What Makes Up the Internet?

What comprises the Internet is a difficult question; the answer changes over time. Five years ago the answer would have been easy: "All the networks, using the IP protocol, which cooperate to form a seamless network for their collective users." This would include various federal networks, a set of regional networks, campus networks, and some foreign networks.

More recently, some non-IP-based networks saw that the Internet was good. They wanted to provide its services to their clientele. So they developed methods of connecting these "strange" networks (e.g., Bitnet, DECnets, etc.) to the Internet. At first these connections, called "gateways", merely served to transfer electronic mail between the two networks. Some, however, have grown to translate other services between the networks as well. Are they part of the Internet? Maybe yes and maybe no. It depends on whether, in their hearts, they want to be. If this sounds strange, read on--it gets stranger.

Who Governs the Internet?

In many ways the Internet is like a church: it has its council of elders, every member has an opinion about how things should work, and you can either take part or not. It's your choice. The Internet has no president, chief operating officer, or Pope. The constituent networks may have presidents and CEO's, but that's a different issue; there's no single authority figure for the Internet as a whole. The ultimate authority for where the Internet is going rests with the Internet Society, or ISOC. ISOC is a voluntary membership organization whose purpose is to promote global information exchange through Internet technology. (If you'd like more information, or if you would like to join, contact information is provided in the "For More Information" section, near the end of this document.) It appoints a council of elders, which has responsibility for the technical management and direction of the Internet.

The council of elders is a group of invited volunteers called the Internet Architecture Board, or the IAB. The IAB meets regularly to "bless" standards and allocate resources, like addresses. The Internet works because there are standard ways for computers and software applications to talk to each other. This allows computers from different vendors to communicate without problems. It's not an IBM-only or Sun-only or Macintosh-only network. The IAB is responsible for these standards; it decides when a standard is necessary, and what the standard should be. When a standard is required, it considers the problem, adopts a standard, and announces it via the network. (You were expecting stone tablets?) The IAB also keeps track of various numbers (and other things) that must remain unique. For example, each computer on the Internet has a unique 32-bit address; no other computer has the same address. How does this address get assigned? The IAB worries about these kinds of problems. It doesn't actually assign the addresses, but it makes the rules about how to assign addresses.

As in a church, everyone has opinions about how things ought to run. Internet users express their opinions through meetings of the Internet Engineering Task Force (IETF). The IETF is another volunteer organization; it meets regularly to discuss operational and near-term technical problems of the Internet. When it considers a problem important enough to merit concern, the IETF sets up a "working group" for further investigation. (In practice, "important enough" usually means that there are enough people to volunteer for the working group.) Anyone can attend IETF meetings and be on working groups; the important thing is that they work. Working groups have many different functions, ranging from producing documentation, to deciding how networks should cooperate when problems occur, to changing the meaning of the bits in some kind of packet. A working group usually produces a report. Depending on the kind of recommendation, it could just be documentation and made available to anyone wanting it, it could be accepted voluntarily as a good idea which people follow, or it could be sent to the IAB to be declared a standard.

If you go to a church and accept its teachings and philosophy, you are accepted by it, and receive the benefits. If you don't like it, you can leave. The church is still there, and you get none of the benefits. Such is the Internet. If a network accepts the teachings of the Internet, is connected to it, and considers itself part of it, then it is part of the Internet. It will find things it doesn't like and can address those concerns through the IETF. Some concerns may be considered valid and the Internet may change accordingly. Some of the changes may run counter to the religion, and be rejected. If the network does something that causes damage to the Internet, it could be excommunicated until it mends its evil ways.

Who pays for the Internet?

The old rule for when things are confusing is "follow the money." Well, this won't help you to understand the Internet. No one pays for "it"; there is no Internet, Inc. that collects fees from all Internet networks or users. Instead, everyone pays for their part. The NSF pays for NSFNET. NASA pays for the NASA Science Internet. Networks get together and decide how to connect themselves together and fund these interconnections. A college or corporation pays for their connection to some regional network, which in turn pays a national provider for its access.

What Does This Mean for Me?

The concept that the Internet is not a network, but a collection of networks, means little to the end user. You want to do something useful: run a program, or access some unique data. You shouldn't have to worry about how it's all stuck together. Consider the telephone system--it's an internet, too. Pacific Bell, AT&T, MCI, British Telephony, Telefonos de Mexico, and so on, are all separate corporations that run pieces of the telephone system. They worry about how to make it all work together; all you have to do is dial. If you ignore cost and commercials, you shouldn't care if you are dealing with MCI, AT&T, or Sprint. Dial the number and it works. You only care who carries your calls when a problem occurs. If something goes out of service, only one of those companies can fix it. They talk to each other about problems, but each phone carrier is responsible for fixing problems on its own part of the system. The same is true on the Internet. Each network has its own network operations center (NOC). The operation centers talk to each other and know how to resolve problems. Your site has a contract with one of the Internet's constituent networks, and its job is to keep your site happy. So if something goes wrong, they are the ones to gripe at. If it's not their problem, they'll pass it along.

What Does the Future Hold?

Finally, a question I can answer. It's not that I have a crystal ball (if I did I'd spend my time on Wall Street instead of writing a book). Rather, these are the things that the IAB and the IETF discuss at their meetings. Most people don't care about the long discussions; they only want to know how they'll be affected. So, here are highlights of the networking future.

New Standard Protocols

When I was talking about how the Internet started, I mentioned the International Standards Organization (ISO) and their set of protocol standards. Well, they finally finished designing it. Now it is an international standard, typically referred to as the ISO/OSI (Open Systems Interconnect) protocol suite. Many of the Internet's component networks allow use of OSI today. There isn't much demand, yet. The U.S. government has taken a position that government computers should be able to speak these protocols. Many have the software, but few are using it now.

It's really unclear how much demand there will be for OSI, notwithstanding the government backing. Many people feel that the current approach isn't broke, so why fix it? They are just becoming comfortable with what they have, why should they have to learn a new set of commands and terminology just because it is the standard? Currently there are no real advantages to moving to OSI. It is more complex and less mature than IP, and hence doesn't work as efficiently. OSI does offer hope of some additional features, but it also suffers from some of the same problems which will plague IP as the network gets much bigger and faster. It's clear that some sites will convert to the OSI protocols over the next few years. The question is: how many?

International connections

The Internet has been an international network for a long time, but it only extended to the United States' allies and overseas military bases. Now, with the less paranoid world environment, the Internet is spreading everywhere. It's currently in over 50 countries, and the number is rapidly increasing. Eastern European countries longing for western scientific ties have wanted to participate for a long time, but were excluded by government regulation. This ban has been relaxed. Third world countries that formerly didn't have the means to participate now view the Internet as a way to raise their education and technology levels.

In Europe, the development of the Internet used to be hampered by national policies mandating OSI protocols, regarding IP as a cultural threat akin to EuroDisney. These policies prevented development of large scale Internet infrastructures except for the Scandinavian countries which embraced the Internet protocols long ago and are already well-connected. In 1989, RIPE (Reseaux IP Europeens) began coordinating the operation of the Internet in Europe and presently about 25% of all hosts connected to the Internet are located in Europe.

At present, the Internet's international expansion is hampered by the lack of a good supporting infrastructure, namely a decent telephone system. In both Eastern Europe and the third world, a state-of-the-art phone system is nonexistent. Even in major cities, connections are limited to the speeds available to the average home anywhere in the U.S., 9600 bits/second. Typically, even if one of these countries is "on the Internet," only a few sites are accessible. Usually, this is the major technical university for that country. However, as phone systems improve, you can expect this to change too; more and more, you'll see smaller sites (even individual home systems) connecting to the Internet.

Commercialization

Many big corporations have been on the Internet for years. For the most part, their participation has been limited to their research and engineering departments. The same corporations used some other network (usually a private network) for their business communications. After all, this IP stuff was only an academic toy. The IBM mainframes that handled their commercial data processing did the "real" networking using a protocol suite called System Network Architecture (SNA).

Businesses are now discovering that running multiple networks is expensive. Some are beginning to look to the Internet for "one-stop" network shopping. They were scared away in the past by policies which excluded or restricted commercial use. Many of these policies are under review and will change. As these restrictions drop, commercial use of the Internet will become progressively more common.

This should be especially good for small businesses. Motorola or Standard Oil can afford to run nationwide networks connecting their sites, but Ace Custom Software couldn't. If Ace has a San Jose office and a Washington office, all it needs is an Internet connection on each end. For all practical purposes, they have a nationwide corporate network, just like the big boys.

Privatization

Right behind commercialization comes privatization. For years, the networking community has wanted the telephone companies and other for-profit ventures to provide "off the shelf" IP connections. That is, just like you can place an order for a telephone jack in your house for your telephone, you could do this for an Internet connection. You order, the telephone installer leaves, and you plug your computer into the Internet. Except for Bolt, Beranek and Newman, the company that ran the ARPAnet, there weren't any takers. The telephone companies have historically said, "We'll sell you phone lines, and you can do whatever you like with them." By default, the Federal government stayed in the networking business.

Now that large corporations have become interested in the Internet, the phone companies have started to change their attitude. Now they and other profit-oriented network purveyors complain that the government ought to get out of the network business. After all, who best can provide network services but the "phone companies"? They've got the ear of a lot of political people, to whom it appears to be a reasonable thing. If you talk to phone company personnel, many of them still don't really understand what the Internet is about. They ain't got religion, but they are studying the Bible furiously. (Apologies to those telephone company employees who saw the light years ago and have been trying to drag their employers into church.)

Although most people in the networking community think that privatization is a good idea, there are some obstacles in the way. Most revolve around the funding for the connections that are already in place. Many schools are connected because the government pays part of the bill. If they had to pay their own way, some schools would probably decide to spend their money elsewhere. Major research institutions would certainly stay on the net; but some smaller colleges might not, and the costs would probably be prohibitive for most secondary schools (let alone grade schools). What if the school could afford either an Internet connection or a science lab? It's unclear which one would get funded. The Internet has not yet become a "necessity" in many people's minds. When it does, expect privatization to come quickly.

Well, enough questions about the history of the information highway system. It's time to walk to the edge of the road, try and hitch a ride, and be on your way.

Acknowledgments

We would like to thank O'Reilly & Associates for permission to reprint the chapter from their book by Ed Krol (1992), "The Whole Internet User's Guide and Catalog."

For More Information

Hoffman, E. and L. Jackson. (1993) "FYI on Introducing the Internet --A Short Bibliography of Introductory Internetworking Readings for the Network Novice," 4 p. (FYI 19, [RFC 1463](#)).

To find out how to obtain this document and other on-line introductory readings, send an e-mail message to:

nis-info@nis.merit.edu, with the following text:

access.guide.

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

Quarterman, J. (1993) "Recent Internet Books," 15 p. (RFC 1432).

The Internet Society; Phone: (703) 620-8990; Fax: (703) 620-0913; e-mail: isoc@cnri.reston.va.us

Security Considerations

Security issues are not discussed in this memo.

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Ann Arbor, MI 48105
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EMail: ellen@merit.edu

IP Address

Every machine on the Internet has a unique address, called its Internet number or IP Address. It's actually a 32-bit number, but is most commonly represented as four numbers joined by periods, (e.g., 147.31.254.130). Sometimes called a dotted quad; there are literally thousands of them. Originally, the addressing scheme allowed only 256 combinations, hence the move to 32 bit integers.

To obtain an address (they're not arbitrarily assigned) you must file an application with the Network Information Center (NIC) (email: hostmaster@nic.ddn.mil).

gateway

A gateway is what it sounds like. It's an entrance and exit into a communications network. Gateways exist at the point where AT&T Communications ends and Comsat begins -- for taking the call overseas.

Gateways also exist between data networks. In data communications, they're typically referred to as a node on a network that connects two otherwise incompatible networks. For example, PC users on a local area network may need a gateway to gain access to a mainframe computer since the mainframe does not speak the same language (protocols) as the PC. Thus, gateways on data networks often perform code and protocol conversion processes as well.

Gateways also eliminate duplicate wiring by giving all users on the network access to the mainframe without having a direct, hard-wired connection. Gateways also connect compatible networks owned by different entities, such as X.25 networks linked by X.75 gateways. Gateways are commonly used to connect people on one network, say a token ring network, with those on a long distance network. According to the OSI model, a gateway is a device that provides mapping at all seven layers of the model. For example, a gateway may be used to interface between two incompatible electronic mail systems or for transferring data files from one system to another.

Gateways are application specific such as NetWare to SNA, Appletalk to DECnet, and NetWare to Banyan's VINES.

VT100 A particular terminal emulation standard, made famous by Digital Equipment.

Library-Oriented Lists and Electronic Serials

The information in this section was compiled by Charles [Bailey](#)

[Computer Conferences](#)

[Electronic Serials](#)



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Editor

Related topic: [LISTGopher](#)

Library-related conferences

Computer conferences are becoming an increasingly important form of communication for librarians. There are a growing number of computer conferences of interest to librarians on BITNET and Internet.

Computer conferences are commonly called "lists." The software used to support these lists is typically referred to as the "list server."

1.1 Lists That Use Eric Thomas's List Server

Many BITNET lists utilize a list server that was developed by Eric Thomas.

Please note that some of these BITNET lists also have Internet addresses, which are not shown here.

(Entries that appear in this document for the first time or have been changed are marked with an asterisk.)

ADVANC-L@IDBSU	Geac Advance Library System
AFAS-L@KENTVM	African American Studies and Librarianship
ALF-L@YORKVM1	Academic Librarian's Forum
ARCHIVES@INDYCMS	Archives and Archivists List
ARIE-L@IDBSU	RLG Ariel Document Transmission System
ARLIS-L@UKCC	Art Libraries Association of North America
ASIS-L@UVMVM	American Society for Information Science
ATLAS-L@TCUBVM	Data Research ATLAS Users
AUTOCAT@UVMVM	Library Cataloging and Authorities
BI-L@BINGVMB	Bibliographic Instruction
BIBSOFT@INDYCMS	Discussion of Software for Citations and Bibliographies
BRS-L@USCVM	BRS/Search Users
BUSLIB-L@IDBSU	Business Librarians
CALL-L@UNBVM1	Canadian Academic Law Libraries List*
CARL-L@UHCCVM	CARL Users
CDPLUS-L@UTORONTO	CDPLUS Software User Group
CDROMLAN@IDBSU	CD-ROM LANs
CDS-ISIS@HEARN	CDS/ISIS Text Retrieval Software
CHMINF-L@IUBVM	Chemical Information Sources
CIRCPLUS@IDBSU	Circulation and Access Services
COLLDV-L@USCVM	Library Collection Development List
CONSALD@UTXVM	Committee on South Asian Libraries and Documentation
COSNDISC@BITNIC	Consortium for School Networking
CWIS-L@WUVMD	Campus-Wide Information Systems
ELDNET-L@UIUCVMD	ASEE Engineering Libraries Division
ELEASAI@ARIZVM1	Open Library/Information Science Research Forum
ELLASBIB@GREARN	Library Automation in Greece
ENDNOTE@UCSBVM	EndNote/EndLink Users Forum
EXLIBRIS@RUTVM1	Rare Books and Special Collections Forum
FEMINIST@MITVMA	ALA SRRT Feminist Task Force
FISC-L@NDSUVM1	Fee-Based Info Service Centers in Academic Libraries
GEONET-L@IUBVM	Geoscience Librarians and Information Specialists
GOVDOC-L@PSUVM	Government Documents
ILL-L@UVMVM	Interlibrary Loan
IMUG-L@OHSTVMA	Innopac Music Users Group
INDEX-L@BINGVMB	Indexer's Discussion Group
INFO+REF@INDYCMS	Information + Referral List
INNOPAC@MAINE	Innovative Interfaces Users
INT-LAW@UMINN1	Foreign and International Law Librarians

JESSE@ARIZVM1	Open Library/Information Science Education Forum
LABMGR@UKCC	Academic Microcomputer Lab Management
LIBADMIN@UMAB	Library Administration and Management
LIBEVENT@USCVM	Library Events in Southern California
LIBEX-L@MAINE	Exhibits and Academic Libraries*
LIBMASTR@UOTTAWA	Library Master Bibliographic Database
LIBPER-L@KSUVM	Library Personnel Issues
LIBPLN-L@QUCDN	Library Planning
LIBRARY@INDYCMS	Libraries and Librarians
LIBREF-L@KENTVM	Discussion of Library Reference Issues
LIBSUP-L@UWAVM	Library Support Staff
LM_NET@SUVM	School Library Media & Network Communications
MAPS-L@UGA	Maps and Air Photo Forum
MEDLIB-L@UBVM	Medical and Health Sciences Libraries
MLA-L@IUBVM	Music Library Association
MULTILIS@ALBNYVM1	multiLIS Users
NETTRAIN@UBVM	Internet/BITNET Network Trainers
NOTIS-L@TCSVM	NOTIS Users
NOTISACQ@CUVMB	NOTIS Acquisitions Discussion Group
NOTMUS-L@UBVM	Notis Music Library List
NOTRBCAT@INDYCMS	Rare Book and Special Collections Catalogers
NYSO-L@UBVM	MLA New York State/Ontario Chapter
OFFCAMP@WAYNEST1	Off-Campus Library Services List
PACS-L@UHUPVM1	Public-Access Computer Systems Forum
PACS-P@UHUPVM1	PACS-L Publications Only
PRO-CITE@IUBVM	Personal Bibliographic Software List
RLIN-L@RUTVM1	RLIN Users*
SAVEIT-L@USCVM	SAVEIT Users*
SERIALST@UVMVM	Serials Users Discussion Group
SLAJOB@IUBVM	Special Libraries Association Employment Opportunities*
SPILIB-L@SUVM	SPIRES Users
UNICRN-L@PSUORVM	SIRSI/UNICORN Automated Library Systems
USMARC-L@MAINE	USMARC Advisory Group Forum
VETLIB-L@VTVM2	Veterinary Medicine Library Issues and Information*
VPIEJ-L@VTVM1	Publishing E-Journals: Publishing, Archiving, & Access
Z3950IW@NERVM	Z39.50 Implementors Workshop

To subscribe to a list, send the following e-mail message to LISTSERV@NODE, where NODE is the part of the address after the "@" character:

SUBSCRIBE List First Name Last Name

(If you are not on BITNET, ask your computer center how to address a message to the desired BITNET node.)

For example, Jane Doe sends the following e-mail message to LISTSERV@UHUPVM1 to subscribe to PACS-L:

SUBSCRIBE PACS-L Jane Doe

You can obtain a directory of list server documentation by sending the following e-mail message to the list server: INFO ?

Once you know the name of the desired documentation file, send another INFO command to the list server to obtain the file. For example, to get a file that describes searching the message database of a list, send the following command: INFO DATABASE.

1.2 Lists That Use Anastasios Kotsikonas's List Server

Anastasios Kotsikonas's list server is being used to support a growing number of Internet lists.

To subscribe to a list, send the following e-mail message to `LISTSERV@NODE`, where `NODE` is the part of the address after the "@" character:

SUBSCRIBE List First Name Last Name

(If you are not on Internet, ask your computer center how to address a message to the desired Internet node.)

To obtain list server documentation, send the following e-mail message to the list server: `HELP`.

`CNI-ANNOUNCE@CNI.ORG`

CNI's News Announcement Network

`CNI-ARCHITECTURE@CNI.ORG`

CNI's Architectures and Standards

`CNI-BIGIDEAS@CNI.ORG`

CNI's Big Ideas Forum

`CNI-COPYRIGHT@CNI.ORG`

CNI's Copyright and Intellectual Property Forum

`CNI-DIRECTORIES@CNI.ORG`

CNI's Directories and Resource Information Services

`CNI-LEGISLATION@CNI.ORG`

CNI's Legislation, Codes, Policies, and Practices

`CNI-MANAGEMENT@CNI.ORG`

CNI's Management and Professional and User Education

`CNI-MODERNIZATION@CNI.ORG`

CNI's Modernization of Scholarly Publication

`CNI-PUBINFO@CNI.ORG`

CNI's Access to Public Information

`CNI-TEACHING@CNI.ORG`

CNI's Teaching and Learning

`CNI-TRANSFORMATION@CNI.ORG`

CNI's Transformation of Scholarly Communication

`PALS-L@KNUTH.MTSU.EDU`

PALS System

`PUBLIB@NYSERNET.ORG`

Public Libraries and the Internet*

`VISIONS@LIBRARY.SDSU.EDU`

Strategic Visions Steering Committee Electronic Discussion

Forum on the Future of Librarianship

1.3 Other Lists

These lists use diverse software. Contact the person who sponsors the list you are interested in to get further information about how the list software works.

ACRLNY-L (Listings of Library Jobs and Events)

Send the following command to `LISTSERV@NYUACF`:

`SUBSCRIBE ACRLNY-L First Name Last Name`.

AGRIS-L (Agricultural Information)

Send the following message to `LISTSERV@IRMFAO01`:

SUBSCRIBE AGRIS-L First Name Last Name.

ALEPHINT (ALEPH Library System Users)

Send the following command to LISTSERV@TAUNIVM:
SUBSCRIBE ALEPHINT First Name Last Name.

CADUCEUS (History of Medicine Collections Forum)

Send a subscription request to Inci Bowman:
IBOWMAN@UTMBEACH.

Conservation DistList (Conservation of Archive, Library, and Museum Materials)

Send a subscription request to Walter Henry:
WHENRY@LINDY.STANFORD.EDU.

CORMOSEA (Committee on Research Materials on Southeast Asia)

Send a subscription request to Kent Mulliner:
MULLINER@OUVAXA.CATS.OHIOU.EDU.

DYNIX_L (DYNIX Users)

Send a subscription request to:
DYNIX_L-REQUEST@SBU.EDU.

EASTLIB (Committee on East Asian Libraries)

Send the following command to LISTSERV@MENTO.OIT.UNC.EDU:
SUBSCRIBE EASTLIB First Name Last Name.

IAMSLIC (International Association of Aquatic and Marine Science Libraries and Information Centers)

Send the following command to LISTSERV@UCSD.EDU:
SUBSCRIBE Your E-Mail Address IAMSLIC.

KATALIST (Discussion on Library Systems and Databases--In Hungarian)

Send the following command to LISTSERV@HUEARN:
SUBSCRIBE KATALIST First Name Last Name.

LAW-LIB (Law Librarians)

Send subscription requests to: LAW-REQ@UCDAVIS.EDU.
Contact Elizabeth St. Goar for technical questions:
ESTGOAR@UCDAVIS.EDU.

LIB_HYTELNET (HYTELNET Program)

Send subscription request to Peter Scott: SCOTT@SKLIB.USASK.CA.

LS2K (LS/2000 Users Group)

Send subscription request to: LS2K-REQUEST@CC.UTAH.EDU.

PAMnet (Physics, Astronomy, and Mathematics Librarians)

Send a subscription request to Joanne Goode:
JMGOODE@UKCC.UKY.EDU.

STUMPERS-L (Difficult Reference Questions)

Send the following message to ROSLIBREFRC@CRF.CUIS.EDU:
SUBSCRIBE STUMPERS-L Your E-Mail Address.

1.4 Diane Kovacs's Directory

Diane Kovacs and her colleagues have compiled a useful directory of lists in many subject areas.

To retrieve this directory, send the following e-mail message to LISTSERV@KENTVM or LISTSERV@KENTVM.KENT.EDU:

```
GET ACADLIST README F=MAIL
GET ACADLIST FILE1 F=MAIL
GET ACADLIST FILE2 F=MAIL
GET ACADLIST FILE3 F=MAIL
GET ACADLIST FILE4 F=MAIL
GET ACADLIST FILE5 F=MAIL
GET ACADLIST FILE6 F=MAIL
GET ACADLIST FILE7 F=MAIL
```

For further information about the directory, contact Diane Kovacs: DKOVACS@KENTVM.

Electronic Serials

There are a growing number of library-related electronic journals and newsletters available on BITNET and Internet.

ACQNET (The Acquisitions Librarian's Electronic Network)

Send a subscription request to Christian Boissonnas:
CRI@CORNELLC.

ALA Washington Office Newslite (ALAWON)

Send the following e-mail message to LISTSERV@UICVM:
SUBSCRIBE ALA-WO First Name Last Name.

ALCTS NETWORK NEWS (Association for Library Collections and Technical Services)

Send the following message to LISTSERV@UICVM:
SUBSCRIBE ALCTS First Name Last Name.
For a list of back issue files, send the message:
INDEX ALCTS.

The Archnet Electronic Journal of Virtual Culture*

Send the following message to LISTSERV@UOTTAWA:
SUBSCRIBE ARACHNET First Name Last Name.

Citations for Serial Literature

Send the following message to LISTSERV@MITVMA:
SUBSCRIBE SERCITES First Name Last Name.
For a list of back issue files, send the message:
INDEX SERCITES.

Consortium Update (SPIRES)

Send a subscription request to: HQ.CON@STANFORD.

Current Cites

TELNET MELVYL.UCOP.EDU; Enter command: SHOW CURRENT CITES.
(Also distributed on [PACS-L](#).)
Further information: David F. W. Robison, DROBISON@UCBLIBRA.

Hot Off the Tree (HOTT) (Excerpts and Abstracts of Articles about Information Technology)

TELNET MELVYL.UCOP.EDU; Enter command: SHOW HOTT.
Further information: Susan Jurist, SJURIST@UCSD.EDU.

Information Networking News

Sent to CDROMLAN subscribers. See above.

IRLIST Digest (Information Retrieval List Digest)

Send the following message to LISTSERV@UCCVMA:
SUBSCRIBE IR-L First Name Last Name.
For a list of back issue files, send the message:
INDEX IR-L.

Issues in Science and Technology Librarianship

Send a subscription request to: ACRLSTS@HAL.UNM.EDU.

Journal of Academic Media Librarianship

Send the following message to LISTSERV@UBVM:
SUBSCRIBE MCJRNL First Name Last Name.

LIBRES: Library and Information Science Research Electronic Journal*

Send the following message to LISTSERV@KENTVM:

SUBSCRIBE LIBRES First Name Last Name.

MeckJournal

Send a subscription request to MECKLER@TIGGER.JVNC.NET.

Network News

Send the following message to LISTSERV@NDSUVM1:

SUBSCRIBE NNEWS First Name Last Name.

Newsletter on Serials Pricing Issues*

Send the following message to LISTSERV@GIBBS.OIT.UNC.EDU:

SUBSCRIBE PRICES First Name Last Name.

Public-Access Computer Systems News

Sent to PACS-L and PACS-P subscribers. See above.

For a list of back issue files, send the following message to LISTSERV@UHUPVM1: INDEX PACS-L.

The Public-Access Computer Systems Review

Sent to PACS-L and PACS-P subscribers. See above.

For a list of article files, send the following message to LISTSERV@UHUPVM1: INDEX PACS-L.

Michael Strangelove has compiled a helpful directory of electronic serials. To retrieve this directory, send the following e-mail message to LISTSERV@UOTTAWA or LISTSERV@ACADVM1.UOTTAWA.CA:

GET EJOURNL1 DIRECTRY F=MAIL

GET EJOURNL2 DIRECTRY F=MAIL

For further information, contact Michael Strangelove: 441495@ACADVM1.UOTTAWA.CA.

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Campus Wide Info Systems (CWIS)

United States

[Appalachian State University VideoText System](#)
[Citadel, the Military College of South Carolina](#)
[Columbia University](#)
[CU-LawNet - Columbia Law School Public information service](#)
[Iowa State University \(CYNET\)](#)
[University of Kansas \(kufacts\)](#)
[MIT TechInfo](#)
[University of North Carolina-Chapel Hill \(INFO\)](#)
[Washington & Lee University \(Law Library\)](#)

U.K.

[Cambridge University Information Service](#)
[Edinburgh University Information Service](#)
[London University Central Information Exchange](#)
[University of Wales, Aberystwyth Information Server](#)



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related topic: [gopher](#)

University of Kansas CWIS (KUFACTS)

telnet kufacts.cc.ukans.edu

or

telnet 129.237.1.30

login: **kufacts**

Citadel (CWIS)

telnet 155.225.6.2

Username: **INFO**

INFO Main Menu

Citadel Phone Book (PB)

Emergency Phone Numbers

Library...

USA Today (a Library service)...

Corps of Cadets...

Press Releases

Computers and Networks...

Purchasing and Property Information...

Athletics...

Committee Information and Minutes...

Faculty Vitae...

How to use INFO...

Exit to \$ prompt

CU-LawNet

telnet SPARC-1.LAW.COLUMBIA.EDU

or

telnet 128.59.176.78

login:

CU-LawNet Info System

- 1 - Law Library Catalog PEGASUS
- 2 - University Catalog CLIO
- 3 - Law School Info Server
- 4 - Law School Academic Services
- 5 - Law School Career Services
- 6 - ColumbiaNet
- 7 - Advanced World wide library access (HytelNet)
- h - Help message

Columbia University

telnet COLUMBIANET.COLUMBIA.EDU

or

telnet 128.59.40.154

No login required

Main Menu: 1: Academic Information Systems
2: CLIO Plus: Library Catalogs and Encyclopedia
3: ColumbiaNet Public Information System
4: Departmental Systems

Q: to quit the ColumbiaNet system entirely

And type the 'ESC' key TWICE to leave a session

Appalachian State University VideoText System

telnet CONRAD.APPSTATE.EDU

or

telnet 152.10.1.1

Login as

Emulate a VT100

Iowa State University (CYNET)

telnet ISN.IASTATE.EDU

or

telnet 129.186.99.14

DIAL:

1. General University information.
2. Information concerning a specific college, curriculum or major
3. Schedules of Classes
4. General instructions for using CYNET
5. Advanced instructions for using CYNET
6. News and announcements about CYNET

MIT TechInfo

telnet TECHINFO.MIT.EDU

or

telnet 18.72.1.146

TechInfo main menu

- 1 About TechInfo
- 2 Around MIT - Offices & Services
- 3 Classified Ads
- 4 Computing
- 5 Courses, Schedules(Fall) & Calendars
- 6 Events
- 7 Information Desk (calendar & things to do)
- 8 Jobs
- 9 MIT Libraries
- 10 Ongoing Activities, Notices, & Clubs
- 11 Policies, Rules & Procedures
- 12 Potluck
- 13 Publications
- 14 Weather

Command:

Basic Commands: Main, Return, Find, Outline,Source, Clear, Advanced, Help, Quit

UNC-Chapel Hill INFO

telnet INFO.ACS.UNC.EDU

or

telnet 128.109.157.1

Username: **INFO**

1. HELP--Using INFO
2. Calendar
3. Job openings
4. Grant/funding opportunities
5. News
6. Campus Directory, catalogs, and lists
7. Ask INFO about...
8. Other Information Systems

Cambridge University Information Service

telnet SUN.NSF.AC.UK

or

telnet 128.86.8.7

login:

Hostname: uk.ac.cam.info

Type one of the following:

NEWS - new entries and recent changes to this service

CS - Cambridge University Computing Service

MICRO - microcomputers and personal systems

NET - networking and other computing information

CU - Cambridge University

UNI - universities and academic community

GEN - general information

GUIDE - guide to the Information Service

NOTES - notes on this scope

Edinburgh University Information System

telnet CASTLE.ED.AC.UK

or

telnet 129.215.128.23

login:

London University Central Information Exchange

telnet SUN.NSF.AC.UK

or

telnet 128.86.8.7

login:

hostname: uk.ac.lon.lucie

University of Wales, Aberystwyth Information Server

telnet SUN.NSF.AC.UK

or

telnet 128.86.8.7

login:

Hostname: uk.ac.aber.info

terminal type: vt100

Washington And Lee University (Law Library)

telnet liberty.uc.wlu.edu

or

telnet 137.113.10.35

login: lawlib

Whois / Directory Services

These systems can help you locate a particular individual on the Internet...

[Australian White Pages Pilot Project \(Queensland\)](#)
[British Telecom's "Electronic Yellow Pages" Service](#)
[JANET Public Access Directory Service](#)
[Knowbot Information Service at nri.reston.va.us](#)
[Netfind - University of Colorado](#)
[Ohio State University WHOIS Service](#)
[Swiss Electronic Phone Book](#)
[USENET contributor e-mail addresses](#)
[WHOIS searches](#)



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related topic: [Campus Wide Information System](#)

Australian White Pages Pilot Project (Queensland)

telnet WHITEPAGES.ADELAIDE.EDU.AU

or

telnet 129.127.40.3

Login:

Password:

The following clients are available to allow you to access the White Pages database:

fred this client provides a line orientated interface similar to the whois service.
pod This client provides a "nifty" X style interface
sd A screen based client of similar functionality to xd.

Note: Only fred allows you to modify your entry (at this time).

If you want X windows access, please enter your DISPLAY name, e.g., myhost.dept.adelaide.edu.au:0.0

We are running DNS so you shouldn't have to enter the IP number, the full qualified name should work.

DISPLAY=fred

Select one of the following clients (dish pod fred de doog xtdua): fred

Try: "help" for a list of commands

"whois" for information on how to find people

"manual" for detailed documentation

"report" to send a report to the white pages manager

To find out about participating organizations, try: "whois -org *"

British Telcom's Electronic Yellow Pages Service

telnet SUN.NSF.AC.UK

or

telnet 128.86.8.7

login:

hostname: .ac.niss

Select U on the NISS Gateway menu

Select E on the Information Services in the UK menu

Press RETURN until Log On Screen appears

Select 1 for vt100 emulation

To log off, follow the menu

JANET Public Access Directory Service

telnet SUN.NSF.AC.UK

or

telnet 128.86.8.7

login:

hostname:.ac.jnt.dir

Type what you are looking for, with commas separating parts:

e.g., , jnt, gb

or hardcastle-kille, ucl

Control-c interrupts a search, quit leaves the service.

Ohio State University WHOIS Service

telnet OSU.EDU
or telnet 128.146.10.72

Swiss Electronic Phone Book

TELNET 130.59.2.10

Select language:

1=DEUTSCH

2=FRANCAIS

3=ITALIANO

At the "Introduire le(s) critere(s) de recherche ou help" type help

To exit, type 9 (return) then 0 (return)

USENET contributor e-mail addresses

Available for searching via [gopher](#)

Select Phone Books from main menu

Select Internet-wide e-mail address searches

This search works by looking at a database of people who have submitted [USENET](#) news items (something like 40,000 to 100,000 people all over the Internet).

This database is run on a [WAIS](#) search engine, so when you search here you are using gopher to talk to a WAIS search engine.

WHOIS Searches

Available via [gopher](#)

Select Phone Books from Main Menu

Select WHOIS Searches from Phone Books Menu

Association of Research Networks in Iceland
Baylor College of Medicine
Bull HN Information Systems
California Institute of Technology
California Institute of Technology
California State University - Fresno
California State University - Hayward
California State University - Sacramento
Cambridge Computer Associates
Chalmers University of Technology
DDN Network Information Center
Dansk UNIX-system Bruger Gruppe
EASInet Operations Center
Energy Sciences Network
Florida State University
GTE Laboratories
George Mason University
Gesellschaft fuer Mathematik und Datenverarbeitung
Gettysburg College
Harvard University
Helsinki University of Technology
Imperial College
Indiana University
Institut National de Recherche en Informatique et Automatique
InterCon Systems Corporation
Johns Hopkins University
Lawrence Berkeley Laboratory
Lawrence Livermore National Laboratory
MCNC - Center for Communications
Massachusetts Institute of Technology
Merit Computer Network
Mississippi State University
NASA Ames Research Center
National Centre for Software Technology
National Energy Research Supercomputer Center
Naval Research Laboratory
New Jersey Institute of Technology
New Jersey Intercampus Network
New York University
New York University, Courant Institute
North Carolina State University
Northern Arizona University
Ohio Northern University
Ohio State University
Oregon State University
Performance Systems International
Portland State University
Prime Computer
Reseaux IP Europeens

Rutgers University
SRI International
SUNET (Swedish University Network)
San Diego State University
Sonoma State University
Stanford University
State University of New York, Stony Brook
Sunquest Information Systems
Swedish Institute of Computer Science
Syracuse University
Tampere University of Technology
USC Information Sciences Institute
Universite Claude Bernard Lyon I
University of Adelaide
University of California at Berkeley
University of California at Davis
University of California at Los Angeles
University of California at San Diego
University of Canterbury
University of Chicago
University of Cincinnati
University of Florida
University of Houston
University of Maryland
University of Miami, Rosentiel School of Marine and Atmospheric
University of Minnesota
University of Nebraska at Lincoln
University of Notre Dame
University of Oregon
University of Pennsylvania
University of Rochester
University of Saskatchewan
University of Virginia
University of Western Australia
University of Western Ontario
University of Wisconsin
Victoria University, Wellington
Waikato University
Wirtschaftsuniversitaet Wien
Worcester Polytechnic Institute

RFC (Request for Comments)

RFC-1118 The Hitchhiker's Guide to the Internet

RFC-1175 A Bibliography of Internetworking Information

RFC-1173 Responsibilities of Host and Network Managers

RFC-1207 Answers to Commonly Asked "Experienced Internet User" Questions

RFC-1208 Networking Glossary of Terms

RFC-1359 Connecting to the Internet

RFC-1392 Internet Users' Glossary

RFC-1463 FYI on Introducing the Internet--A Short Bibliography...

RFC-1462 "FYI on 'What is the Internet?"

RFC-1594 Answers to Commonly Asked "New Internet User" Questions

These are just a few of the many RFC's available to assist you in developing your internet skills. To obtain any of these documents (or a list of all available documents):

```
ftp to nis.nsf.net
cd documents/rfc
get INDEX.rfc
```

RFC 1463

Here is the text of RFC 1463, a short bibliography on the Internet



Another bibliography by Carolyn Kotlas

Network Working Group
Request for Comments: 1463
FYI: 19

E. Hoffman
Merit Network, Inc.
L. Jackson
NASA
May 1993

FYI on Introducing the Internet--

A Short Bibliography of Introductory Internetworking Readings for the Network Novice

Status of this Memo

This memo provides information for the Internet community. It does not specify an Internet standard.
Distribution of this memo is
unlimited.

Abstract

This bibliography offers a short list of recent information resources that will help the network novice become familiar with the Internet, including its associated networks, resources, protocols, and history. This FYI RFC includes references to free sources of information available on-line as well as traditional publications. A short section at the end includes information for accessing the on-line files. This FYI is intentionally brief so it can be easily used as a handout by user services personnel.

Acknowledgments

This document is based upon the work of the User Documents Working Group in the User Services Area of the Internet Engineering Task Force (IETF).

Bibliography of Introductory Readings

The following list includes a number of sources for learning about the Internet. If you have more questions about the Internet, the best source of information is your network service provider. For those interested in finding out about getting Internet connectivity, the books listed will help you locate a network service provider.

* Items with an asterisk are available at no charge on-line on the Internet--see the final section for information on how to obtain these.

a. Introductory Papers

* Kehoe, Brendan P. (1992) "Zen and the Art of the Internet: A Beginner's Guide to the Internet," (first edition) 95 p.

* Krol, E. and E. Hoffman. (1993) "What is the Internet?" 11 p. (FYI 20, RFC 1462).

* Malkin, G. and A. Marine. (1992) "FYI on Questions and Answers: Answers to Commonly Asked 'New Internet User' Questions," 32 p. (FYI 4, RFC 1325). *InfoPop note. This one is now obsolete. See RFC 1594 instead.*

* LaQuey, Tracy with Jeanne C. Ryer. (1992) "The Internet Companion," 30 p. (on-line chapters from book published by Addison-Wesley)

b. Introductory Books: Basic User Guides

Kehoe, Brendan P. (1993) Zen and the Art of the Internet: A Beginner's Guide, (second edition) 112 p. Prentice Hall, Englewood Cliffs, NJ.

Krol, Ed. (1992) The Whole Internet User's Guide and Catalog, 400 p. O'Reilly & Assoc., Inc. Sebastopol, CA.

LaQuey, Tracy with Jeanne C. Ryer. (1992) The Internet Companion: A Beginner's Guide to Global Networking, 208 p. Addison-Wesley, Reading, MA.

c. Introductory Books: Connection Starters

SRI International. (1992) Internet: Getting Started, 318 p. SRI International, 333 Ravenswood Ave., Rm. EJ291, Menlo Park, CA 94025.

. Internet services and resources

* Martin, J. (1993) "There's Gold in them thar Networks! or Searching for Treasure in all the Wrong Places," 39 p. (RFC 1402/FYI 10).

* Merit Network, Inc. (1992) "Cruise of the Internet," Merit Network Inc., Ann Arbor, MI. (Disk based tutorial available for Macintosh or Windows).

Metz, Ray (1992) Directory of Directories on the Internet, 175 p. Meckler, Westport, CT.

* NSF Network Service Center. (nd) "Internet Resource Guide," NSF Network Service Center, Cambridge, MA.

. Internet networks

Frey, Donnalyn and Rick Adams. (1991) !%@:: A Directory of Electronic Mail Addressing and Networks, (second edition) 436 p. O'Reilly & Assoc. Inc. Sebastopol, CA.

LaQuey, Tracy L. (1990) User's Directory of Computer Networks, 653 p. Digital Press, Bedford, MA.

Quarterman, John S. (1990) The Matrix: Computer Networks and Conferencing Systems Worldwide, 746 p. Digital Press, Bedford, MA. . **Introducing the Internet Protocols**

Comer, Douglas E. (1991) Internetworking With TCP/IP: Volume I, Principles, Protocols, and Architecture, (second edition). 547 p. Prentice Hall, Englewood Cliffs, NJ

* Hedrick, Charles L. (1987) "Introduction to the Internet Protocols," 34 p. Rutgers University Computer Science Facilities Group, Piscataway, NJ.

Lynch, Daniel C. & Marshall T. Rose (eds). (1993) The Internet System Handbook, 822 p. Addison-Wesley, Reading, MA.

. Further Reading

* Bowers, K. L. et al. (1990) "FYI on Where to Start: A Bibliography of Internetworking Information," 42 p. (RFC 1175/FYI 3).

* Malkin, G. & T. LaQuey Parker. (1993) "Internet Users' Glossary," 53 p. (RFC 1392/FYI 18).

Getting Articles On-Line

All the documents marked with an asterisk in this bibliography are available on-line at no charge if you have access to the Internet. To find out more about accessing documents in introducing.the.internet, send electronic mail to: nis-info@nic.merit.edu, with the text: [send access.guide](http://access.guide).

If you know how to use Anonymous FTP, you can get the Access Guide from one of several sites, including nic.merit.edu, nic.mr.net, ftp.nisc.sri.com, or ftp.hawaii.edu. Check the directory introducing.the.internet for the file titled access.guide. The Access Guide includes information about obtaining documents through dial-up service using a modem for those who do not have direct Internet access.

In addition to the listed publications, many network providers publish excellent user guides and newsletters which cover Internet topics. Contact your Internet network service provider for more information. A longer bibliography with more comprehensive references and abstracts, FYI 3, RFC 1175 is listed above for those who may need more detailed materials.

Security Considerations

Security issues are not discussed in this memo. **Authors' Addresses**

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Moffett Field, CA 94035

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E-mail: jackson@nsipo.arc.nasa.gov

Individual access to the internet



Sample of the PDIAL list of public providers

excerpted from RFC 1402 by J. Martin, Ohio State University

A frequently asked question concerns how the average mortal gets access to the Internet. The most common way is via electronic mail. Using e-mail, it is possible to communicate with anyone on the Internet and on any other networks as well, and there are many "gateways" to the Internet from other networks and systems. For instance using CompuServe a large commercial electronic information and communication service, you can send e-mail to and from individuals on the Internet.

A direct connection to the Internet provides some additional capabilities that e-mail cannot. One of these is the ability to establish a connection to a remote computer connected to the Internet from your own personal computer or from one connected to the Internet. The program that establishes this connection is called Telnet. Many universities and large research companies have Internet connections. They pay rather large fees to have these high speed (more than one million bits per second) connections. If you are associated with a large university or company you already may have access or can gain access to the Internet using one of their computers.

Traditionally, connections to the Internet were dedicated connections. This is still the most common type of connection. Monthly costs for the connection range anywhere from \$250 per month (plus line charges) for a dialup 9600-bps connection to \$4,000 (plus line charges) for a T1 (1.44-Mbps) connection. There is also an initial one-time startup fee of anywhere from \$100 to \$8,000 (plus equipment charges).

Some service providers also are offering part-time dialup connections. Customers share a set of phone lines and dialup when needed. This is usually less expensive than dedicated dialup connections for customers who need a connection less than 80 hours per month. Monthly costs range from \$40-100 per month (plus line charges) plus an hourly charge of \$2-4.

Some service providers have begun to offer a new dial-in service. The name for dial-in service varies from vendor to vendor. The dial-in service is usually provided as a way for Internet-connected users to connect back to their home sites from remote locations. But most service providers do not limit their service to this audience, it is open to people not already on the Internet. The dial-in service provides either a terminal server connection (with password) or an account on the service provider's equipment (with password) which permits you to use Telnet to connect to other sites on the Internet. This service differs from the normal dialup IP services because it does not require the user to run any IP software like PPP (Point-to-Point protocol) or SLIP (serial line IP). The cost for this service usually range from \$35 to \$250 per month (plus line charges). There is also an initial \$35 to \$500 connection fee (plus equipment charges).

If you do not have access to a service connected to Internet, you can get access for a fee. The following companies provide Internet access to individuals or companies at various rates depending on the time of access, speed of access desired, and several other factors. The first method to gain access to the Internet is by getting an account on a public access bulletin board system that is connected to the Internet. There are a growing number of such systems available. For information on some of these systems, send electronic mail to:

info@world.std.com
info@netcom.com
info@concert.net

info@panix.com
info@holonet.net
info@msen.com
info@csn.org
sysadmin@ids.com

PDIAL

The Public Dialup Internet Access List (PDIAL)

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Contents:

[Quick Start](#)

[Area Code Summary - Providers With Many Local Dialins \(1-800, PDN\)](#)

[Area Code Summary - US/Canada Metro and Regional Dialins](#)

[Area Code Summary - International Dialins](#)

[Alphabetical List of Providers](#)

[What The PDIAL Is](#)

[How People Can Get The PDIAL \(This List\)](#)

[Appendix A - Finding Public Data Network \(PDN\) Access Numbers](#)

[Additional Notices; Submitting Updates and Corrections](#)

PDIAL - Quick Start

The Internet is a global cooperative information network which can give you instant access to millions of people and terabytes of data. Providers listed in the PDIAL provide inexpensive public access to the Internet using your regular modem and computer.

Special note: the PDIAL currently lists only providers directly connected to the Internet. Much of the Internet can still be explored through systems with only Internet email and USENET netnews connections, but you need to check other BBS lists to find them.

Phone charges can dominate the cost of your access to the Internet. Check first for providers with metro or regional dialins that are a local call for you (no per-minute phone charges). If there aren't any, move on to comparing prices for PDN, 800, and direct-dial long distance charges. Make sure to compare all your options. Calling long distance out-of-state or across the country is often cheaper than calling 30 miles away.

If you're not in North America and have no local provider, you may still be able to use one of the providers listed as having PDN access. Contact the individual providers with PDN access (see listings below) to find out.

The information listed in the PDIAL changes and expands rapidly. If this edition is more than 3 months old, consider obtaining a new one. Check section for details.

Remember, the PDIAL is only a summary listing of the resources and environment delivered by each of the various providers. Contact the providers that interest you by email or voice phone and make sure you find out if they have what you need.

Then go for it. Happy 'netting!

PDIAL Area Code Summary

Providers With Many Local Dialins (1-800, PDN)

PDN delphi holonet IGC michnet portal psi-world-dial psilink tmn

PDN well world

800 class cns csl csd dial-n-cerf-usa IGC jvnc OARnet

"PDN" means the provider is accessible through a public data network (check the listings below for which network); note that many PDNs listed offer access outside North America as well as within North America. Check with the provider or the PDN for more details.

"800" means the provider is accessible via a "toll-free" US phone number. The phone company will not charge for the call, but the service provider will add a surcharge to cover the cost of the 800 service. This may be more expensive than other long-distance options.

Area Code Summary

US/Canada

If you are not local to any of these providers, it's still likely you are able to access those providers available through a public data network (PDN). Check the section above for providers with wide area access.

201 jvnc-tiger
202 CAPCON express grebyn tmn
203 jvnc-tiger
206 eskimo halcyon netcom nwnexus
212 maestro mindvox panix
213 dial-n-cerf netcom
214 metronet
215 jvnc-tiger PREPnet
216 OARnet wariat
301 CAPCON express grebyn tmn
303 cns csu
310 dial-n-cerf netcom
312 genesis
313 michnet MSen
401 anomaly ids jvnc-tiger
403 PUCnet
408 a2i netcom portal
410 CAPCON express
412 PREPnet telerama
415 crl dial-n-cerf IGC netcom portal well
416 uunorth
419 OARnet
503 agora.rain.com netcom
508 anomaly nearnet northshore novalink
510 crl dial-n-cerf holonet netcom
513 OARnet
514 CAM.ORG
516 jvnc-tiger
517 michnet
519 uunorth
602 crl
603 MV nearnet
609 jvnc-tiger
613 uunorth
614 OARnet
616 michnet
617 delphi nearnet northshore world
619 crash.cts.com cyber dial-n-cerf netcom
703 CAPCON express grebyn tmn
704 concert Vnet
707 crl
708 genesis
713 sugar
714 dial-n-cerf
717 PREPnet
718 maestro mindvox panix
719 cns csu oldcolo
804 wyvern

814 PREPnet
815 genesis
818 dial-n-cerf netcom
906 michnet
908 express jvnc-tiger
916 netcom
919 concert

These are area codes local to the dialups, although some prefixes in the area codes listed may not be local to the dialups. Check your phone book or with your phone company. Most providers listed here are also accessible by packet-switched data services such as PC Pursuit (\$30/month for 30 hours off-peak 2400 bps access -- call 800-736-1130 for more information), traditional long distance services, and of course telnet.

PDIAL -Area Code Summary

International

If you are not local to any of these providers, there is still a chance you are able to access those providers available through a public data network (PDN). Check section -1- above for providers with wide area access, and send email to them to ask about availability.

+301 Ariadne

+61 2 connect.com.au

+61 3 connect.com.au

+44 (0)81 Demon dircon ibmpcug



PDIAL - Alphabetical List of Providers

Fees are for personal dialup accounts with outgoing Internet access; most sites have other classes of service with other rate structures as well. Most support email and netnews along with the listed services.

"Long distance: provided by user" means you need to use services such as PC Pursuit, direct dial long distance or other long distance services.

name -----> a2i communications
dialup -----> 408-293-9010 (v.32, v.32 bis) or 408-293-9020 (PEP) 'guest'
area codes ----> 408
local access --> CA: Campbell, Los Altos, Los Gatos, Mountain View, San Jose, Santa Clara, Saratoga, Sunnyvale
long distance -> provided by user
services -----> shell (SunOS UNIX and MS-DOS), ftp, telnet, feeds
fees -----> \$20/month or \$45/3 months or \$72/6 months
email -----> info@rahul.net
voice -----> 408-293-8078 voicemail
ftp more info -> ftp.rahul.net:/pub/BLURB

agora.rain.com

name -----> RainDrop Laboratories
dialup -----> 503-293-1772 (2400) 503-293-2059 (v.32, v.32 bis) 'apply'
area codes ----> 503
local access --> OR: Portland, Beaverton, Hillsboro, Forest Grove, Gresham, Tigard, Lake Oswego, Oregon City, Tualatin, Wilsonville
long distance -> provided by user
services -----> shell, ftp, telnet, gopher, usenet
fees -----> \$6/month (1 hr/day limit)
email -----> info@agora.rain.com
voice -----> n/a
ftp more info -> agora.rain.com:/pub/gopher-data/agora/agora

anomaly

name -----> Anomaly - Rhode Island's Gateway To The Internet
dialup -----> 401-331-3706 (v.32) or 401-455-0347 (PEP)
area codes ----> 401, 508
local access --> RI: Providence/Seekonk Zone
long distance -> provided by user
services -----> shell, ftp, telnet, SLIP
fees -----> Commercial: \$125/6 months or \$200/year; Educational: \$75/6 months or \$125/year
email -----> info@anomaly.sbs.risc.net voice -----> 401-273-4669 ftp more info -> anomaly.sbs.risc.net:/anomaly.info/access.zip **Ariadne**
name -----> Ariadne - Greek Academic and Research Network
dialup -----> +301 65-48-800 (1200 - 9600 bps)
area codes ----> +301
local access --> Athens, Greece
long distance -> provided by user
services -----> e-mail, ftp, telnet, gopher, talk, pad(EuropaNet)
fees -----> 5900 drachmas per calendar quarter, 1 hr/day limit.

email -----> dialup@leon.nrcps.ariadne-t.gr
voice -----> +301 65-13-392
fax -----> +301 6532910
ftp more info -> n/a

CAM.ORG

name -----> Communications Accessibles Montreal
dialup -----> 514-281-5601 (v.32 bis, HST) 514-738-3664 (PEP),514-923-2103 (ZyXeL 19.2K) 514-466-0592 (v.32)
area codes ----> 514
local access --> QC: Montreal, Laval, South-Shore, West-Island
long distance -> provided by user
services -----> shell, ftp, telnet, feeds, SLIP, PPP, FAX gateway
fees -----> \$25/month Cdn.
email -----> info@CAM.ORG
voice -----> 514-923-2102
ftp more info -> n/a

CAPCON

name -----> CAPCON Library Network
dialup -----> contact for number
area codes ----> 202, 301, 410, 703
local access --> District of Columbia, Suburban Maryland & Northern Virginia
long distance -> various plans available/recommended; contact for details
services -----> menu, archie, ftp, gopher, listservs, telnet, wais, whois, full day training and 'CAPCON Connect User Manual'
fees -----> \$35 start-up + \$150/yr + \$24/mo for first account from an institution; \$35 start-up + \$90/yr + \$15/mo for additional users (member rates lower); 20 hours/month included, additional hours \$2/hr
email -----> capcon@capcon.net
voice -----> 202-331-5771
fax -----> 202-797-7719
ftp more info -> n/a

class

name -----> Cooperative Library Agency for Systems and Services
dialup -----> contact for number; NOTE: CLASS serves libraries/information distributors only
area codes ----> 800
local access --> anywhere (800) service is available
long distance -> included
services -----> ftp, telnet, gopher, wais, hytelnet
fees -----> \$10.50/hour + \$150/year for first account + \$50/year each additional account + \$135/year CLASS membership
email -----> class@class.org
voice -----> 800-488-4559
fax -----> 408-453-5379
ftp more info -> n/a

cns

name -----> Community News Service
dialup -----> 719-520-1700 id 'new', passwd 'newuser'
area codes ----> 303, 719, 800
local access --> CO: Colorado Springs, Denver; continental US/800
long distance -> 800 or provided by user
services -----> UNIX shell, email, ftp, telnet, irc, USENET, Clarinet, gopher
fees -----> \$1/hour; \$10/month minimum + \$35 signup
email -----> klaus@cscns.com

voice -----> 719-579-9120

ftp more info -> n/a

concert

name -----> CONCERT-CONNECT

dialup -----> contact for number

area codes ----> 704, 919

local access --> NC: Asheville, Chapel Hill, Charlotte, Durham, Greensboro, Greenville, Raleigh, Winston-Salem, Research Triangle Park

long distance -> provided by user

services -----> UUCP, SLIP

fees -----> SLIP: \$150 educational/research or \$180 commercial for first 60 hours/month + \$300

signup

email -----> info@concert.net

voice -----> 919-248-1999

ftp more info -> ftp.concert.net

connect.com.au

name -----> connect.com.au Pty Ltd

dialup -----> contact for number

area codes ----> +61 3, +61 2

local access --> Australia: Melbourne, Sydney

long distance -> provided by user

services -----> SLIP, PPP, ISDN, UUCP, ftp, telnet, NTP, FTPmail

fees -----> AUS\$2000/year (1 hour/day), 10% discount for AUUG members; other billing negotiable

email -----> connect@connect.com.au

voice -----> +61 3 5282239

fax -----> +61 3 5285887

ftp more info -> ftp.connect.com.au

crash.cts.com

name -----> CTS Network Services (CTSNET)

dialup -----> 619-593-6400 HST, 619-593-7300 V.32bis, 619-593-9500 PEP 'help'

area codes ----> 619

local access --> CA: San Diego, Pt. Loma, La Jolla, La Mesa, El Cajon, Poway, Ramona, Chula Vista, National City, Mira Mesa, Alpine, East County

long distance -> provided by user

services -----> shell, UUCP, Usenet newsfeeds, NNTP, Reuters, FTP, Telnet, SLIP, PPP, IRC, Gopher, Archie, WAIS, POPmail, UMDSS, domains, nameservice, DNS

fees -----> personal: \$10-\$23/month, \$15 startup; commercial: \$20->/month, \$15 startup

email -----> info@crash.cts.com (server), support@crash.cts.com (human)

voice -----> 619-593-9597

fax -----> 619-444-9247

ftp more info -> n/a

crl

name -----> CR Laboratories Dialup Internet Access

dialup -----> 415-389-UNIX

area codes ----> 415, 510, 602, 707, 800

local access --> CA: San Francisco Bay area + San Rafael, Santa Rosa; AZ: Phoenix, Scottsdale, Tempe, and Glendale AZ; continental US/800

long distance -> 800 or provided by user

services -----> shell, ftp, telnet, feeds, SLIP, WAIS

fees -----> \$17.50/month + \$19.50 signup

email -----> info@crl.com

voice -----> 415-381-2800

ftp more info -> n/a

csn

name -----> Colorado SuperNet, Inc.

dialup -----> contact for number

area codes ----> 303, 719, 800

local access --> CO: Alamosa, Boulder/Denver, Colorado Springs, Durango, Fort Collins, Frisco, Glenwood Springs/Aspen, Grand Junction, Greeley, Gunnison, Pueblo, Telluride; anywhere 800 service is available

long distance -> provided by user or 800

services -----> shell or menu, UUCP, SLIP, 56K, ISDN, T1; ftp, telnet, irc, gopher, WAIS, domains, anonymous ftp space, email-to-fax

fees -----> \$1/hour off-peak, \$3/hour peak (\$250 max/month) + \$20 signup, \$5/hr surcharge for 800 use

email -----> info@csn.org

voice -----> 303-273-3471

fax -----> 303-273-3475

ftp more info -> csn.org:/CSN/reports/DialinInfo.txt

off-peak -----> midnight to 6am

cyber

name -----> The Cyberspace Station

dialup -----> 619-634-1376 'guest'

area codes ----> 619

local access --> CA: San Diego

long distance -> provided by user

services -----> shell, ftp, telnet, irc

fees -----> \$15/month + \$10 startup or \$60 for six months

email -----> help@cyber.net

voice -----> n/a

ftp more info -> n/a

Demon

name -----> Demon Internet Systems (DIS)

dialup -----> +44 (0)81 343 4848

area codes ----> +44 (0)81

local access --> London, England

long distance -> provided by user

services -----> ftp, telnet, SLIP/PPP

fees -----> GBPounds 10.00/month; 132.50/year (inc 12.50 startup charge). No on-line time charges.

email -----> internet@demon.co.uk

voice -----> +44 (0)81 349 0063

ftp more info -> n/a

delphi

name -----> DELPHI

dialup -----> 800-365-4636 'JOINDELPHI password:INTERNETSIG'

area codes ----> 617, PDN

local access --> MA: Boston; KS: Kansas City

long distance -> Sprintnet or Tymnet: \$9/hour weekday business hours, no charge nights and weekends

services -----> ftp, telnet, feeds, user groups, wire services, member conferencing

fees -----> \$10/month for 4 hours or \$20/month for 20 hours + \$3/month for Internet services

email -----> walthowe@delphi.com

voice -----> 800-544-4005

ftp more info -> n/a

dial-n-cerf

name -----> DIAL n' CERF or DIAL n' CERF AYC
dialup -----> contact for number
area codes ----> 213, 310, 415, 510, 619, 714, 818
local access --> CA: Los Angeles, Oakland, San Diego, Irvine, Pasadena, Palo Alto
long distance -> provided by user
services -----> shell, menu, irc, ftp, hytelnet, gopher, WAIS, WWW, terminal service, SLIP
fees -----> \$5/hour (\$3/hour on weekend) + \$20/month + \$50 startup OR \$250/month flat for AYC
email -----> help@cerf.net
voice -----> 800-876-2373 or 619-455-3900
ftp more info -> nic.cerf.net:/cerfnet/dial-n-cerf/
off-peak -----> Weekend: 5pm Friday to 5pm Sunday

dial-n-cerf-usa

name -----> DIAL n' CERF USA
dialup -----> contact for number
area codes ----> 800
local access --> anywhere (800) service is available
long distance -> included
services -----> shell, menu, irc, ftp, hytelnet, gopher, WAIS, WWW, terminal service, SLIP
fees -----> \$10/hour (\$8/hour on weekend) + \$20/month
email -----> help@cerf.net
voice -----> 800-876-2373 or 619-455-3900
ftp more info -> nic.cerf.net:/cerfnet/dial-n-cerf/
off-peak -----> Weekend: 5pm Friday to 5pm Sunday

dircon

name -----> The Direct Connection
dialup -----> +44 (0)81 317 2222
area codes ----> +44 (0)81
local access --> London, England
long distance -> provided by user
services -----> shell or menu, UUCP feeds, SLIP/PPP, ftp, telnet, gopher, WAIS, Archie, personal ftp/file space, email-to-fax
fees -----> Subscriptions from GBPounds 10 per month, no on-line charges. GBPounds 7.50 signup fee.
email -----> helpdesk@dircon.co.uk
voice -----> +44 (0)81 317 0100
fax -----> +44 (0)81 317 0100
ftp more info -> n/a

eskimo

name -----> Eskimo North
dialup -----> 206-367-3837 300-2400 bps, 206-362-6731 for 9600/14.4k, 206-742-1150 World Blazer
area codes ----> 206
local access --> WA: Seattle, Everett
long distance -> provided by user
services -----> shell, ftp, telnet
fees -----> \$10/month or \$96/year
email -----> nanook@eskimo.com
voice -----> 206-367-7457
ftp more info -> n/a

express

name -----> Express Access - Online Communications Service
dialup -----> 301-220-0462, 410-766-1855, 908-937-9481 'new'

area codes ----> 202, 301, 410, 703, 908
local access --> Northern VA, Baltimore MD, Washington DC, New Brunswick NJ
long distance -> provided by user
services -----> shell, ftp, telnet, irc, gopher, hytelnet, www
fees -----> \$25/month or \$250/year
email -----> info@digex.com
voice -----> 800-546-2010, 301-220-2020
ftp more info -> n/a

genesis

name -----> 'genesis', MCSNet
dialup -----> (312) 248-0900 V.32, 0970 V.32bis, 6295 (PEP), follow prompts
area codes ----> 312, 708, 815
local access --> IL: Chicago
long distance -> provided by user
services -----> shell, ftp, telnet, feeds, email, irc, gopher, hytelnet, etc. fees -----> \$25/month or \$65/3 months untimed, \$30/3 months for 15 hours/month
email -----> info@genesis.mcs.com
voice -----> (312) 248-UNIX
ftp more info -> n/a

grebyn

name -----> Grebyn Corporation
dialup -----> 703-281-7997, 'apply'
area codes ----> 202, 301, 703
local access --> Northern VA, Southern MD, Washington DC
long distance -> provided by user
services -----> shell, ftp, telnet
fees -----> \$30/month
email -----> info@grebyn.com
voice -----> 703-281-2194
ftp more info -> n/a

halcyon

name -----> Halcyon
dialup -----> 206-382-6245 'new', 8N1
area codes ----> 206
local access --> Seattle, WA
long distance -> provided by user
services -----> shell, telnet, ftp, bbs, irc, gopher, hytelnet
fees -----> \$200/year, or \$60/quarter + \$10 start-up
email -----> info@halcyon.com
voice -----> 206-955-1050
ftp more info -> halcyon.com:/pub/waffle/info

IGC

name -----> Institute for Global Communications/IGC Networks (PeaceNet, EcoNet, ConflictNet, LaborNet, HomeoNet)
dialup -----> 415-322-0284 (N-8-1), 'new'
area codes ----> 415, 800, PDN
local access --> CA: Palo Alto, San Francisco
long distance -> (per hour, off-peak/peak) SprintNet: \$2/\$7; 800: \$11/\$11
services -----> telnet, local newsgroups for environmental, peace/social justice issues; NO ftp
fees -----> \$10/month + \$3/hr after first hour
email -----> support@igc.apc.org
voice -----> 415-442-0220

ftp more info -> [igc.apc.org/pub](ftp://igc.apc.org/pub)

holonet

name -----> HoloNet
dialup -----> 510-704-1058
area codes ----> 510, PDN
local access --> Berkeley, CA
long distance -> (per hour, off-peak/peak) Bay Area: \$0.50/\$0.95; PSINet A: \$0.95/\$1.95; PSINet B: \$2.50/\$6.00; Tymnet: \$3.75/\$7.50
services -----> ftp, telnet, irc, games
fees -----> \$2/hour off-peak, \$4/hour peak; \$6/month or \$60/year minimum
email -----> info@holonet.net
voice -----> 510-704-0160
ftp more info -> [holonet.net/info/](ftp://holonet.net/info/)
off-peak -----> 5pm to 8am + weekends and holidays

ibmpcug

name -----> UK PC User Group
dialup -----> +44 (0)81 863 6646
area codes ----> +44 (0)81
local access --> London, England
long distance -> provided by user
services -----> ftp, telnet, bbs, irc, feeds
fees -----> GBPounds 15.50/month or 160/year + 10 startup (no time charges)
email -----> info@ibmpcug.co.uk
voice -----> +44 (0)81 863 6646
ftp more info -> n/a

ids

name -----> The IDS World Network
dialup -----> 401-884-9002, 401-785-1067
area codes ----> 401
local access --> East Greenwich, RI; northern RI
long distance -> provided by user
services -----> ftp, telnet, SLIP, feeds, bbs
fees -----> \$10/month or \$50/half year or \$100/year
email -----> sysadmin@ids.net
voice -----> 401-884-7856
ftp more info -> [ids.net/ids.net](ftp://ids.net/ids.net)

jvnc

name -----> The John von Neumann Computer Network - Tiger Mail & Dialin' Terminal
dialup -----> contact for number
area codes ----> 800
local access --> anywhere (800) service is available
long distance -> included
services -----> email and newsfeed or terminal access only
fees -----> \$19/month + \$10/hour + \$36 startup (PC or Mac SLIP software included)
email -----> info@jvnc.net
voice -----> 800-35-TIGER, 609-258-2400
ftp more info -> n/a

jvnc-tiger

name -----> The John von Neumann Computer Network - Dialin' Tiger
dialup -----> contact for number
area codes ----> 201, 203, 215, 401, 516, 609, 908

local access --> Princeton & Newark, NJ; Philadelphia, PA; Garden City, NY; Bridgeport, New Haven, & Storrs, CT; Providence, RI
long distance -> provided by user
services -----> ftp, telnet, SLIP, feeds, optional shell
fees -----> \$99/month + \$99 startup (PC or Mac SLIP software included -- shell is additional \$21/month)
email -----> info@jvnc.net
voice -----> 800-35-TIGER, 609-258-2400
ftp more info -> n/a

maestro

name -----> Maestro
dialup -----> (212) 240-9700 'newuser'
area codes ----> 212, 718
local access --> NY: New York City
long distance -> provided by user
services -----> shell, ftp, telnet, gopher, wais, irc, feeds, etc.
fees -----> \$15/month or \$150/year
email -----> info@maestro.com (autoreply); staff@maestro.com, rkelly@maestro.com, ksingh@maestro.com
voice -----> 212-240-9600
ftp more info -> n/a

metronet

name -----> Texas Metronet
dialup -----> 214-705-2902 9600bps, 214-705-2917 2400bps, 'info/info' or 'signup/signup'
area codes ----> 214
local access --> TX: Dallas
long distance -> provided by user
services -----> shell, ftp, telnet, feeds, SLIP
fees -----> \$10-\$50/month + \$20-\$30 startup
email -----> srl@metronet.com / 73157.1323@compuserve.com / GENie:S.LINEBARG
voice -----> 214-401-2800
fax -----> 214-401-2802 (8am-5pm CST weekdays)
ftp more info -> n/a

michnet

name -----> Merit Network, Inc. -- MichNet project
dialup -----> contact for number or telnet hermes.merit.edu and type 'help' at 'Which host?' prompt
area codes ----> 313, 517, 616, 906, PDN
local access --> Michigan; Boston, MA; Wash. DC
long distance -> SprintNet, Autonet, Michigan Bell packet-switch network
services -----> telnet, SLIP, PPP, outbound SprintNet, Autonet and Ann Arbor dialout
fees -----> \$35/month + \$40 signup (\$10/month for K-12 & libraries in Michigan)
email -----> info@merit.edu
voice -----> 313-764-9430
ftp more info -> nic.merit.edu:/

mindvox

name -----> MindVOX
dialup -----> 212-989-4141 'mindvox' 'guest'
area codes ----> 212, 718
local access --> NY: New York City
long distance -> provided by user
services -----> conferencing system ftp, telnet, irc, gopher, hytelnet, Archives, BBS
fees -----> \$15-\$20/month. No startup.

email -----> info@phantom.com
voice -----> 212-989-2418
ftp more info -> n/a

MSen

name -----> MSen
dialup -----> contact for number
area codes ----> 313
local access --> All of SE Michigan (313)
long distance -> provided by user
services -----> shell, WAIS, gopher, telnet, ftp, SLIP, PPP, IRC, WWW, Picospan BBS, ftp space
fees -----> \$20/month; \$20 startup
email -----> info@msen.com
voice -----> 313-998-4562
fax -----> 313-998-4563
ftp more info -> ftp.msen.com:/pub/vendor/msen

MV

name -----> MV Communications, Inc.
dialup -----> contact for numbers
area codes ----> 603
local access --> Many NH communities
long distance -> provided by user
services -----> shell, ftp, telnet, gopher, SLIP, email, feeds, dns, archives, etc.
fees -----> \$5.00/mo minimum + variable hourly rates. See schedule.
email -----> info@mv.com
voice -----> 603-429-2223
ftp more info -> ftp.mv.com:/pub/mv

nearnet

name -----> NEARnet
dialup -----> contact for numbers
area codes ----> 508, 603, 617
local access --> Boston, MA; Nashua, NH
long distance -> provided by user
services -----> SLIP, email, feeds, dns
fees -----> \$250/month
email -----> nearnet-join@nic.near.net
voice -----> 617-873-8730
ftp more info -> nic.near.net:/docs

netcom

name -----> Netcom Online Communication Services
dialup -----> 206-527-5992, 214-753-0045, 310-842-8835, 408-241-9760, 408-459-9851, 415-328-9940, 415-985-5650, 503-626-6833, 510-426-6610, 510-865-9004, 619-234-0524, 714-708-3800, 916-965-1371
area codes ----> 206, 213, 310, 408, 415, 503, 510, 619, 818, 916
local access --> CA: SF Bay Area (5 POPs), Sacramento, Santa Cruz, Los Angeles, Irvine, San Diego;
OR: Portland; TX: Dallas/Fort Worth; WA: Seattle
long distance -> provided by user
services -----> shell, ftp, telnet, irc, WAIS, gopher, SLIP/PPP, ftp space, feeds, dns
fees -----> \$19.50/month + \$20.00 signup
email -----> info@netcom.com
voice -----> 408-554-UNIX
ftp more info -> n/a

northshore

name -----> North Shore Access
dialup -----> 617-593-5774 (v.32, PEP) 'guest'
area codes ----> 617, 508
local access --> MA: Wakefield, Lynnfield, Lynn, Saugus, Revere, Peabody, Salem, Marblehead, Swampscott
long distance -> provided by user
services -----> shell (SunOS UNIX), ftp, telnet, archie, gopher, feeds
fees -----> \$10/month includes 10 hours connect, \$1/hr thereafter
email -----> postmaster@northshore.ecosoft.com
voice -----> 617-593-3110 voicemail
ftp more info -> northshore.ecosoft.com:/pub/flyer

novalink

name -----> NovaLink
dialup -----> (800) 937-7644 'new' or 'info', 508-754-4009 2400, 14400
area codes ----> 508
local access --> MA: Worcester
long distance -> CPS: \$1.80/hour 2400, 9600
services -----> ftp, telnet, gopher, shell, irc, XWindows, feeds, adult, user groups, FAX, Legends of Future Past
fees -----> \$12.95 sign-up (refundable and includes 2 hours), + \$9.95/mo (includes 5 daytime hours) + \$1.80/hr
email -----> info@novalink.com
voice -----> 800-274-2814
ftp more info -> n/a

nwnexus

name -----> Northwest Nexus Inc.
dialup -----> contact for numbers
area codes ----> 206
local access --> WA: Seattle
long distance -> provided by user
services -----> UUCP, SLIP, PPP, feeds, dns
fees -----> \$10/month for first 10 hours + \$3/hr; \$20 start-up
email -----> info@nwnexus.wa.com
voice -----> 206-455-3505
ftp more info -> nwnexus.wa.com:/NWNEXUS.info.txt

OARnet

name -----> OARnet
dialup -----> send e-mail to nic@oar.net
area codes ----> 614, 513, 419, 216, 800
local access --> OH: Columbus, Cincinnati, Cleveland, Dayton
long distance -> 800 service
services -----> email, ftp, telnet, newsfeed
fees -----> \$4.00/hr to \$330.00/month; call for code or send email
email -----> nic@oar.net
voice -----> 614-292-8100
fax -----> 614-292-7168
ftp more info -> n/a

oldcolo

name -----> Old Colorado City Communications
dialup -----> 719-632-4111 'newuser'
area codes ----> 719

local access --> CO: Colorado Springs
long distance -> provided by user
services -----> shell, ftp, telnet, AKCS, home of the NAPLPS conference
fees -----> \$25/month
email -----> dave@oldcolo.com / thefox@oldcolo.com
voice -----> 719-632-4848, 719-593-7575 or 719-636-2040
fax -----> 719-593-7521
ftp more info -> n/a

panix

name -----> PANIX Public Access Unix
dialup -----> 212-787-3100 'newuser'
area codes ----> 212, 718
local access --> New York City, NY
long distance -> provided by user
services -----> shell, ftp, telnet, gopher, wais, irc, feeds
fees -----> \$19/month or \$208/year + \$40 signup
email -----> alexis@panix.com, jsb@panix.com
voice -----> 212-877-4854 (Alexis Rosen), 212-691-1526 (Jim Baumbach)
ftp more info -> n/a

portal

name -----> The Portal System
dialup -----> 408-973-8091 high-speed, 408-725-0561 2400bps; 'info'
area codes ----> 408, 415, PDN
local access --> CA: Cupertino, Mountain View, San Jose
long distance -> SprintNet: \$2.50/hour off-peak, \$7-\$10/hour peak; Tymnet: \$2.50/hour off-peak, \$13/hour peak
services -----> shell, ftp, telnet, IRC, UUCP, feeds, bbs
fees -----> \$19.95/month + \$19.95 signup
email -----> cs@cup.portal.com, info@portal.com
voice -----> 408-973-9111
ftp more info -> n/a
off-peak -----> 6pm to 7am + weekends and holidays

PREPnet

name -----> PREPnet
dialup -----> contact for numbers
area codes ----> 215, 412, 717, 814
local access --> PA: Philadelphia, Pittsburgh, Harrisburg
long distance -> provided by user
services -----> SLIP, terminal service, telnet, ftp
fees -----> \$1,000/year membership. Equipment-\$325 onetime fee plus \$40/month
email -----> prepnet@cmu.edu
voice -----> 412-268-7870
fax -----> 412-268-7875
ftp more info -> ftp.prepnet.com:/prepnet/general/

psilink

name -----> PSILink - Personal Internet Access
dialup -----> North America: send email to classa-na-numbers@psi.com and classb-na-numbers@psi.com; Rest of World: send email to classb-row-numbers@psi.com
area codes ----> PDN
local access -->
long distance -> (per hour, off-peak/peak) PSINet A: included; PSINet B: \$6/\$2.50; PSINet B international: \$18/\$18

services -----> email and newsfeed, ftp
fees -----> 2400: \$19/month; 9600: \$29/month (PSILink software included)
email -----> all-info@psi.com, psilink-info@psi.com
voice -----> 703-620-6651
fax -----> 703-620-4586
ftp more info -> ftp.psi.com:/

psi-world-dial

name -----> PSI's World-Dial Service
dialup -----> send email to numbers-info@psi.com
area codes ----> PDN
local access -->
long distance -> (per hour, off-peak/peak) V.22bis: \$1.25/\$2.75; V.32: \$3.00/\$4.50; 14.4K: \$4.00/\$6.50
services -----> telnet, rlogin, tn3270, XRemote
fees -----> \$9/month minimum + \$19 startup
email -----> all-info@psi.com, world-dial-info@psi.com
voice -----> 703-620-6651
fax -----> 703-620-4586
ftp more info -> ftp.psi.com:/
off-peak -----> 8pm to 8am + weekends and holidays

PUCnet

name -----> PUCnet Computer Connections
dialup -----> 403-484-5640 (v.32 bis) 'guest'
area codes ----> 403
local access --> AB: Edmonton and surrounding communities in the Extended Flat Rate Calling Area
long distance -> provided by user
services -----> shell, menu, ftp, telnet, feeds, USENET
fees -----> \$Cdn 20/month (20 hours connect time) + \$5/hr (ftp & telnet only) + \$10 signup
email -----> info@PUCnet.com (Mail responder) or pwilson@PUCnet.com
voice -----> 403-448-1901
fax -----> 403-484-7103
ftp more info -> n/a

sugar

name -----> NeoSoft's Sugar Land Unix
dialup -----> 713-684-5900
area codes ----> 713
local access --> TX: Houston metro area
long distance -> provided by user
services -----> bbs, shell, ftp, telnet, irc, feeds, UUCP
fees -----> \$29.95/month
email -----> info@NeoSoft.com
voice -----> 713-438-4964
ftp more info -> n/a

telerama

name -----> Telerama Public Access Internet
dialup -----> 412-481-5302 'new' (2400)
area codes ----> 412
local access --> PA: Pittsburgh
long distance -> provided by user
services -----> telnet, ftp, irc, gopher, ClariNet/Usenet, shell/menu, uucp
fees -----> 66 cents/hour 2400bps; \$1.32/hour 14.4K bps; \$6 min/month
email -----> info@telerama.pgh.pa.us
voice -----> 412-481-3505

ftp more info -> telerama.pgh.pa.us:/info/general.info

tmn

name -----> The Meta Network
dialup -----> contact for numbers
area codes ----> 703, 202, 301, PDN
local access --> Washington, DC metro area
long distance -> SprintNet: \$6.75/hr; FTS-2000; Acunet
services -----> Caucus conferencing, email, shell, ftp, telnet, bbs, feeds
fees -----> \$20/month + \$15 signup/first month
email -----> info@tmn.com
voice -----> 703-243-6622
ftp more info -> n/a

uunorth

name -----> UUnorth
dialup -----> contact for numbers
area codes ----> 416, 519, 613
local access --> ON: Toronto
long distance -> provided by user
services -----> shell, ftp, telnet, gopher, feeds, IRC, feeds, SLIP, PPP
fees -----> (All Cdn\$ + GST) \$20 startup + \$25 for 20 hours off-peak + \$1.25/hr OR \$40 for 40 hours up to 5/day + \$2/hr OR \$3/hr
email -----> uunorth@uunorth.north.net
voice -----> 416-225-8649
fax -----> 416-225-0525
ftp more info -> n/a

Vnet

name -----> Vnet Internet Access, Inc.
dialup -----> 704-347-8839 'new'
area codes ----> 704
local access --> NC: Charlotte; RTP, Raleigh, Durham planned by 8/1/93; special offer in other selected NC communities, contact for details
long distance -> provided by user
services -----> shell, ftp, telnet, irc, gopher, hytelnet
fees -----> \$25/month or \$259/year
email -----> info@char.vnet.net
voice -----> 704-374-0779
ftp more info -> n/a

well

name -----> The Whole Earth 'Lectronic Link
dialup -----> 415-332-6106 'newuser'
area codes ----> 415, PDN
local access --> Sausalito, CA
long distance -> Compuserve Packet Network: \$4/hour
services -----> shell, ftp, telnet, bbs
fees -----> \$15.00/month + \$2.00/hr
email -----> info@well.sf.ca.us
voice -----> 415-332-4335
ftp more info -> n/a

variat

name -----> APK- Public Access UNI* Site
dialup -----> 216-481-9436 (2400), 216-481-9425 (V.32bis, SuperPEP)

area codes ----> 216
local access --> OH: Cleveland
long distance -> provided by user
services -----> shell, ftp, telnet, irc, gopher, feeds, BBS(Uniboard1.10)
fees -----> \$35/monthly, \$200/6months, \$20 signup
email -----> zbig@wariat.org
voice -----> 216-481-9428
ftp more info -> n/a

world

name -----> The World
dialup -----> 617-739-9753 'new'
area codes ----> 617, PDN
local access --> Boston, MA
long distance -> Compuserve Packet Network: \$5.60/hour
services -----> shell, ftp, telnet, irc
fees -----> \$5.00/month + \$2.00/hr or \$20/month for 20 hours
email -----> office@world.std.com
voice -----> 617-739-0202
ftp more info -> world.std.com:/world-info/description

wyvern

name -----> Wyvern Technologies, Inc.
dialup -----> (804) 627-1828 Norfolk, (804) 886-0662 (Peninsula)
area codes ----> 804
local access --> VA: Norfolk, Virginia Beach, Portsmouth, Chesapeake, Newport News, Hampton, Williamsburg
long distance -> provided by user
services -----> shell, menu, ftp, telnet, uucp feeds, irc, archie, gopher, UPI news, email, dns, archives
fees -----> \$15/month or \$144/year, \$10 startup
email -----> system@wyvern.com
voice -----> 804-622-4289
fax -----> 804-622-7158
ftp more info -> n/a

PDIAL - What It is

This is the PDIAL, the Public Dialup Internet Access List.

It is a list of Internet service providers offering public access dialins and outgoing Internet access (ftp, telnet, etc.). Most of them provide email and USENET news and other services as well.

If one of these systems is not accessible to you and you need email or USENET access, but **don't** need ftp or telnet, you have many more public access systems from which to choose. Public access systems without ftp or telnet are **not** listed in this list, however. See the nixpub (alt.bbs, comp.misc) list and other BBS lists.

Some of these providers offer time-shared access to a shell or BBS program on a computer connected directly to the Internet, through which you can FTP or telnet to other systems on the Internet. Usually other services are provided as well. Generally, you need only a modem and terminal or terminal emulator to access these systems. Check for "shell", "bbs", or "menu" on the "services" line.

Other providers connect you directly to the Internet via SLIP or PPP when you dial in. For these you need a computer system capable of running the software to interface with the Internet, e.g., a Unix machine, PC, or Mac. Check for "SLIP", or "PPP" on the services line.

While I have included all sites for which I have complete information, this list is surely incomplete. If you have any additions or corrections please send them to me at one of the addresses listed in section.

PDIAL - Updates?

EMAIL:

From the Information Deli archive server (most up-to-date):

To receive the current edition of the PDIAL, send email containing the phrase "Send PDIAL" to "info-deli-server@netcom.com". To be put on a list of people who receive future editions as they are published, send email containing the phrase "Subscribe PDIAL" to "info-deli-server@netcom.com". To receive both the most recent and future editions, send both messages.

From the news.answers FAQ archive:

Send email with the message "send usenet/news.answers/pdial" to "mail-server@rtfm.mit.edu". For help, send the message "help" to "mail-server@rtfm.mit.edu".

USENET:

The PDIAL list is posted semi-regularly to alt.internet.access.wanted, alt.bbs.lists, alt.online-service, ba.internet, and news.answers.

FTP ARCHIVE SITES (PDIAL and other useful information):

Information Deli FTP site:

ftp.netcom.com:/pub/info-deli/public-access/pdial (192.100.81.100)

As part of a collection of public access lists:

VFL.Paramax.COM:/pub/pubnet/pdial (28.126.220.104)

From the Merit Network Information Center Internet information archive:

nic.merit.edu:/internet/pdial (35.1.1.48)

As part of an Internet access compilation file:

liberty.uc.wlu.edu:/pub/lawlib/internet.access (137.113.10.35)

As part of the news.answers FAQ archive:

rtfm.mit.edu:/pub/usenet/news.answers/pdial (18.70.0.224)

PDIAL Finding PDN Access Numbers

Here's how to get local access numbers or information for the various PDNs. Generally, you can contact the site you're calling for help, too.

IMPORTANT NOTE: Unless noted otherwise, set your modem to 7E1 (7 data bits, even parity, 1 stop bit) when dialing to look up access numbers by modem as instructed below.

BT Tymnet

For information and local access numbers, call 800-937-2862 (voice) or 215-666-1770 (voice).

To look up access numbers by modem, dial a local access number, hit <cr> and 'a', and enter "information" at the "please log in:" prompt.

Compuserve Packet Network

You do NOT have to be a Compuserve member to use the CPN to dial other services.

For information and local access numbers, call 800-848-8199 (voice).

To look up access numbers by modem, dial a local access number, hit <cr> and enter "PHONES" at the "Host Name:" prompt.

PC Pursuit (SprintNet)

PC Pursuit may be used to call a modem in any of 44 major metro areas in the US from local access numbers around the country. As such, it can be used to access most of the providers listed in the PDIAL (those with no other PDN access or even those which are accessible by other PDNs).

For information and registration, call 800-736-1130 (voice) or 800-877-2006 (data). More information is also available on the PC Pursuit support BBS (see below).

To look up access numbers by modem, dial 800-546-1000, hit <cr><cr><cr> at 1200 baud or '@<cr><cr>' at 2400 baud. Enter "MAIL" at the "@" prompt, then "PHONES" at the "USER NAME:" prompt, and "PHONES" at the "PASSWORD:" prompt.

The PC Pursuit support BBS provides a great deal of information about PC Pursuit, including rates, terms and conditions, outdial numbers, etc.

To access the PC Pursuit support BBS, dial a local access number and hit <cr><cr><cr> at 1200 baud or '@<cr><cr>' at 2400 baud. Change modem parameters to 8N1, and enter "C PURSUIT" at the "@" prompt.

PSINet

For information, call 800-82PSI82 (voice) or 703-620-6651 (voice), or send email to "all-info@psi.com". For a list of local access numbers send email to "numbers-info@psi.com".

Additional Notices; Submitting Updates and Corrections

I make no representations about the suitability or accuracy of this document for any purpose. It is provided "as is" without express or implied warranty. All information contained herein is subject to change.

For UPDATES AND CORRECTIONS or REQUESTS FOR COMMERCIAL DISTRIBUTION, contact the author at the addresses below. If you have new or updated entries, send them to me in the format used in the PDIAL listings. Also include an email address to which I can send requests for more information.

Peter Kaminski / The Information Deli
kaminski@netcom.com (preferred)
71053.2155@compuserve.com

Gopher+

An excerpt...

Upward compatible enhancements to the Internet Gopher protocol

Farhad Anklesaria, Paul Lindner, Mark P. McCahill, Daniel Torrey, David Johnson, Bob Alberti

Microcomputer and Workstation Networks Center
Computer and Information Systems
University of Minnesota

July 30, 1993

gopher+ . 1. Hardier strains of mammals of the family Geomyidae. 2. (*Amer. colloq.*) Native or inhabitant of Minnesota, the Gopher state, in full winter regalia (see PARKA). 3. (*Amer. colloq.*) Executive secretary. 4. (*computer tech.*) Software following a simple protocol for burrowing through a TCP/IP internet, made more powerful by simple enhancements (see *CREEPING FEATURISM*).

The Internet Gopher protocol was designed primarily to act as a distributed document delivery system. It has enjoyed increasing popularity, and is being used for purposes that were not visualized when the protocol was first outlined. The rest of this document describes the Gopher+ enhancements in a non-rigorous but easily read and understood way. There is a short BNF-like section at the end for exact syntax descriptions. **Throughout the document, "F" stands for the ASCII TAB character.** There is an implicit carriage return and linefeed at the ends of lines; these will only be explicitly mentioned where necessary to avoid confusion. To understand this document, you really must be familiar with the basic Gopher protocol.

Servers and clients understanding the Gopher+ extensions will transmit extra information at the ends of list and request lines. Old, basic gopher clients ignore such information. New Gopher+ aware servers continue to work at their old level with unenhanced clients. The extra information that can be communicated by Gopher+ clients may be used to summon new capabilities to bridge the most keenly felt shortcomings of the venerable old Gopher.

2. How does Gopher+ work?

Gopher+ enhancements rely on transmitting an "extra" tab delimited fields beyond what regular (old) Gopher servers and clients now use. If most existing (old) clients were to encounter extra stuff beyond the "port" field in a list (directory), most would ignore it. Gopher+ servers will return item descriptions in this form:

```
1Display stringFselector stringFhostFportFextrastuff<CRLF>
```

If an existing (old) client has problems with additional information beyond the port, it should not take much more than a simple tweak to have it discard unneeded stuff.

All the regular Gopher protocol info remains intact except for:

(1) Instead of just a CRLF after the port field in any item of a list (directory) there may be an optional TAB followed by extra stuff as noted above (explanation to follow).

(2) In the original Gopher protocol, there was provision for a date-time descriptor (sec 3.6) to be sent after the selector (for use by autoindexer beasts). As far as we know, while the descriptor is implemented in the Mac server, it is not in any other server and no clients or daemons use it. This is a good time to withdraw this feature. The basic gopher protocol has been revised for the final time and will be frozen.

. . . Gopher was originally designed as an essentially anonymous document retrieval protocol to facilitate easy access to information rather than limited access. Various kinds of restrictive mechanisms have been implemented at the server end (for example, access restriction by source IP address); however if you have sensitive information, we emphasize that putting it under a Gopher's nose is not a good idea.

Winsock.dll



While many commercial vendors sell a WINSOCK.DLL (Dynamic Link Library) for Windows, I've found one shareware package that works well with the [Clarkson packet drivers](#). You can obtain it via anonymous [ftp](#) from:

<ftp.utas.edu.au:/pc/trumpet/winsock>

You can obtain it via gopher by pointing your gopher at: <trans.csuohio.edu>

Peter Tattam (email: peter@psychnet.psychol.utas.edu.au), the programmer of the Trumpet WINSOCK.DLL, also has a very nice NEWS reader for Windows.



related topic: [Winsock FAQ](#)

Winsock FAQ

Editor's note: This is just an excerpt of the Windows Sockets (winsock) FAQ

Frequently Asked Questions About Windows Sockets Version 1.1

22 July 1993

This FAQ has been put together by Mark Towfiq, with much-appreciated assistance from Jay Allard, Bruce Backman, Paul Brooks, Martin Hall, Simon Hewison, Bob Quinn, Ed Schwalenberg, Bill Tang, and Dave Treadwell. If you have any modifications to this FAQ, send them to towfiq@Microdyne.COM, and I will fold them into the next revision.

First of all, the questions:

1. What is Windows Sockets?
2. What is the latest version?
3. Where can I get a/the WINSOCK.DLL?
4. Why isn't there just one WINSOCK.DLL? Do I need a TCP/IP already to use it?

1. What is Windows Sockets?

Answer: The Windows Sockets specification defines a network programming interface for Microsoft Windows which is based on the "socket" paradigm popularized in the Berkeley Software Distribution (BSD) from the University of California at Berkeley. It encompasses both familiar Berkeley socket style routines and a set of Windows-specific extensions designed to allow the programmer to take advantage of the message-driven nature of Windows.

The Windows Sockets Specification is intended to provide a single API to which application developers can program and multiple network software vendors can conform. Furthermore, in the context of a particular version of Microsoft Windows, it defines a binary interface (ABI) such that an application written to the Windows Sockets API can work with a conformant protocol implementation from any network software vendor. This specification thus defines the library calls and associated semantics to which an application developer can program and which a network software vendor can implement.

Network software which conforms to this Windows Sockets specification will be considered "Windows Sockets Compliant". Suppliers of interfaces which are "Windows Sockets Compliant" shall be referred to as "Windows Sockets Suppliers". To be Windows Sockets Compliant, a vendor must implement 100% of this Windows Sockets specification.

Applications which are capable of operating with any "Windows Sockets Compliant" protocol implementation will be considered as having a "Windows Sockets Interface" and will be referred to as "Windows Sockets Applications".

2. What is the latest version?

Answer: The latest version of the specification is 1.1.

3. When is the next rev of the specification? Why not sooner?

Answer: The next rev. (2.0) will not be until towards the end of 1993. We need 1.1 of the API to become firmly settled and implemented first.

4. Where can I get a/the WINSOCK.DLL?

Answer: You can most probably get one from the same place you got your TCP/IP software from.



Another source for WINSOCK.DLL

5. Why isn't there just one WINSOCK.DLL? Do I need a TCP/IP already to use it?

Answer: The Windows Sockets specification defines the top level of the DLL, the part which is called by user programs. The method a given WINSOCK.DLL will use to access TCP/IP (or NetWare, or AppleTalk, or DECNet ...) depends on the networking package you have installed, and therefore must vary. A WINSOCK.DLL is therefore just an interface to whatever existing protocol you already have installed.

API

Application Programming Interface

An API is a standard set of interface points for a given piece of software. For example, you often see reference to the Windows API. Windows offers many 'built-in' functions (e.g., the dialog boxes, scroll bars, etc.) which your application can use, providing you 'call' them correctly from your program.

LISTGopher

Editor's note: Here's an excerpt from a recent email announcement of a archived message search service that Eric Morgan of NC State University libraries has made available:

LISTGopher is a gopher+ item whose purpose is to facilitate the searching and retrieval of archived LISTSERV messages. I wrote LISTGopher to make the searching of these archives a bit easier.

Despite the large amounts of noise, I have long believed LISTSERV archives contain a wealth of useful information. How many times have you wished you could retrieve that little bit of information you read in that posting a few months ago? Or how often do you wish you could glean postings from a LISTSERV list without subscribing to the whole thing? LISTGopher can help you with these and other problems.

This is how LISTGopher is intended to be used. First you enter your name, email address, the list to search *remember, LISTGopher is case-sensitive (e.g., PACS-L, not pacs-l)*, type of query (search or print), and your query. LISTGopher then creates a valid LISTSERV query and sends it off in the mail to the designated list's LISTSERV. You then receive a reply, from the LISTSERV, via email. Selecting messages from the results, you enter item numbers into LISTGopher. Finally, LISTGopher sends your request to the LISTSERV again and you get the messages in the mail *it can take as long as 24 hours for the batch job results to get to you...so be patient.*

In its present state, LISTGopher ONLY supports original LISTSERV queries; LISTGopher does NOT support Unix LISTSERVs.

The first LISTGopher I created includes all the library-related lists in Charles Bailey's guide, _Library-oriented lists and electronic serials_. If people find this useful, then I will create other LISTGophers (original flavor as well as Unix LISTSERV) to include other disciplines based on Diane Kovac's _Directory of Scholarly Electronic Conferences_. Here is a link file to my library-related LISTGopher:

Type=1+
Name=Search library-related LISTSERVs (LISTGopher)
Path=1/library/disciplines/library/listgopher
Host=dewey.lib.ncsu.edu
Port=70

Enjoy, and if you have any questions, then drop me a line.

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InterNic

INTERNIC DIRECTORY AND DATABASE SERVICES THE DIRECTORY OF DIRECTORIES

We have a yellow pages directory of resources available to the Internet. This Directory of Directories enables users to easily obtain references to information resources, products and services associated with the Internet. It includes pointers to resources such as computing centers, network providers, information servers, library catalogs, data and software archives, training services, newsgroups, bulletin boards, and so forth.

We offer two types of listings in the Directory of Directories: Standard and Expanded entries.

Standard entries are maintained free-of-charge. They are allowed up to 1,264 characters (between the keyword and description fields). The intent is to provide a brief and easily readable description of the resource. In addition to the description, a Standard entry contains contact and resource classification information which are not counted in the 1,264 characters.

Expanded entries are charged a monthly fee, and allow the resource provider much more space to fully describe their resources, similar to a large advertisement in the yellow pages.

If your organization has several resources, you may qualify for multiple Standard Entries, one for each resource. We will work with the resource provider to determine how many Standard Entries might apply.

We will strive to maintain the accuracy and relevance of the information in the database. Once an entry is created, we will maintain contact with the provider of the resource to revalidate and update the entry information at least once every six months.

The Directory of Directories is freely available online to all Internet users. We provide several different methods to access the information. Keyword searches and information download will be supported through the Wide Area Information Server (WAIS), and entries may also be retrieved using anonymous FTP and Gopher. For those without telnet or FTP access, electronic mail may be used to search for and retrieve information via our mailserver application. We will enhance these services over time.

We know that the Directory of Directories needs many entries to be successful. If you know anyone else who might want to set up a listing, please pass on this message, or send us a note. We will not list any resource without the permission of the resource provider.

If you are interested in more information about the Directory of Directories or the other services associated with the InterNIC Directory and Database Services, contact the Directory and Database Administrator via email at admin@ds.internic.net or phone 1-800-862-0677 or 1-908-668-6587.



GMUtant
Editor

[a bit more info on InterNIC](#)

Electronic Frontier Foundation

The Electronic Frontier Foundation (EFF) is a membership organization that was founded in July of 1990 to ensure that the principles embodied in the Constitution and the Bill of Rights are protected as new communications technologies emerge.

From the beginning, EFF has worked to shape our nation's communications infrastructure and the policies that govern it in order to maintain and enhance First Amendment, privacy and other democratic values. We believe that our overriding public goal must be the creation of Electronic Democracy, so our work focuses on the establishment of:

new laws that protect citizens' basic Constitutional rights as they use new communications technologies,

a policy of common carriage requirements for all network providers so that all speech, no matter how controversial, will be carried without discrimination,

a National Public Network where voice, data and video services are accessible to all citizens on an equitable and affordable basis, and

a diversity of communities that enable all citizens to have a voice in the information age.

Join us!

Regular membership: \$ 40.00

Student membership: \$ 20.00

Membership Coordinator
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The Electronic Frontier Foundation is a nonprofit, 501(c)(3) organization supported by contributions from individual members, corporations and private foundations. Donations are tax-deductible.



GMUtant
Editor

Related topic: [Mitch Kapor's foreword to *Big Dummy's Guide to the Internet*](#)

editor's note: The EFF operates a gopher server at [ftp.eff.org](ftp://ftp.eff.org), port 70

Foreword from Big Dummy's Guide to the Internet

produced by the Electronic Frontier Foundation.

By Mitch Kapor

Co-founder, Electronic Frontier Foundation.

"As a net is made up of a series of ties, so everything in this world is connected by a series of ties. If anyone thinks that the mesh of a net is an independent, isolated thing, he is mistaken. It is called a net because it is made up of a series of interconnected meshes, and each mesh has its place and responsibility in relation to other meshes." -- Buddha

New communities are being built today. You cannot see them, except on a computer screen. You cannot visit them, except through your keyboard. Their highways are wires and optical fibers; their language a series of ones and zeroes.

Yet these communities of cyberspace are as real and vibrant as any you could find on a globe or in an atlas. Those are real people on the other sides of those monitors. And freed from physical limitations, these people are developing new types of cohesive and effective communities - ones which are defined more by common interest and purpose than by an accident of geography, ones on which what really counts is what you say and think and feel, not how you look or talk or how old you are.

The oldest of these communities is that of the scientists, which actually predates computers. Scientists have long seen themselves as an international community, where ideas were more important than national origin. It is not surprising that the scientists were the first to adopt the new electronic media as their principal means of day- to-day communication.

I look forward to a day in which everybody, not just scientists, can enjoy similar benefits of a global community.

But how exactly does community grow out of a computer network? It does so because the network enables new forms of communication.

The most obvious example of these new digital communications media is electronic mail, but there are many others. We should begin to think of mailing lists, newsgroups, file and document archives, etc. as just the first generation of new forms of information and communications media. The digital media of computer networks, by virtue of their design and the enabling technology upon which they ride, are fundamentally different from the now dominant mass media of television, radio, newspapers and magazines. Digital communications media are inherently capable of being more interactive, more participatory, more egalitarian, more decentralized, and less hierarchical.

As such, the types of social relations and communities which can be built on these media share these characteristics. Computer networks encourage the active participation of individuals rather than the passive non-participation induced by television narcosis.

In mass media, the vast majority of participants are passive recipients of information. In digital communications media, the vast majority of participants are active creators of information as well as recipients. This type of symmetry has previously only been found in media like the telephone. But while the telephone is almost entirely a medium for private one-to-one communication, computer network applications such as electronic mailing lists, conferences, and bulletin boards, serve as a medium of group or "many-to-many" communication. The new forums atop computer networks are the great levelers and reducers of organizational hierarchy. Each user has, at least in theory, access to every other user, and an equal chance to be heard. Some U.S. high-tech companies, such as Microsoft and Borland, already use this to good advantage: their CEO's -- Bill Gates and Philippe Kahn -- are directly accessible to all employees via electronic mail. This creates a sense that the voice of the individual employee really matters. More generally, when corporate communication is facilitated by electronic mail, decision-making processes can be far more inclusive and participatory.

Computer networks do not require tightly centralized administrative control. In fact, decentralization is necessary to enable rapid growth of the network itself. Tight controls strangle growth. This decentralization promotes inclusiveness, for it lowers barriers to entry for new parties wishing to join the network.

Given these characteristics, networks hold tremendous potential to enrich our collective cultural, political, and social lives and enhance democratic values everywhere.

And the Internet, and the UUCP and related networks connected to it, represents an outstanding example of a computer network with these qualities. It is an open network of networks, not a single unitary network, but an ensemble of interconnected systems which operate on the basis of multiple implementations of accepted, non-proprietary protocols, standards and interfaces.

One of its important characteristics is that new networks, host systems, and users may readily join the network -- the network is open to all.

The openness (in all senses) of the Internet reflects, I believe, the sensibilities and values of its architects. Had the Internet somehow been developed outside the world of research and education, it's less likely to have had such an open architecture. Future generations will be indebted to this community for the wisdom of building these types of open systems.

Still, the fundamental qualities of the Net, such as its decentralization, also pose problems. How can full connectivity be maintained in the face of an ever-expanding number of connected networks, for example? What of software bugs that bring down computers, or human crackers who try to do the same? But these problems can and will be solved.

Digital media can be the basis of new forms of political discourse, in which citizens form and express their views on the important public issues of the day. There is more than one possible vision of such electronic democracy, however. Let's look at some examples of the potential power, and problems, of the new digital media.

The idea of something called an "electronic town meeting" received considerable attention in 1992 with Ross Perot's presidential campaign (or, at least, its first incarnation).

Perot's original vision, from 20 or so years ago, was that viewers would watch a debate on television and fill out punch cards which would be mailed in and collated. Now we could do it with 800 telephone numbers.

In the current atmosphere of disaffection, alienation and cynicism, anything that promotes greater citizen involvement seems a good idea. People are turned off by politicians in general -- witness the original surge of support for Perot as outsider who would go in and clean up the mess -- and the idea of going right to the people is appealing,

What's wrong with this picture? The individual viewer is a passive recipient of the views of experts. The only action taken by the citizen is in expressing a preference for one of three pre-constructed alternatives. While this might be occasionally useful, it's unsophisticated and falls far short of the real potential of electronic democracy. We've been reduced to forming our judgments on the basis of mass media's portrayal of the personality and character of the candidates.

All this is in contrast to robust political debates already found on various on-line computer systems, from CompuServe to Usenet. Through these new media, the issues of the day, ranging from national security in the post-Cold War era to comparative national health care systems, are fiercely discussed in a wide variety of bulletin boards, conferences, and newsgroups.

What I see in online debate are multiple active participants, not just experts, representing every point of

view, in discussions that unfold over extended periods of time. What this shows is that, far from being alienated and disaffected from the political process, people like to talk and discuss -- and take action -- if they have the opportunity to do so. Mass media don't permit that. But these new media are more akin to a gathering around the cracker barrel at the general store -- only extended over hundreds, thousands of miles, in cyberspace, rather than in one physical location.

Recent years have shown the potential power of these new media. We have also seen several examples of where talk translated into action.

In 1987, the Federal Communications Commission proposed changing the way certain online providers paid for access to local phone service. Online, this quickly became known as the "modem tax" and generated a storm of protest. The FCC withdrew the idea, but not quickly enough: the "modem tax" has penetrated so deeply into the crevices of the Net that it has taken up a permanent and ghostly residence as a kind of virtual or cognitive virus, which periodically causes a re-infection of the systems and its users. FCC commissioners continue to receive substantial mail on this even though the original issue is long dead; in fact, it has generated more mail than any other issue in the history of the FCC.

More recently, Jim Manzi, chairman of Lotus Development Corp., received more than 30,000 e-mail messages when the company was getting ready to sell a database containing records on tens of millions of Americans. The flood of electronic complaints about the threat to privacy helped force the company to abandon the project. Issues of narrow but vital interest to the online community give a hint of the organizing power of the Net.

In August, 1991, the managers of a Soviet computer network known as Relcom stayed online during an abortive coup, relaying eyewitness accounts and news of actions against the coup to the West and to the rest of Russia.

And many public interest non-profit organizations and special interest groups already use bulletin boards heavily as a means of communicating among their members and organizing political activity.

But all is not perfect online. The quality of discourse is often very low. Discussion is often trivial and boring and bereft of persuasive reason. Discourse often sinks to the level of "flaming," of personal attacks, instead of substantive discussion. Flaming. Those with the most time to spend often wind up dominating the debate - a triumph of quantity of time available over quality of content.

It seems like no place for serious discussion. Information overload is also a problem. There is simply far too much to read to keep up with. It is all without organization. How can this be addressed?

Recent innovations in the design of software used to connect people to the Net and the process of online discussion itself reveal some hope.

Flaming is universal, but different systems handle it in different ways. Both the technology and cultural norms matter.

On Usenet, for instance, most news reader applications support a feature known as a "killfile," which allows an individual to screen out postings by a particular user or on a particular subject. It is also sometimes referred to as "the bozo filter." This spares the user who is sufficiently sophisticated from further flamage, but it does nothing to stop the problem at its source.

Censorship would be one solution. But what else can be done without resorting to unacceptably heavy-handed tactics of censorship? There is a great tradition of respect for free speech on these systems, and to censor public postings or even ban a poster for annoying or offensive content is properly seen as unacceptable, in my opinion.

Some systems use cultural norms, rather than software, to deal with flame wars. These online communities have developed practices which rely more on a shared, internalized sense of appropriate

behavior than on censorship, for instance. The WELL (Whole Earth 'Lectronic Link) is a relatively small online conferencing system based in the San Francisco Bay area. On the WELL, individuals who get into a fight are encouraged to move the discussion out of the public conference and into e-mail. The encouragement is provided not only by the host of the conference, but also by the users. It is part of the culture, not part of the technology.

WELL hosts are volunteers who facilitate the discussion of a particular subject. While they have the power to censor individual postings, the power is very rarely used and only as a last resort, as it has been found that dispute resolution by talking it out among the parties is a superior method of problem solving in the long run.

It is not an accident that the WELL has a uniquely high quality of conversation. Nor is it coincidental that it developed as a small and originally isolated community (now on the Net) which gave it a chance to develop its own norms or that key management of the system came from "The Farm," a large, successful commune of the 1960's and 1970's led by Stephen Gaskin.

We still know very little about the facilitation of online conversations. It is a subject well worth further formal study and experimentation.

Some problems have to do with the unrefined and immature format and structure of the discussion medium itself. The undifferentiated stream of new messages marching along in 80 columns of ASCII text creates a kind of hypnotic trance. Compare this with the typical multiplicity of type fonts, varied layouts, images, and pictures of the printed page.

New media take time to develop and to be shaped. Reading text on a terminal reminds me of looking at the Gutenberg Bible. The modern book took a century to develop after the invention of printing with movable type and the first Western printed books. Aldus Manutius and the inventions of modern typefaces, pagination, the table of contents, the index, all of which gave the book its modern form, came later, were done by different people, and were of a different order than the invention of printing with movable type itself. The new electronic media are undergoing a similar evolution.

Key inventions are occurring slowly, for example, development of software tools that will allow the dissemination of audio and video across the Net. This type of software has usually been done so far by volunteers who have given away the results. It's a great thing, but it's not sufficient, given how hard it is to develop robust software. Innovation in the application space will also be driven by entrepreneurs and independent software vendors at such point as they perceive a business opportunity to create such products (it would be nice if creators did it for art's sake but this seems unlikely).

There are some requirements to provide incentives to attract additional software development. This requires a competitive free market in network services at all levels to serve the expanding user demand for network services. It requires a technologically mature network able to support these services.

And there must be a user population, current or prospective, interested in paying for better applications -- and not just the current base of technically sophisticated users and students, though they will absolutely benefit.

There are multiple classes of new application opportunities. E-mail is overloaded because there aren't readily available alternatives yet. New and different kinds of tools are needed for collaborative work. Computer conferencing, as it evolves, may be sufficient for discussion and debate. But by itself, it cannot really support collaborative work, in the sense of readily enabling a group to make decisions efficiently, represent and track the status of its work process. Trying to run an organization via e-mail mailing list is very different than trying to have a discussion.

Computer networks can only fully realize their potential as innovative communications media in an environment which encourages free and open expression.

In some countries, legal principles of free speech protect freedom of expression in traditional media such as the printed word. But once communication moves to new digital media and across crosses international borders, such legal protections fall away. As John Perry Barlow, the co-founder of EFF puts it: "In Cyberspace, the First Amendment is a local ordinance." There is no international legal authority which protects free expression on trans-national networks. Article 19 of the Universal Declaration of Human Rights calls for the protection of free expression in all media, but the declaration falls far short of being binding.

And if we're to take seriously the idea of the electronic online forum, we have to deal with the access issue. If the only people with access to the medium are well-educated, affluent, techno-literate elite, it won't be sufficiently inclusive to represent all points of view.

We also need, fundamentally, a better infrastructure (the highway system for information). As we move from the high-speed Internet to the even more powerful National Research and Education Network, we need to look at how to bring the power of these new media into the homes of everybody who might want it. Addressing this "last mile" problem (phone networks are now largely digitized, fiber-optic systems, except for the mile between your home and the nearest switching station) should be a priority.

Computer networks will eventually become ubiquitous around the world. We should therefore be concerned with the impact on society that they have, the opportunities to improve society, and the dangers that they pose. Fundamentally, we are optimists who believe in the potential of networks to enhance democratic values of openness, diversity, and innovation.

Because the medium is so new, it is important now to develop policies at the national and international level that help achieve the potential of computer networks for society as a whole. By the time television was recognized as a vast wasteland it was already too late to change. There is a rare opportunity to develop policies in advance of a technologically and economically mature system which would be hard to change.

-- Mitch Kapor

Internet Relay Chat

Here's an entry on IRC from [Big Dummy's Guide to the Internet](#), written by Adam Gaffin, published by the [Electronic Frontier Foundation](#).

IRC is a program that lets you hold live keyboard conversations with people around the world. It's a lot like an international CB radio - it even uses "channels." Type something on your computer and it's instantly echoed around the world to whoever happens to be on the same channel with you. You can join in existing public group chats or set up your own. You can even create a private channel for yourself and as few as one or two other people. And just like on a CB radio, you can give yourself a unique "handle" or nickname.

IRC currently links host systems in 20 different countries, from Australia to Hong Kong to Israel.

Unfortunately, it's like telnet -- either your site has it or it doesn't. If your host system does have it, Just type

irc

and hit enter. You'll get something like this:

```
*** Connecting to port 6667 of server world.std.com
*** Welcome to the Internet Relay Network, adamg
*** Your host is world.std.com, running version 2.7.1e+4
*** You have new mail.
*** If you have not already done so, please read the new user information with +/HELP NEWUSER
*** This server was created Sat Apr 18 1992 at 16:27:02 EDT
*** There are 364 users on 140 servers
*** 45 users have connection to the twilight zone
*** There are 124 channels.
*** I have 1 clients and 3 servers
MOTD - world.std.com Message of the Day -
MOTD - Be careful out there...
MOTD -
MOTD - ->Spike
* End of /MOTD command.
```

You are now in channel 0, the "null" channel, in which you can look up various help files, but not much else. As you can see, IRC takes over your entire screen. The top of the screen is where messages will appear. The last line is where you type IRC commands and messages. All IRC commands begin with a /. The slash tells the computer you are about to enter a command, rather than a message. To see what channels are available, type

/list

and hit enter. You'll get something like this:

```
*** Channel  Users  Topic
*** #Money   1      School CA$H (/msg SOS_AID help)
*** #Gone    1      ----->> Gone with the wind!!! ----->>>>>
*** #mee     1
*** #eclipse 1
*** #hiya    2
*** #saigon  4
```

```

*** #screwed 3
*** #z 2
*** #comix 1 LET'S TALK 'BOUT COMIX!!!!
*** #Drama 1
*** #RayTrace 1 Rendering to Reality and Back
*** #NeXT 1
*** #wicca 4 Mr. Potato Head, R.I.P.
*** #dde^mhe
*** #jgm 1
*** #ucd 1
*** #Maine 2
*** #Snuffland 1
*** #p/g! 4
*** #DragonSrv 1

```

Because IRC allows for a large number of channels, the list might scroll off your screen, so you might want to turn on your computer's screen capture to capture the entire list. Note that the channels always have names, instead of numbers. Each line in the listing tells you the channel name, the number of people currently in it, and whether there's a specific topic for it. To switch to a particular channel, type

`/join #channel`

where "#channel" is the channel name and hit enter. Some "public" channels actually require an invitation from somebody already on it. To request an invitation, type

`/who #channel-name`

where channel-name is the name of the channel, and hit enter. Then ask someone with an @ next to their name if you can join in. Note that whenever you enter a channel, you have to include the #. Choose one with a number of users, so you can see IRC in action.

If it's a busy channel, as soon as you join it, the top of your screen will quickly be filled with messages. Each will start with a person's IRC nickname, followed by his message.

It may seem awfully confusing at first. There could be two or three conversations going on at the same time and sometimes the messages will come in so fast you'll wonder how you can read them all.

Eventually, though, you'll get into the rhythm of the channel and things will begin to make more sense. You might even want to add your two cents (in fact, don't be surprised if a message to you shows up on your screen right away; on some channels, newcomers are welcomed immediately). To enter a public message, simply type it on that bottom line (the computer knows it's a message because you haven't started the line with a slash) and hit enter.

Public messages have a user's nickname in brackets, like this:

`<tomg>`

If you receive a private message from somebody, his name will be between asterisks, like this:

`*tomg*`

For more information on using IRC, see the IRC command box. You can find discussions about IRC in the alt.irc newsgroup.

Big Dummy's Guide to the Internet

Here is the introductory matter and table of contents from *The Big Dummy's Guide to the Internet*. The publication is free and available via <ftp> and <gopher> from <ftp.eff.org>

The genesis of the Big Dummy's Guide was a few informal conversations, which included Mitch Kapor of the Electronic Frontier Foundation (EFF) and Steve Cisler of Apple Computer, Inc. in June of 1991. With the support of Apple Computer, EFF hired a writer (Adam Gaffin) and actually took on the project in September of 1991.

The idea was to write a guide to the Internet for folks who had little or no experience with network communications. We intended to post this Guide to "the 'net" in ASCII and [HyperCard](#) formats and to give it away on disk, as well as have a print edition available for a nominal charge. With the consolidation of our offices to Washington, DC, we were able to put the Guide on a fast track. You're looking at the realization of our dreams -- version one of the Guide. At the time I'm writing this, we're still fishing around for a book publisher, so the hard-copy version has not yet been printed. We're hoping to update this Guide on a regular basis, so please feel free to send us your comments and corrections.

EFF would like to thanks the folks at Apple, especially Steve Cisler of the Apple Library, for their support of our efforts to bring this Guide to you. We hope it helps you open up a whole new world, where new friends and experiences are sure to be yours. Enjoy!

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Electronic Frontier Foundation
July 15, 1993

Big Dummy's Guide to the Internet
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TABLE OF CONTENTS

Foreword by Mitchell Kapor, co-founder, Electronic Frontier Foundation.

Preface by Adam Gaffin, reporter, Middlesex News.

Chapter 1: Setting up/getting connected/jacking in.

- A. List of public-access sites.

Chapter 2: E-mail.

- A. Smileys.
- B. Seven Unix commands you can't live without.
- C. E-mail to other networks

Chapter 3: Usenet I -- the Global watering hole.

Chapter 4: Usenet II

- A. Flame, blather and spew and the First Amendment.
- B. rn commands.
- C. nn commands.
- D. Usenet hints.
- E. Cross posting
- F. The brain-tumor boy and the modem tax.
- G. The Big Sig.
- H. Killfiles.
- I. Usenet history.

Chapter 5: Mailing lists and Bitnet.

Chapter 6: Telnet

- A. Telnet sites.
- B. Telnet BBSs.
- C. Finger
- D. Finding someone on the Net.

Chapter 7: FTP

- A. The keyboard cabal.
- B. FTP sites.

Chapter 8: Gophers, WAISs and the World-Wide Web

Chapter 9: Advanced E-mail.

Chapter 10: News of the world.

Chapter 11: IRC, MUDs and other things that are more fun than they sound.

- A. IRC commands.

Chapter 12: Education and the Net.

Conclusion: The end?

Appendix A: Lingo

..was failure to mention a possible Winhelp version an oversight?

Packet Drivers

This illuminating discussion of packet drivers was taken from the INSTALL.TXT file that accompanies Peter Tattam's excellent shareware package [The Trumpet Winsock](#)

Firstly, if you don't know what a packet driver is, it is normally a small piece of software which sits in between your network card and your TCP program. This provides a standard interface which many programs can use in a similar manner to BIOS calls using software interrupts.

Why is it called a packet driver? This is because modern networks send information using packets of information rather than sending information one byte or character at a time. For example, Ethernet sends information in frames of up to 1514 bytes long. The reason for sending things in packets is that information can be transmitted much more efficiently in packets.

Central to the concept of the packet driver is the vector which is used to communicate with it. The 80x86 family of processors allows programs to communicate with the operating system through what is called a "software interrupt", which always has a number in the range 0 to 255. This is termed a "vector" and is the one of the key mechanisms to pass control to the MS-DOS operating system. Usually the vectors are in hexadecimal, making the range expressed as 0x00 to 0xFF. The 0x in front of the number means that we are using hexadecimal numbers instead of decimal numbers. They may also be expressed in the notation 00H to FFH, or \$00 to \$FF. If you are dealing with packet drivers, hexadecimal notation is much more common, but occasionally they are expressed in decimal. Examples of software interrupts in use on PC's are 0x10 for the video BIOS, or 0x21 for calls to DOS.

Packet drivers are only allowed to have a software interrupt vector in the range 0x60 to 0x7F. Normally, you will pick 0x60 as the default place to install your packet driver, but certain machine configurations may make that vector unavailable. Just choose one that is free - the packet driver should tell you if you can use it or not.

EDUPAGE March 7, 1994 issue

Here's a sample of EDUPAGE, a news summary. Instructions on how to subscribe to this free service are included at the end of the document.

EDUPAGE. Edupage, a twice-weekly summary of news items on information technology, is provided as a service by EDUCOM -- a consortium of leading colleges and universities seeking to transform education through the use of information technology.

MOTOROLA PALMTOP. Motorola is introducing the Envoy, a personal communicator that will let users send and receive messages through Ardis, the world's largest wireless network. A user can tap on-screen boxes and can also jot down a note and transmit it as written. The device, will retail for about \$1500, makes no attempt to try to recognize handwriting. (New York Times 3/7/94 C3)

MULTILINGUAL BULLETIN BOARDS. Prodigy has added 24 bulletin boards designed for foreign languages using the Roman alphabet. There's even a BBS in Esperanto, an invented hybrid of European languages. Each BBS will be monitored by a specialist in that language (the Esperanto post is still up for grabs). (Wall Street Journal 3/7/94 B5B)

ATLANTA GETS ELECTRONIC NEWSPAPER. Access Atlanta, an electronic newspaper to be offered through Prodigy, is being introduced by Cox Newspapers, which owns the Atlanta Journal-Constitution. Access Atlanta, which will have its own newsroom, is not expected to break even until its 3rd year, at which time it hopes to have 35 to 45 thousand subscribers. (Atlanta Journal-Constitution 3/6/94 C1)

ILLEGAL SOFTWARE. The Canadian Alliance Against Software Theft (CAAST) estimates worldwide losses from software theft and copyright violations total as much as \$12-billion US. CAAST's American counterpart, the Business Software Alliance, estimates 92% of all software sold during 1992 in Japan was illegal. (Toronto Financial Post, 03/05/94 p. S19).

TCI, MICROSOFT TO TEST INTERACTIVE CABLE. Tele-Communications Inc. and Microsoft will team up to test interactive cable TV services in Seattle and Denver. Microsoft will provide a new operating system software for delivering the services. (Wall Street Journal 3/4/94 B5)

IBM'S POWER PC NOTEBOOK. IBM is offering a high-end notebook computer using the PowerPC microprocessor it developed jointly with Apple and Motorola. The notebook, which cost about \$12K, is designed to support CAD/CAM technology and can zoom images up to resolutions usually possible on much larger machines. (New York Times 3/7/94 C3)

PRINT YOUR OWN STAMPS (IS MONEY NEXT?). The U.S. Post Office is testing a postage mailing center machine which allows a customer to insert money to print a single stamp sufficient for any letter or package being mailed, from 19 cents to \$99.99. (Atlanta Journal-Constitution 3/5/94 A13)

TELECOM BILL COULD VIOLATE GATT. Provisions in the Dingell-Brooks bill to allow the regional Bell companies to manufacture telecommunications equipment will be viewed as a violation of the General Agreement on Tariffs and Trade by some U.S. trading partners, warns U.S. Trade Representative Mickey Kantor. The problems lies in a provision to cap the value of foreign parts in the equipment at 40% of the final price. The bill recently introduced in the Senate contains similar language, but despite Mr. Kantor's appeals, the bills are unlikely to change. (Wall Street Journal 3/7/94 A2)

STRATACOM EXPANSION. California-based StrataCom, involved in info-highway ATM technology, is moving into Canada and has customers lined up such as Unitel Communications, Canada Post and Nova Corp. (Ottawa Citizen, 03/04/94 F1).

A DEGREE OF DEFLATION. A degree from Harvard and other Ivy League schools is no longer the lifetime guarantee of success it may have been in the past. "The layoffs of managers at IBM or Xerox or AT&T do not discriminate between graduates of Harvard" and some lesser school, says Senator John D.

Rockefeller IV of West Virginia. (New York Times 3/6/94, Sec.3, p.1)

BRITISH TELECOM PICKS FIVE. British Telecommunications PLC has picked five suppliers for the first round of "video-on-demand" trials in Europe. Those chosen are: Apple Computer Inc., Oracle Corp., nCube Corp., Northern Telecom Ltd. and Alcatel-Alsthom SA. (Wall Street Journal 3/4/94 A4)

ANNUAL REPORTS ON CD ROM. Oracle Corporation and Adobe Systems are two of the companies that are offering their shareholders CD ROM versions of their annual reports. "The magic of CD ROM is that you can make a little show of it," says an Oracle executive. (New York Times 3/5/94 p.21)

TV BORDER WAR BREWING? A regulatory and cultural war is brewing among Canada's telecom regulatory agency, domestic cable system operators and American direct-to-home (DTH) TV operators. The CRTC sees its mandate as protecting the prime TV entertainment/culture delivery system and will hear applications from the cable industry (which views DTH as an ominous threat to a Canadian presence in TV viewing) on DirecTV's proposal to exempt foreign satellite services from "detailed regulation" when allied with a domestic satellite system. (Toronto Star, 03/04/94 p. B10).

DIGITAL NETWORK. Radio dispatch company Clearnet, backed by new partners Nextel Communications and Motorola Canada, will build a \$300-million digital network across Canada. The new network will integrate various radio networks into a single one, allowing customers to use one telephone set for radio dispatch, voice communications, data and paging. (Toronto Globe & Mail, 03/05/94 p. B18).

NEW NEWTON. Apple new version of the Newton Messagepad has improved word recognition software (which now tries to read a word letter-by-letter rather than trying to look it up in a dictionary), communications capability for paging (with two-way wireless modems announced but not yet available), more applications software, and a lower price (now \$599). (New York Times 3/4/94 C1)

UPDATE ON UPDATE. Be sure to sign up for Educom Update to get announcements about new position openings (such as the search for an Executive Director for the Electronic Frontier Foundation), upcoming events such as the National Net conference... the spring meeting of the Coalition for Networked Information... and this summer's Seminars on Academic Computing), new programs, new publications, and much more. See sign-up instructions below.

EDUCOM REVIEW. For individual first-time subscribers in U.S. and Canada we're offering a full-year (6 issues) trial subscription to Educom Review for \$18 (a 70% savings from the regular subscription price). Send check for \$18 to Educom Review, 1112 16th NW, Washington, DC 20036, or send mail with credit card number and expiration date to offer@educom.edu.

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EDUCOM UPDATE. The EDUCOM Update is a twice-a-month electronic information service covering news about Educom, its member institutions, its corporate affiliates, and other organizations that share Educom's goals for transforming education through information technology. To subscribe, send mail to listproc@educom.edu with the message SUB UPDATE <yourfirstname yourlastname>. To submit news about your organization, send a very brief message to info@educom.edu.

CompuServe

CompuServe is an online network that's been around just over 10 years. The number of services available here is staggering... as are the charges if you get carried away with using the system.

There are a number of other similar services available ([GENIE](#), [DELPHI](#), [AMERICA ONLINE](#), [Prodigy](#), etc), but none offer the variety or depth of the CompuServe universe.

What can you do via CompuServe? Access ZiffNet; send mail to other users; send faxes to any fax machine; access the Internet (for messages of 50K or less only); download any of thousands of SHAREWARE programs; talk directly to vendors and users of products from hundreds of companies (Novell, QuarterDeck, TurboPower Software, Borland, and Microsoft); shop over 100 stores in the electronic mall; access a multitude of information systems (e.g., Books in Print, Computer Library, Magazine Database Plus, IQ Quest (indexing 850 publications), Executive News Service, UK Company Library; join any of the many forums available on the system to talk with others who share your interest; and more...

Customer service: 1-800-848-8199

[Access phone numbers](#)

[Cost?](#)

[Forum list](#)

[Navigation tools](#)

[How to email a compuserve user via the internet](#)

Comparative review of online services

The February 23, 1993 issue of *PC Magazine* (volume 12, number 4, pages 303-326) contains an in-depth review of five such services: America Online, CompuServe, Delphi, GEnie, and Prodigy. Several charts compare cost, offerings, availability, and function of the competing services...with CompuServe earning the 'Editor's Choice' award.

A later article (March 15, 1994) revisits the comparison, dropping Delphi but adding Dow Jones. Again, CompuServe gets the 'Editor's Choice' award (Cynics should note that ZiffNet--run by the publishers of *PC Magazine*--is now also available on Prodigy so perhaps *PC Magazine's* ranking of CompuServe poses no conflict of interest).

Delphi

Note that DELPHI currently offers some levels of internet access to users of their service.

GEnie

Maximum access speed: 9600 bps

Number of subscribers: 400,000

Number of countries served: 29

Signup fee: None

Monthly fee: \$ 8.95 (4 hours of connect time to basic services)

Email? None

Requires special software to access: No

Number of discussion areas (forums): 250

To sign up (voice): 800-638-9636

Prodigy

Maximum access speed: 9600 bps

Number of subscribers: 1,000,000

Number of countries served: 1

Signup fee: \$29.95

Monthly fee: \$14.95 (unlimited access to core features)

Email: Yes

Requires special software to access: Yes

Number of discussion areas (forums): 40

To sign up (voice): 800-776-3449

America Online

Maximum access speed: 9600 bps

Number of subscribers: 500,000

Number of countries served: 2

Signup fee: None

Monthly fee: \$9.95 (5 hours connect time, unlimited email)

Email: Yes

Requires special software to access: Yes

Number of discussion areas (forums): 280

To sign up (voice): 800-827-6364

Cost of CompuServe?

Standard Plan

Alternative Plan

CompuServe navigators

CIM and WinCim (for Windows) are automated access managers for the CompuServe system. Both programs provide a user-friendly interface to the CompuServe universe--supporting your mouse, enabling background downloading, and mail processing.

There is a fee for each of these programs but a usage credit is issued for the software cost...yielding in-effect a free program.

Note: If you're using WinCim 1.1, add the line Auto-Pilot=ON to your WINCIM.INI file and you'll gain some offline processing capabilities. Check SPECIAL menu-option on main program menubar after making the change.

OZCIS (now in release 2.0) is a very nice DOS-based offline navigator for CIS. The shareware fee is \$ 65.00 (version 1.0 was free for non-commercial use). OZCIS now has its own forum on CompuServe -- GO OZCIS (software is in Library 2, file OZ2D1.EXE and OZ2D2.EXE).

CIS Standard Plan

Effective February 6, 1994, the Standard Pricing Plan includes unlimited connect time to use a wide variety of services for a membership of \$8.95 per month. New members will not be charged a membership of \$8.95 until the second month of membership.

The Standard Pricing Plan includes unlimited connect time to the services listed below. For other services, hourly connect rates apply.

NEWS, SPORTS, WEATHER

- Associated Press Online: Hourly News Summaries, Sports, Entertainment, Business News, This Day In History
- Accu-Weather Maps/Reports
- National Weather Service
- UK News Clips
- UK Sports Clips
- UK Weather

REFERENCE LIBRARY

- Consumer Reports
- Grolier's Academic American Encyclopedia
- Handicapped Users' Database
- HealthNet
- Peterson's College Database
- Rehabilitation Database

SHOPPING

- The Electronic Mall
- Shopper's Advantage (Discount Shopping Club)

MONEY TALKS

- Basic Current Stock Quotes
- FundWatch Online By Money Magazine
- Issue/Symbol Reference
- Mortgage Calculator

GAMES & ENTERTAINMENT

- Black Dragon
- CastleQuest
- Classic Adventure
- Enhanced Adventure
- Hangman
- Roger Ebert's Movie Reviews
- Science Trivia Quiz
- ShowBizQuiz
- The Grolier Whiz Quiz

COMMUNICATION EXCHANGE

- Ask Customer Service
- Classified Ads (read only)
- CompuServe Mail (limited to 50 messages per month)

Directory of Members
DOSCIM Support Forum
Help Forum
MACCIM Support Forum
Navigator Support Forum
Practice Forum
WinCIM Support Forum

TRAVEL AND LEISURE

Department of State Advisories
Travelshopper and EAASY SABRE (airline, hotel, rental car info and reservations)
Visa Advisors
Zagat Restaurant Survey

CIS Hourly Connect Rates (Standard Plan)

Here's a note recently posted by the CompuServe management...

Starting 6-Feb-1994, CompuServe members billed under the Standard Pricing Plan will pay lower rates for access to extended (hourly priced) services. The new rates for CompuServe's extended services will be \$4.80 per hour for access at 300, 1,200 and 2,400 bps, and \$9.60 per hour for access at 9,600 and 14,400 bps. This pricing change reflects up to a 40 percent reduction from previous rates for extended-service products. Communications network and product-specific surcharges still apply.

The monthly basic services rate of \$8.95, which provides access to more than 50 product areas, remains unchanged, as do rates for CompuServe members billed under the Alternative ("pay-as-you-go") Pricing Plan.

Through this pricing reduction, CompuServe is passing along cost savings realized by the use of advanced technology and "commodity"-priced hardware in its host computer systems.

For complete information about CompuServe's Standard and Alternative Pricing Plans, to check your current billing option or to change from one billing option to the other, GO CHOICE.

Alternative Pricing Plan

Effective 28 February, 1993, members on the Alternative Pricing Plan are charged a \$2.50 monthly membership support fee which supports unlimited connect time to use online Membership Support services (GO FREE, GO MEMBER). All other usage is billed at the hourly connect rates based on baud rate, plus any applicable network charges and premium surcharges. Hourly connect time charges are billed in one-minute increments, with a one minute minimum charge per session.

300 baud	\$6.30 per hour
1200,2400 baud	\$12.80 per hour
9600 baud	\$22.80 per hour



List of CompuServe forums

Forum name	GO ...
ACIUS	ACIUS
AI Expert	AIEXPERT
APPC Info Exchange	APPCFORUM
ASP/Shareware	ASPFORUM
Adobe	ADOBE
Aldus Customer Service	ALDSVC
Aldus	ALDUSFORUM
Aldus Special Programs	ALDUSSP
Amiga Arts	AMIGAARTS
Amiga Tech	AMIGATECH
Amiga User's	AMIGAUSER
Amiga Vendor	AMIGAVENDOR
Apple II Programmers	APPROG
Apple II Users	APPUSER
Apple II Vendor	APIIVEN
Aquaria/Fish	FISHNET
Artisoft	ARTISOFT
Ask3Com	ASKFORUM
Astronomy	ASTROFORUM
Atari 8-Bit	ATARI8
Atari Portfolio	APORTFOLIO
Atari ST Arts	ATARIARTS
Atari ST Productivity	ATARIPRO
Atari Vendor	ATARIVEN
Attn. Deficit Disorder	ADD
Autodesk AutoCAD	ACAD
Autodesk Retail	ARETAIL
Autodesk Software	ASOFT
Automobile	CARS
Aviation	AVSIG
BASIS International	BASIS
Bacchus Wine	WINEFORUM
Banyan	BANFORUM
Blyth	BLYTH
Borland Applications	BORAPP
Borland C/DOS	BCPPDOS
Borland C/Windows	BCPPWIN
Borland Dbase Products	BORDB
Borland Developer Tool	BDEVTOOLS
Borland GmbH	BORGMBH
Borland Paradox/DOS	PDOXDOS
Borland Paradox/Windows	PDOXWIN
Borland PASCAL	BPASCAL
Borland Quattro Pro	QUATTROPRO
Borland dBASE	DBASE
Broadcast Professionals	BPFORUM
CADD/CAM/CAE Vendor	CADDVEN
CASE DCI	CASEFORUM

CB	CBFORUM
CDROM	CDROM
CDROM Vendor	CDVEN
<u>CIM</u> Support	CIMSUPPORT
CIM/Windows Support	WCIMSUPPORT
CP/M Users Group	CPMFORUM
CTOS/Open	CTOS
Cabletron Systems	CTRONFORUM
Cadence	CADENCE
California	CALFORUM
Cancer	CANCER
Cannon Support	CAN-10
Canopus Research	CANOPUS
Central Point DOS	CPSDOS
Central Point	CPSWIN
Chess	CHESSFORUM
Clarion	CLARION
Claris	CLARIS
Client Server Computing	MSNETWORKS
Coin/Stamp/Collectibles	COLLECT
Color Computer (tandy)	COCO
Comics/Animation	COMICS
Commodore Applications	CBMAPP
Commodore Art/Games	CBMART
Commodore Service	CBMSERVICE
Compaq Computer	CPQFORUM
CompuAdd	COMPUADD
CompuServe Help (FREE)	HELPFORUM
CompuServe Pacific	PACFORUM
Computer Art	COMART
Computer Assoc App Dev	CAIDEV
Computer Assoc Clipper	CLIPPER
Computer Assoc ClipperGermany	CLIPGER
Computer Assoc Micro Germany	CAMICRO
Computer Assoc Prof Solutions	CAIPRO
Computer Assoc VAX/UNIX	CAIMINI
Computer Club	CLUB
Computer Consultant's	CONSULT
Computer Language	CLMFORUM
Computer Training	DPTRAIN
Consumer Electronics	CEFORUM
Cooks Online	COOKS
Corel Support	COREL
Court Reporters	CRFORUM
Crafts	CRAFTS
Crosstalk	XTALK
DATASTORM	DATASTORM
DBMS Magazine	DBMSFORUM
DEC PC	DECPC
DEC PC Integration	DECPCI
DELL	DELL
Data Access Corp.	DACCESS
Data Based Advisor	DBADVISOR
DataEase International	DATAEASE
DaVinci	DAVINCI
Dear FocWizardss	FOCWIZARD

Delrine Technology	DELRINA
Desktop Publish. Vendor	DTPVENDOR
Desktop Publishing	DTPFORUM
Deutsches Computer	GERNET
Diabetes	DIABETES
Digitaltalk	DIGITALK
Disabilities	DISABILITIES
Dr. Dobbs Journal	DDJFORUM
Dr. Neuhaus	NHDFORUM
EICON Technology	EICON
Earth	EARTH
Education	EDFORUM
Educational Research	EDRESEARCH
Electronic Frontier	EFFSIG
Engineering Automation	LEAP
Epson	EPSON
European Comm. Telework	ECTF
European	EURFORUM
Federation Intl Distributions	FEDERATION
Fifth Generation	FIFTHGEN
Fine Art	FINEART
Fishnet - ADC	AQUADATA
Flight Simulator	FSFORUM
Florida	FLORIDA
Florida Today	FLATODAY
FocServices	FOCSERVICES
Focus User's Group	FUSE
Foreign Lang. Education	FLEFO
Forth/Creative Solution	FORTH
Fox Software	FOXFORUM
Game Publishers A	GAMAPUB
Game Publishers B	GAMBPUB
Gamers	GAMERS
Gardening	GARDENING
Genealogy	ROOTS
General Computing	GENCOM
Global Crisis	CRISIS
Graphics Corner	CORNER
Graphics Developers	GRAPHDEV
Graphics Gallery	GALLERY
Graphics Plus	GRAPHPLUS
Graphics Support	GRAPHSUPPORT
Graphics Vendor	GRAPHVEN
Graphics Vendor B	GRAPHBVEN
HP Handheld	HPHAND
HP Peripherals	HPPER
HP Systems	HPSYS
HamNet <Ham Radio>	HAMNET
Hayes	HAYFORUM
Health & Fitness	GOODHEALTH
Human Sexuality Adult	HSX200
Human Sexuality Open	HSX100
Human Society of U.S.	HSUS
IBM Applications	IBMAPP
IBM Bulletin Board	IBMBBS
IBM Communications	IBMCOM

IBM Desktop Software	IBMDISK
IBM Hardware	IBMHW
IBM Lan Mgmt Utilities/2	LMU2FORUM
IBM New Users	IBMNEW
IBM OS/2 Developer's #1	OS2DF1
IBM OS/2 Developer's #2	OS2DF2
IBM OS/2 PSP Beta	PSPBETA
IBM OS/2 Support	OS2SUPPORT
IBM OS/2 User's	OS2USER
IBM OS/2 Vendor	OS2AVEN
IBM Programming	IBMPRO
IBM Systems/Utilities	IBMSYS
IBM/Special Needs	IBMSPECIAL
IBM ThinkPad	THINKPAD
Int'l Entrepreneurs Network	USEN
International Trade	TRADE
Intel Access/iRUG	INTELACCESS
Intel	INTELFORUM
Investors	INVFORUM
Issues	ISSUESFORUM
Javelin/EXPRESS	IRIFORUM
Journalism	JFORUM
Kodak CD	KODAK
LDC Word Processing	LOTUSWP
LDOS/TRSDOS6 Users	LDOS
LOGO	LOGOFORUM
Lan Magazine	LANMAG
Lan Technology	LANTECH
Legal	LAWSIG
Literary	LITFORUM
Logitech	LOGITECH
Lotus GmbH	LOTGER
Lotus Spreadsheets	LOTUSA
Lotus Words & Pixels	LOTUSB
MECA Software	MECA
MIDI Vendor A	MIDIAVENDOR
MIDI Vendor B	MIDIBVENDOR
MIDI Vendor C	MIDICVENDOR
MIDI/Music	MIDIFORUM
Mac A Vendor	MACAVEN
Mac Applications	MACAP
Mac B Vendor	MACBVEN
Mac C Vendor	MACCVEN
Mac D Vendor	MACDVEN
Mac CIM Support (FREE)	MCIMSUPPORT
Mac Communications	MACCOMM
Mac Community Clubhouse	MACCLUB
Mac Developers	MACDEV
Mac Fun/Entertainment	MACFUN
Mac Hardware	MACHW
Mac Hypertext	MACHYPER
Mac New Users/Help	MACNEW
Mac System Software	MACSYS
Macromedia	MACROMEDIA
Markt & Technik Deutschland	MUTFORUM
Masonry	MASONRY

McAfee Virus Help	VIRUSFORUM
MedSIG	MEDSIG
Mensa	MENSA
Microsoft Applications	MSAPP
Microsoft Access	MSACCESS
Microsoft BASIC	MSBASIC
Microsoft Benelux	MSBF
Microsoft Centrl Europe	MSCE
Microsoft Centrl Europe System	MSCESYSTEM
Microsoft DOS	MSDOS
Microsoft Developer Network	MSDNLIB
Microsoft Developer Relations	MSDR
Microsoft Excel	MSEXCEL
Microsoft Languages	MSLANG
Microsoft SQL Server	MSSQL
Microsoft WIN32	MSWIN32
Microsoft Windows SDK	WINSDK
Microsoft Word	MSWORD
Microsoft Workgroup	MSWRKGRP
Military	MILITARY
Model Aviation	MODELNET
Modem Games	MODEMGAMES
Modem Vendor	MODEMVENDOR
Motor Sports	RACING
Multi-Player Games	MPGAMES
MultiMedia	MULTIMEDIA
MultiMedia Vendor	MULTIVEN
Music/Arts	MUSICARTS
NAIC Investor Education	NAIC
Navigator Support	NAVSUPPORT
NeXT	NEXTFORUM
New Age	NEWAGE
Novell A	NOVA
Novell B	NOVB
Novell C	NOVC
Novell Desktop Systems Group	DRFORUM
Novell Library	NOVLIB
Novell NetWare 2.X	NETW2X
Novell NetWare 3.X	NETW3X
Novell Netware 4.X	NETW4X
Novell User Library	NOVUSER
Novell Vendor	NOVVEN
OS-9	OS9
Office Automation Vendra	OAFORUM
Oracle Support	ORACLE
Outdoors	OUTDOORFORUM
PC Plus/PC Answers	PCPFORUM
PC Vendor A	PCVENA
PC Vendor B	PCVENB
PC Vendor C	PCVENC
PC Vendor D	PCVEND
PC Vendor E	PCVENE
PC Vendor F	PCVENF
PC Vendor G	PCVENG
PDP-11	PDP11
PR & Marketing	PRSIG

Pacific Vendor	PACVENDOR
Packard Bell	PACKARDBELL
Palmtop	PALMTOP
Pen Technology	PENFORUM
Pers.Comp.Mag Europe	PCMFORUM
Pets/Animal	PETS
Photography	PHOTOFORUM
Play-By-Mail Games	PBMGAMES
Political Debate	POLITICS
Portable Programming	CODEPORT
Practical Peripherals	PPIFORUM
Practice (FREE)	PRACTICE
Prisma Deutschland	PRISMA
Quarterdeck Support	QUARTERDECK
Quick Pictures	QPICS
Religion	RELIGION
Revelation Tech	REVELATION
RockNet	ROCKNET
Role-Playing Games	RPGAMES
Safetynet	SAFETY
Sailing	SAILING
Santa Cruz Operation	SCOFORUM
Science/Math Education	SCIENCE
ScienceFiction &Fantasy	SCI-FI
Scuba	DIVING
Seniors	SENIORS
ShowBiz	SHOWBIZ
Siemens Auomatisierungs	AUTFORUM
Sight & Sound	SSFORUM
Software Publisher Assn	SPAFORUM
Software Publishing	SPCFORUM
Solutions Australia	SOLUTIONS
Space/Astronomy	SPACEFORUM
Spinnaker Software	SPINNAKER
Sports	FANS
Stac Electronics	STACKER
Standard Microsystem	SMC
Students'	STUFO
Sun Select	SUNSELECT
Symantec AntiVirus	SYMVIRUS
Symantec Applications	SYMAPPS
Symantec Development	SYMDEVTOOL
Symantec/Norton Utility	SYMUTIL
TAP	TAP
Tandy Model 100	M100SIG
Tandy Professional	TRS80PRO
Telecommunication Issues	TELECOM
Texas Instrumentss	TIFORUM
Thomas-Conrad Support	TCCFORUM
Toshiba	TOSHIBA
Toshiba GmbH	TOSHGER
TrainNet	TRAINNET
Travel	TRAVSIG
UK Computer Shopper	UKSHOPPER
UK Computing	UKCOMPUTING
UK	UKFORUM

UK Share	UKSHARE
Ultimedia Hardware Plus	ULTIHW
Ultimedia Tools Series	AULTIATools
Ultimedia Tools Series	BULTIBTools
Unix	UNIXFORUM
UnixWare	UNIXWARE
UserLand	USERLAND
VAX	VAXFORUM
Venture Software	VENTURA
WRQ/Reflection	WRQFORUM
Wang Support	WANGFORUM
White House	WHITEHOUSE
Windows 3rd Party A	WINAPA
Windows 3rd Party B	WINAPB
Windows 3rd Party C	WINAPC
Windows 3rd Party D	WINAPD
Windows Extensions	WINEXT
Windows Fun	WINFUN
Windows Objects	WINOBJECTS
Windows Shareware	WINSHARE
Windows Support	MSWIN
Windows Users Network	WUGNET
WinNT Pre-Release	WINNT
Wolfram Research	WOLFRAM
WordPerfect Customer Support	WPCS
WordPerfect Users	WPUSERS
WordStar	WORDSTAR
Working-From-Home	WORK
Worldwide Car Network	WWCAR
Zenith Data Systems	ZENITH

Email Compuserve <-> Internet

Assuming you know the individuals compuserve address (e.g., 70404,3376 is mine), you can send an email message via the internet.

Here's the address you' use to send me a message (e.g., a correction an entry in the IPWIN database):

70404.3376@compuserve.com

Note that the period replaces the ':' of a typical CIS address. Also be aware that CIS is now stamping Internet messages postage due (\$ 0.15 and up).

Sending CIS mail to an Internet address

To send CIS mail to an internet address, use the following form:

Internet:jdoh@domain.name

Thus to send wallyg@fen1.gmu.edu mail from a CIS account you'd address it as:

Internet:wallyg@fen1.gmu.edu



CIS Access Numbers

phone	city	speed supported
201/783-5400	Montclair, NJ	300/1200/2400(cps) 224MNP
201/783-0644	Montclair, NJ	9600(cps) V.32/v.42
201/984-7921	Morristown, NJ	300/1200/2400(cps) 224MNP
201/984-7633	Morristown, NJ	1200(cps)VADIC
201/984-5113	Morristown, NJ	9600(cps) V.32/v.42
201/643-0404	Newark, NJ	300/1200/2400(cps) 224MNP
201/623-5666	Newark, NJ	9600(cps) v.32/v.42
201/444-3913	Ridgewood, NJ	300/1200/2400(cps) 224MNP
201/368-8300	Rochelle Park, NJ	300/1200/2400(cps) 224MNP
201/368-0912	Rochelle Park, NJ	9600(cps) v.32/v.42
201/696-6104	Wayne, NJ	300/1200/2400(cps) 224MNP
202/388-3303	Washington, DC	300/1200/2400(cps) 224MNP
203/926-0316	Bridgeport, CT	300/1200/2400(cps) 224MNP
203/929-4918	Bridgeport, CT	9600(cps) v.32/v.42
203/794-9169	Danbury, CT	300/1200/2400(cps) 224MNP
203/468-7165	East Haven, CT	300/1200/2400(cps) 224MNP
203/466-3619	East Haven, CT	9600(cps) v.32/v.42
203/548-9369	Hartford, CT	300/1200/2400(cps) 224MNP
203/727-8708	Hartford, CT	9600(cps) v.32/v.42
203/444-2509	New London, CT	300/1200/2400(cps) 224MNP
203/324-8943	Stamford, CT	300/1200/2400(cps) 224MNP
203/324-1115	Stamford, CT	9600(cps) v.32/v.42
203/756-5022	Waterbury, CT	300/1200/2400(cps) 224MNP
203/756-2832	Waterbury, CT	1200 CPS VADIC
203/222-8558	Westport, CT	300/1200/2400(cps) 224MNP
205/558-4000	Birmingham, AL	300/1200/2400(cps) 224MNP
205/933-6212	Birmingham, AL	9600(cps) v.32/v.42
205/671-3917	Dothan, AL	300/1200/2400(cps) 224MNP
205/766-9925	Florence , AL	300/1200/2400(cps) 224MNP
205/536-1346	Huntsville, AL	300/1200/2400(cps) 224MNP
205/478-0688	Mobile, AL	300/1200/2400(cps) 224MNP
205/260-0171	Montgomery, AL	300/1200/2400(cps) 224MNP
205/270-5845	Montgomery, AL	9600(cps) v.32/v.42
205/553-1120	Tuscaloosa, AL	300/1200/2400(cps) 224MNP
206/332-8100	Blaine, WA	300/1200/2400(cps) 224MNP
206/252-3550	Everett, WA	300/1200/2400(cps) 224MNP
206/754-2200	Olympia, WA	300/1200/2400(cps) 224MNP
206/242-5767	Seattle, WA	300/1200/2400(cps) 224MNP
206/242-9992	Seattle, WA	9600(cps) v.32/v.42
206/922-7181	Tacoma, WA	300/1200/2400(cps) 224MNP
206/922-1246	Tacoma, WA	9600(cps) v.32/v.42
207/871-1276	Portland, ME	300/1200/2400(cps) 224MNP
207/775-6249	Portland, ME	9600(cps) v.32/v.42
208/344-1845	Boise, ID	300/1200/2400(cps) 224MNP
208/788-5060	Ketchum, ID	300/1200/2400(cps) 224MNP
208/232-9452	Pocatello, ID	300/1200/2400(cps) 224MNP
209/251-2890	Fresno, CA	300/1200/2400(cps) 224MNP
209/453-1487	Fresno, CA	9600(cps) v.32/v.42

209/521-9970 Modesto, CA 300/1200/2400(cps) 224MNP
209/465-7284 Stockton , CA 300/1200/2400(cps) 224MNP
210/233-6682 Brownsville, TX 300/1200/2400(cps) 224MNP
210/722-8008 Laredo, TX 300/1200/2400(cps) 224MNP
210/736-8600 San Antonio, TX 300/1200/2400(cps) 224MNP
210/736-8645 San Antonio, TX 9600(cps) v.32/v.42
212/608-9012 New York, NY 1200 CPS VADIC
212/758-0330 New York, NY 1200 CPS VADIC
212/608-6021 New York, NY 300/1200/2400(cps) 224MNP
212/888-1020 New York, NY 300/1200/2400(cps) 224MNP
212/766-2080 New York, NY 9600(cps) v.32/v.42
212/593-3972 New York, NY 9600(cps) v.32/v.42
213/629-4095 Los Angeles, CA 300/1200/2400(cps) 224MNP
213/689-9019 Los Angeles, CA 1200 CPS VADIC
213/624-3730 Los Angeles, CA 9600(cps) v.32/v.42
214/953-1168 Dallas, TX 1200 CPS VADIC
214/953-0436 Dallas, TX 300/1200/2400(cps) 224MNP
214/720-9183 Dallas, TX 9600(cps) v.32/v.42
215/776-1087, Allentown, PA 300/1200/2400(cps) 224MNP
215/776-0801, Allentown, PA 9600(cps) v.32/v.42
215/277-3708 Norristown, PA 300/1200/2400(cps) 224MNP
215/277-1301 Norristown, PA 9600(cps) v.32/v.42
215/563-1305 Philadelphia, PA 300/1200/2400(cps) 224MNP
215/561-1634 Philadelphia, PA 9600(cps) v.32/v.42
215/375-0914 Reading, PA 300/1200/2400(cps) 224MNP
216/869-5085 Akron, OH 300/1200/2400(cps) 224MNP
216/836-0679 Akron, OH 9600(cps) v.32/v.42
216/452-3491 Canton, OH 300/1200/2400(cps) 224MNP
216/781-4135 Cleveland, OH 300/1200/2400(cps) 224MNP
216/781-7598 Cleveland, OH 9600(cps) v.32/v.42
216/678-5066 Ravenna, OH 300/1200/2400(cps) 224MNP
216/757-0084 Youngstown, OH 300/1200/2400(cps) 224MNP
217/352-0041 Champaign, IL 300/1200/2400(cps) 224MNP
217/356-1082 Champaign, IL 9600(cps) v.32/v.42
217/422-2075 Decatur, IL 300/1200/2400(cps) 224MNP
217/789-0944 Springfield, IL 300/1200/2400(cps) 224MNP
218/722-0058 Duluth, MN 300/1200/2400(cps) 224MNP
219/294-8629 Elkhart, IN 300/1200/2400(cps) 224MNP
219/447-0510 Ft. Wayne, IN 300/1200/2400(cps) 224MNP
219/884-4940 Gary, IN 300/1200/2400(cps) 224MNP
219/271-0489 South Bend, IN 1200 CPS VADIC
219/271-9197 South Bend, IN 300/1200/2400(cps) 224MNP
219/271-0016 South Bend, IN 9600(cps) v.32/v.42
219/267-7712 Warsaw, IN 300/1200/2400(cps) 224MNP
301/403-1600 Hyattsville, MD 300/1200/2400(cps) 224MNP
301/403-1687 Hyattsville, MD 9600(cps) v.32/v.42
302/945-5245 Rehoboth Beach, DE 300/1200/2400(cps) 224MNP
302/731-2965 Wilmington, DE 300/1200/2400(cps) 224MNP
302/456-3542 Wilmington, DE 9600(cps) v.32/v.42
303/925-5892 Aspen, CO 300/1200/2400(cps) 224MNP
303/623-4711 Denver, CO 1200 CPS VADIC
303/629-9145 Denver, CO 300/1200/2400(cps) 224MNP
303/595-0123 Denver, CO 9600(cps) v.32/v.42
303/668-0991 Dillon, CO 300/1200/2400(cps) 224MNP
303/259-5880 Durango, CO 300/1200/2400(cps) 224MNP
303/223-1535 Ft. Collins, CO 300/1200/2400(cps) 224MNP

303/945-0351 Glenwood Spring, CO 300/1200/2400(cps) 224MNP
303/241-1885 Grand Junction, CO 300/1200/2400(cps) 224MNP
303/356-1180 Greeley, CO 300/1200/2400(cps) 224MNP
303/651-3207 Longmont, CO 300/1200/2400(cps) 224MNP
303/663-0992 Loveland, CO 300/1200/2400(cps) 224MNP
303/879-4900 Steamboat Spngs, CO 300/1200/2400(cps) 224MNP
303/949-1336 Vail, CO 300/1200/2400(cps) 224MNP
304/345-9730 Charleston, WV 300/1200/2400(cps) 224MNP
304/733-4010 Huntington, WV 300/1200/2400(cps) 224MNP
304/291-5884 Morgantown, WV 300/1200/2400(cps) 224MNP
304/291-6783 Morgantown, WV 9600(cps) v.32/v.42
304/485-4225 Parkersburg, WV 300/1200/2400(cps) 224MNP
304/233-9470 Wheeling, WV 300/1200/2400(cps) 224MNP
305/429-0552 Deerfield Beach, FL 300/1200/2400(cps) 224MNP
305/426-0228 Deerfield Beach FL 9600(cps) v.32/v.42
305/772-1339 Ft. Lauderdale, FL 300/1200/2400(cps) 224MNP
305/772-9264 Ft. Lauderdale, FL 9600(cps) v.32/v.42
305/262-1643 Miami, FL 300/1200/2400(cps) 224MNP
305/262-9325 Miami, FL 9600(cps) v.32/v.42
307/234-6914 Casper, WY 300/1200/2400(cps) 224MNP
307/637-3027 Cheyenne, WY 300/1200/2400(cps) 224MNP
307/733-1640 Jackson, WY 300/1200/2400(cps) 224MNP
307/742-9641 Laramie, WY 300/1200/2400(cps) 224MNP
307/742-2320 Laramie, WY 9600(cps) v.32/v.42
309/827-3343 Bloomington, IL 300/1200/2400(cps) 224MNP
309/685-1275 Peoria, IL 300/1200/2400(cps) 224MNP
310/397-7887 Culver City, CA 300/1200/2400(cps) 224MNP
310/390-4188 Culver City, CA 9600(cps) v.32/v.42
310/599-5966 Long Beach, CA 300/1200/2400(cps) 224MNP
310/591-5768 Long Beach, CA 9600(cps) v.32/v.42
310/214-1442 Torrance , CA 300/1200/2400(cps) 224MNP
310/370-2831 Torrance, CA 9600(cps) v.32/v.42
312/372-1402 Chicago, IL 1200 CPS VADIC
312/263-5636 Chicago, IL 300/1200/2400(cps) 224MNP
312/693-0330 Chicago, IL 300/1200/2400(cps) 224MNP
312/201-0711 Chicago, IL 9600(cps) v.32/v.42
312/693-4100 Chicago, IL 9600(cps) v.32/v.42
313/769-2012 Ann Arbor MI 300/1200/2400(cps) 224MNP
313/761-9300 Ann Arbor, MI 9600(cps) v.32/v.42
313/535-1122 Detroit, MI 300/1200/2400(cps) 224MNP
313/535-0084 Detroit, MI 1200 CPS VADIC
313/535-1466 Detroit, MI 9600(cps) v.32/v.42
313/238-6202 Flint, MI 300/1200/2400(cps) 224MNP
313/463-1945 Mt. Clemens, MI 300/1200/2400(cps) 224MNP
313/334-2900 Pontiac, MI 300/1200/2400(cps) 224MNP
313/335-2680 Pontiac, MI 9600(cps) v.32/v.42
313/362-3242 Troy, MI 300/1200/2400(cps) 224MNP
313/244-8740 Troy, MI 9600(cps) v.32/v.42
314/875-0746 Columbia, MO 300/1200/2400(cps) 224MNP
314/635-9170 Jefferson City, MO 300/1200/2400(cps) 224MNP
314/241-3110 St. Louis, MO 1200 CPS VADIC
314/241-5337 St. Louis, MO 300/1200/2400(cps) 224MNP
314/421-5651 St. Louis, MO 9600(cps) v.32/v.42
315/451-0337 Syracuse, NY 300/1200/2400(cps) 224MNP
315/451-8093 Syracuse, NY 9600(cps) v.32/v.42
315/737-2101 Utica, NY 300/1200/2400(cps) 224MNP

316/689-8132 Wichita, KS 300/1200/2400(cps) 224MNP
316/687-0634 Wichita, KS 9600(cps) v.32/v.42
317/638-5785 Indianapolis, IN 1200 CPS VADIC
317/631-6824 Indianapolis, IN 300/1200/2400(cps) 224MNP
317/638-8129 Indianapolis, IN 9600(cps) v.32/v.42
317/448-9925 Lafayette, IN 300/1200/2400(cps) 224MNP
317/447-5557 Lafayette, IN 9600(cps) v.32/v.42
317/284-3812 Muncie, IN 300/1200/2400(cps) 224MNP
317/935-0061 Richmond, IN 300/1200/2400(cps) 224MNP
318/234-9880 Lafayette, LA 300/1200/2400(cps) 224MNP
318/433-0215 Lake Charles, LA 300/1200/2400(cps) 224MNP
318/324-9982 Monroe, LA 300/1200/2400(cps) 224MNP
318/424-5380 Shreveport, LA 300/1200/2400(cps) 224MNP
319/364-1437 Cedar Rapids, IA 300/1200/2400(cps) 224MNP
319/323-7388 Davenport, IA 300/1200/2400(cps) 224MNP
401/438-7960 Providence, RI 300/1200/2400(cps) 224MNP
402/474-9005 Lincoln, NE 300/1200/2400(cps) 224MNP
402/474-2316 Lincoln, NE 9600(cps) v.32/v.42
402/345-3602 Omaha, NE 1200 CPS VADIC
402/345-5012 Omaha, NE 300/1200/2400(cps) 224MNP
402/345-9557 Omaha, NE 9600(cps) v.32/v.42
403/466-5083 Edmonton, AB 300/1200/2400(cps) 224MNP
403/440-2744 Edmonton, AB 9600(cps) v.32/v.42
404/266-7060 Atlanta, GA 300/1200/2400(cps) 224MNP
404/261-0646 Atlanta, GA 1200 CPS VADIC
404/841-0578 Atlanta, GA 9600(cps) v.32/v.42
405/945-1018 Oklahoma City, OK 300/1200/2400(cps) 224MNP
405/942-7278 Oklahoma City, OK 9600(cps) v.32/v.42
405/624-5107 Stillwater, OK 300/1200/2400(cps) 224MNP
406/245-0863 Billings, MT 300/1200/2400(cps) 224MNP
406/449-3680 Helena, MT 300/1200/2400(cps) 224MNP
407/933-5703 Kissimmee, FL 300/1200/2400(cps) 224MNP
407/723-2622 Melbourne, FL 300/1200/2400(cps) 224MNP
407/896-3053 Orlando, FL 300/1200/2400(cps) 224MNP
407/896-6122 Orlando, FL 9600(cps) v.32/v.42
407/778-0550 Vero Beach, FL 300/1200/2400(cps) 224MNP
407/863-7031 West Palm Beach, FL 300/1200/2400(cps) 224MNP
407/881-7439 West Palm Beach, FL 1200 CPS VADIC
407/840-1219 West Palm Beach FL 9600(cps) v.32/v.42
408/646-1687 Monterey, CA 300/1200/2400(cps) 224MNP
408/754-2751 Salinas, CA 300/1200/2400(cps) 224MNP
408/988-5366 Santa Clara, CA 300/1200/2400(cps) 224MNP
408/727-8113 Santa Clara, CA 9600(cps) v.32/v.42
408/476-0126 Santa Cruz, CA 300/1200/2400(cps) 224MNP
408/462-9666 Santa Cruz, CA 9600(cps) v.32/v.42
409/835-0236 Beaumont, TX 300/1200/2400(cps) 224MNP
409/696-7986 College Station, TX 300/1200/2400(cps) 224MNP
409/756-8904 Conroe, TX 300/1200/2400(cps) 224MNP
409/763-5125 Galveston, TX 300/1200/2400(cps) 224MNP
410/266-7530 Annapolis, MD 300/1200/2400(cps) 224MNP
410/832-2702 Baltimore, MD 1200 CPS VADIC
410/832-0160 Baltimore, MD 300/1200/2400(cps) 224MNP
410/494-8403 Baltimore, MD 9600(cps) v.32/v.42
410/548-1502 Ocean City, MD 300/1200/2400(cps) 224MNP
412/285-8187 Butler, PA 300/1200/2400(cps) 224MNP
412/261-4192 Pittsburgh, PA 300/1200/2400(cps) 224MNP

412/391-8218 Pittsburgh, PA 1200 CPS VADIC
412/471-6417 Pittsburgh, PA 9600(cps) v.32/v.42
413/549-7431 Amherst, MA 300/1200/2400(cps) 224MNP
413/731-9680 Springfield, MA 300/1200/2400(cps) 224MNP
413/739-3314 Springfield, MA 9600(cps) v.32/v.42
414/731-4345 Appleton, WI 300/1200/2400(cps) 224MNP
414/494-0917 Green Bay, WI 300/1200/2400(cps) 224MNP
414/453-5132 Milwaukee, WI 300/1200/2400(cps) 224MNP
414/453-3010 Milwaukee, WI 9600(cps) v.32/v.42
414/458-3421 Sheboygan, WI 300/1200/2400(cps) 224MNP
415/296-8362 San Francisco, CA 300/1200/2400(cps) 224MNP
415/296-8972 San Francisco, CA 1200 CPS VADIC
415/434-1580 San Francisco, CA 9600(cps) v.32/v.42
415/591-5415 San Mateo, CA 300/1200/2400(cps) 224MNP
415/802-0130 San Mateo, CA 9600(cps) v.32/v.42
415/454-9935 San Rafael, CA 300/1200/2400(cps) 224MNP
415/721-7226 San Rafael, CA 9600(cps) v.32/v.42
416/367-8122 Toronto, ON 9600(cps) v.32/v.42
416/367-1743 Toronto, ON 300/1200/2400(cps) 224MNP
417/336-5786 Branson, MO 300/1200/2400(cps) 224MNP
417/887-8422 Springfield, MO 300/1200/2400(cps) 224MNP
419/243-2818 Toledo, OH 300/1200/2400(cps) 224MNP
419/242-5706 Toledo, OH 9600(cps) v.32/v.42
501/521-5386 Fayetteville AR 300/1200/2400(cps) 224MNP
501/521-3774 Fayetteville, AR 9600(cps) v.32/v.42
501/376-8374 Little Rock AR 300/1200/2400(cps) 224MNP
501/376-8544 Little Rock, AR 9600(cps) v.32/v.42
502/583-1277 Louisville KY 300/1200/2400(cps) 224MNP
502/568-6250 Louisville, KY 9600(cps) v.32/v.42
502/683-0777 Owensboro KY 300/1200/2400(cps) 224MNP
503/967-2460 Albany, OR 300/1200/2400(cps) 224MNP
503/689-9800 Eugene, OR 300/1200/2400(cps) 224MNP
503/689-6031 Eugene, OR 9600(cps) v.32/v.42
503/779-0504 Medford, OR 300/1200/2400(cps) 224MNP
503/239-6124 Portland, OR 300/1200/2400(cps) 224MNP
503/238-6729 Portland, OR 9600(cps) v.32/v.42
503/362-2523 Salem, OR 300/1200/2400(cps) 224MNP
503/362-0358 Salem, OR 9600(cps) v.32/v.42
504/383-9801 Baton Rouge LA 300/1200/2400(cps) 224MNP
504/383-9998 Baton Rouge, LA 9600(cps) v.32/v.42
504/733-2297 New Orleans LA 300/1200/2400(cps) 224MNP
504/733-3184 New Orleans, LA 9600(cps) v.32/v.42
505/265-7046 ALbuquerque NM 1200 CPS VADIC
505/255-8626 ALbuquerque NM 300/1200/2400(cps) 224MNP
505/662-4122 Los Alamos NM 300/1200/2400(cps) 224MNP
507/388-8723 Mankato MN 300/1200/2400(cps) 224MNP
507/285-1277 Rochester MN 300/1200/2400(cps) 224MNP
508/667-2939 Billerica, MA 300/1200/2400(cps) 224MNP
508/667-1765 Billerica, MA 9600(cps) v.32/v.42
508/588-1837 Brockton, MA 300/1200/2400(cps) 224MNP
508/677-0405 Fall River, MA 300/1200/2400(cps) 224MNP
508/820-9349 Framingham, MA 300/1200/2400(cps) 224MNP
508/371-0354 Framingham, MA 300/1200/2400(cps) 224MNP
508/448-3007 Groton, MA 300/1200/2400(cps) 224MNP
508/568-8019 Hudson, MA 300/1200/2400(cps) 224MNP
508/975-2040 Lawrence, MA 300/1200/2400(cps) 224MNP

508/897-4746 Maynard, MA 300/1200/2400(cps) 224MNP
508/359-7603 Medfield, MA 300/1200/2400(cps) 224MNP
508/533-2722 Medway, MA 300/1200/2400(cps) 224MNP
508/478-0653 Mendon, MA 300/1200/2400(cps) 224MNP
508/366-2617 Westborough, MA 300/1200/2400(cps) 224MNP
508/791-0745 Worcester, MA 300/1200/2400(cps) 224MNP
508/849-1000 Worcester, MA 9600(cps) v.32/v.42
509/326-6526 Spokane, WA 300/1200/2400(cps) 224MNP
509/326-0318 Spokane, WA 9600(cps) v.32/v.42
510/889-0369 Castro Valley, CA 300/1200/2400(cps) 224MNP
510/482-0190 Oakland, CA 300/1200/2400(cps) 224MNP
510/530-3393 Oakland, CA 9600(cps) v.32/v.42
510/682-0762 Pleasant Hill, CA 300/1200/2400(cps) 224MNP
510/682-2055 Pleasant Hill, CA 9600(cps) v.32/v.42
510/373-0546 Pleasanton, CA 300/1200/2400(cps) 224MNP
512/444-0566 Austin, TX 300/1200/2400(cps) 224MNP
512/326-1155 Austin, TX 9600(cps) v.32/v.42
512/882-1465 Corpus Christi, TX 300/1200/2400(cps) 224MNP
512/887-2891 Corpus Christi, TX 9600(cps) v.32/v.42
513/771-8543 Cincinnati, OH 300/1200/2400(cps) 224MNP
513/771-0592 Cincinnati, OH 9600(cps) v.32/v.42
513/226-1907 Dayton, OH 300/1200/2400(cps) 224MNP
513/224-4576 Dayton, OH 9600(cps) v.32/v.42
514/879-8519 Montreal PQ 300/1200/2400(cps) 224MNP
514/879-5826 Montreal PQ 9600(cps) v.32/v.42
515/276-5992 Des Moines IA 300/1200/2400(cps) 224MNP
515/276-7231 Des Moines, IA 9600(cps) v.32/v.42
516/981-1120 Lake Grove, NY 300/1200/2400(cps) 224MNP
516/932-2088 Long Island, NY 300/1200/2400(cps) 224MNP
516/937-1719 Long Island, NY 9600(cps) v.32/v.42
516/294-4190 Williston Park, NY 300/1200/2400(cps) 224MNP
517/332-6808 Lansing MI 300/1200/2400(cps) 224MNP
517/332-7141 Lansing, MI 9600(cps) v.32/v.42
517/754-9177 Saginaw MI 300/1200/2400(cps) 224MNP
517/753-5100 Saginaw, MI 9600(cps) v.32/v.42
518/439-8104, Albany, NY 300/1200/2400(cps) 224MNP
601/948-6411 Jackson MS 300/1200/2400(cps) 224MNP
601/352-5182 Jackson, MS 9600(cps) v.32/v.42
602/955-1464 Phoenix AZ 300/1200/2400(cps) 224MNP
602/468-0285 Phoenix, AZ 9600(cps) v.32/v.42
602/459-6390 Sierra Vista AZ 300/1200/2400(cps) 224MNP
602/745-8745 Tucson AZ 300/1200/2400(cps) 224MNP
602/750-9575 Tucson, AZ 1200 CPS VADIC
602/571-0207 Tucson, AZ 9600(cps) v.32/v.42
602/782-7191 Yuma AZ 300/1200/2400(cps) 224MNP
603/225-7322 Concord, NH 9600(cps) v.32/v.42
603/225-4277 Concord NH 300/1200/2400(cps) 224MNP
603/625-2940 Manchester NH 300/1200/2400(cps) 224MNP
603/886-3544 Nashua NH 300/1200/2400(cps) 224MNP
604/737-2452 Vancouver BC 300/1200/2400(cps) 224MNP
604/739-8194 Vancouver, BC 9600(cps) v.32/v.42
605/341-3733 Rapid City SD 300/1200/2400(cps) 224MNP
606/254-0585 Lexington KY 300/1200/2400(cps) 224MNP
606/254-6557 Lexington, KY 9600(cps) v.32/v.42
607/724-1171 Binghamton, NY 300/1200/2400(cps) 224MNP
607/257-0155 Ithaca, NY 300/1200/2400(cps) 224MNP

607/257-4264 Ithaca, NY 9600(cps) v.32/v.42
608/785-7530 La Crosse WI 300/1200/2400(cps) 224MNP
608/256-5346 Madison WI 300/1200/2400(cps) 224MNP
608/256-6716 Madison, WI 9600(cps) v.32/v.42
609/645-8778 Atlantic City NJ 300/1200/2400(cps) 224MNP
609/482-8770 Cherry Hill NJ 300/1200/2400(cps) 224MNP
609/667-8865 Cherry Hill, NJ 9600(cps) v.32/v.42
609/921-2207 Princeton NJ 1200 CPS VADIC
609/921-2855 Princeton NJ 300/1200/2400(cps) 224MNP
609/497-2384 Princeton, NJ 9600(cps) v.32/v.42
609/530-9521 Trenton NJ 300/1200/2400(cps) 224MNP
609/530-1517 Trenton, NJ 9600(cps) v.32/v.42
612/375-0328 Minneapolis MN 1200 CPS VADIC
612/339-2507 Minneapolis MN 300/1200/2400(cps) 224MNP
612/339-1805 Minneapolis, MN 9600(cps) v.32/v.42
613/830-7385 Ottawa ON 300/1200/2400(cps) 224MNP
614/592-2109 Athens, OH 300/1200/2400(cps) 224MNP
614/439-7360 Cambridge, OH 300/1200/2400(cps) 224MNP
614/442-2082 Columbus, OH 1200 CPS VADIC
614/457-2105 Columbus, OH 300/1200/2400(cps) 224MNP
614/761-1133 Columbus, OH 300/1200/2400(cps) 224MNP
614/876-2116 Columbus, OH 300/1200/2400(cps) 224MNP
614/792-0669 Columbus, OH 9600(cps) v.32/v.42
614/587-0932 Granville, OH 300/1200/2400(cps) 224MNP
615/892-4311 Chattanooga TN 300/1200/2400(cps) 224MNP
615/928-2644 Johnson City TN 300/1200/2400(cps) 224MNP
615/522-2152 Knoxville TN 300/1200/2400(cps) 224MNP
615/971-3774 Knoxville, TN 9600(cps) v.32/v.42
615/360-7923 Nashville TN 300/1200/2400(cps) 224MNP
615/367-0014 Nashville, TN 9600(cps) v.32/v.42
616/957-9733 Grand Rapids MI 300/1200/2400(cps) 224MNP
616/956-0075 Grand Rapids, MI 9600(cps) v.32/v.42
616/383-3516 Kalamazoo MI 300/1200/2400(cps) 224MNP
617/542-1779 Boston, MA 1200 CPS VADIC
617/482-7061 Boston, MA 300/1200/2400(cps) 224MNP
617/426-9295 Boston, MA 9600(cps) v.32/v.42
617/661-7071 Cambridge, MA 9600(cps) v.32/v.42
617/868-0524 Cambridge, MA 300/1200/2400(cps) 224MNP
619/498-0099 Chula Vista, CA 300/1200/2400(cps) 224MNP
619/753-2728 Encinitas, CA 300/1200/2400(cps) 224MNP
619/753-0235 Encinitas, CA 9600(cps) v.32/v.42
619/325-4584 Palm Springs, CA 300/1200/2400(cps) 224MNP
619/569-4282 San Diego, CA 300/1200/2400(cps) 224MNP
619/467-9508 San Diego, CA 9600(cps) v.32/v.42
619/471-0960 San Marcos, CA 300/1200/2400(cps) 224MNP
701/232-0904 Fargo, ND 300/1200/2400(cps) 224MNP
702/737-1292 Las Vegas, NV 300/1200/2400(cps) 224MNP
702/796-4877 Las Vegas, NV 9600(cps) v.32/v.42
702/323-6608 Reno, NV 300/1200/2400(cps) 224MNP
702/322-8968 Reno, NV 9600(cps) v.32/v.42
703/352-8750 Fairfax, VA 1200 CPS VADIC
703/591-0506 Fairfax, VA 300/1200/2400(cps) 224MNP
703/591-0461 Fairfax, VA 9600(cps) v.32/v.42
703/368-5707 Manassas, VA 300/1200/2400(cps) 224MNP
703/934-2200 Reston, VA 300/1200/2400(cps) 224MNP
703/934-2267 Reston, VA 9600(cps) v.32/v.42

703/265-1013 Roanoke, VA 300/1200/2400(cps) 224MNP
703/885-0253 Staunton, VA 300/1200/2400(cps) 224MNP
704/274-9491 Asheville, NC 300/1200/2400(cps) 224MNP
704/331-0905 Charlotte, NC 300/1200/2400(cps) 224MNP
704/358-8991 Charlotte, NC 9600(cps) v.32/v.42
706/353-6133 Athens, GA 300/1200/2400(cps) 224MNP
706/353-6120 Athens, GA 9600(cps) v.32/v.42
706/738-3018 Augusta, GA 300/1200/2400(cps) 224MNP
706/596-2700 Columbus, GA 300/1200/2400(cps) 224MNP
707/257-7710 Napa, CA 300/1200/2400(cps) 224MNP
707/579-4611 Santa Rosa, CA 300/1200/2400(cps) 224MNP
707/579-1588 Santa Rosa, CA 9600(cps) v.32/v.42
707/645-8880 Vallejo, CA 300/1200/2400(cps) 224MNP
708/801-9488 Aurora, IL 300/1200/2400(cps) 224MNP
708/801-9468 Aurora, IL 9600(cps) v.32/v.42
708/261-1400 Lombard, IL 300/1200/2400(cps) 224MNP
708/261-0040 Lombard, IL 9600(cps) v.32/v.42
713/650-5000 Houston, TX 300/1200/2400(cps) 224MNP
713/650-5143 Houston, TX 9600(cps) v.32/v.42
714/520-5231 Anaheim, CA 300/1200/2400(cps) 224MNP
714/563-9431 Anaheim, CA 9600(cps) v.32/v.42
714/833-9915 Newport Beach, CA 300/1200/2400(cps) 224MNP
714/252-1131 Newport Beach, CA 9600(cps) v.32/v.42
716/875-3711 Buffalo, NY 300/1200/2400(cps) 224MNP
716/876-7680 Buffalo, NY 9600(cps) v.32/v.42
716/925-7042 Limestone, NY 300/1200/2400(cps) 224MNP
716/284-3570 Niagara Falls, NY 300/1200/2400(cps) 224MNP
716/647-1567 Rochester, NY 300/1200/2400(cps) 224MNP
716/254-1390 Rochester, NY 9600(cps) v.32/v.42
716/694-6263 Tonawanda, NY 300/1200/2400(cps) 224MNP
717/245-2066 Carlisle, PA 300/1200/2400(cps) 224MNP
717/243-6477 Carlisle, PA 9600(cps) v.32/v.42
717/545-7116 Harrisburg, PA 300/1200/2400(cps) 224MNP
717/941-3239 Scranton, PA 300/1200/2400(cps) 224MNP
717/822-2964 Wilkes Barre, PA 300/1200/2400(cps) 224MNP
717/845-7631 York, PA 300/1200/2400(cps) 224MNP
719/596-0910 Colorado Sprngs, CO 300/1200/2400(cps) 224MNP
719/546-1891 Pueblo, CO 300/1200/2400(cps) 224MNP
800/848-4480 CompuServe 800, OH 300/1200/2400(cps) 224MNP
800/331-7166 CompuServe 800, OH 9600(cps) v.32/v.42
801/544-0338 Kaysville, UT 300/1200/2400(cps) 224MNP
801/544-3791 Kaysville, UT 9600(cps) v.32/v.42
801/649-0121 Park City, UT 300/1200/2400(cps) 224MNP
801/377-1120 Provo, UT 300/1200/2400(cps) 224MNP
801/375-1748 Provo, UT 9600(cps) v.32/v.42
801/521-6326 Salt Lake City, UT 300/1200/2400(cps) 224MNP
801/521-9777 Salt Lake City, UT 9600(cps) v.32/v.42
802/862-1575 Burlington, VT 300/1200/2400(cps) 224MNP
802/362-5580 Manchester Ctr, VT 300/1200/2400(cps) 224MNP
803/556-0422 Charleston, SC 1200 CPS VADIC
803/766-8099 Charleston, SC 300/1200/2400(cps) 224MNP
803/763-3423 Charleston, SC 9600(cps) v.32/v.42
803/776-5355 Columbia, SC 300/1200/2400(cps) 224MNP
803/776-2229 Columbia, SC 9600(cps) v.32/v.42
803/676-9777 Greenville, SC 300/1200/2400(cps) 224MNP
803/676-9228 Greenville, SC 9600(cps) v.32/v.42

803/842-6314 Hilton Head, SC 300/1200/2400(cps) 224MNP
803/238-8625 Myrtle Beach, SC 300/1200/2400(cps) 224MNP
803/585-9611 Spartanburg, SC 300/1200/2400(cps) 224MNP
804/979-5159 Charlottesville, VA 300/1200/2400(cps) 224MNP
804/295-2846 Charlottesville VA 9600(cps) v.32/v.42
804/855-0241 Norfolk, VA 300/1200/2400(cps) 224MNP
804/855-6499 Norfolk, VA 9600(cps) v.32/v.42
804/287-8500 Richmond, VA 300/1200/2400(cps) 224MNP
804/287-8566 Richmond, VA 9600(cps) v.32/v.42
804/888-2556 Williamsburg, VA 300/1200/2400(cps) 224MNP
804/887-5377 Williamsburg, VA 9600(cps) v.32/v.42
805/324-0971 Bakersfield, CA 300/1200/2400(cps) 224MNP
805/942-3888 Lancaster, CA 300/1200/2400(cps) 224MNP
805/486-3386 Oxnard, CA 300/1200/2400(cps) 224MNP
805/549-8605 San Luis Obispo, CA 300/1200/2400(cps) 224MNP
805/682-7750 Santa Barbara, CA 300/1200/2400(cps) 224MNP
805/934-5322 Santa Maria, CA 300/1200/2400(cps) 224MNP
805/937-5490 Santa Maria, CA 9600(cps) v.32/v.42
805/498-3453 Thousand Oaks, CA 300/1200/2400(cps) 224MNP
805/499-6110 Thousand Oaks, CA 9600(cps) v.32/v.42
805/648-1906 Ventura, CA 300/1200/2400(cps) 224MNP
806/379-8411 Amarillo, TX 300/1200/2400(cps) 224MNP
806/797-0018 Lubbock, TX 300/1200/2400(cps) 224MNP
806/797-0479 Lubbock, TX 9600(cps) v.32/v.42
808/521-6292 Honolulu HI 300/1200/2400(cps) 224MNP
808/528-0430 Honolulu HI 9600(cps) v.32/v.42
808/871-8328 Maui HI 300/1200/2400(cps) 224MNP
809/722-2999 San Juan PR 300/1200/2400(cps) 224MNP
809/722-0995 San Juan PR 9600(cps) v.32/v.42
812/330-1327 Bloomington, IN 300/1200/2400(cps) 224MNP
812/330-1424 Bloomington, IN 9600(cps) v.32/v.42
812/479-0165 Evansville, IN 300/1200/2400(cps) 224MNP
813/337-0136 Ft. Myers, FL 300/1200/2400(cps) 224MNP
813/566-9562 Naples, FL 300/1200/2400(cps) 224MNP
813/566-7015 Naples, FL 9600(cps) v.32/v.42
813/355-0832 Sarasota, FL 300/1200/2400(cps) 224MNP
813/527-0338 St. Petersburg, FL 300/1200/2400(cps) 224MNP
813/229-7406 Tampa, FL 300/1200/2400(cps) 224MNP
813/229-3200 Tampa, FL 9600(cps) v.32/v.42
813/293-3911 Winter Haven, FL 300/1200/2400(cps) 224MNP
814/864-4018 Erie, PA 300/1200/2400(cps) 224MNP
814/443-6402 Somerset, PA 300/1200/2400(cps) 224MNP
814/238-7910 State College, PA 300/1200/2400(cps) 224MNP
815/748-5288 Dekalb, IL 300/1200/2400(cps) 224MNP
815/933-3782 Kankakee, IL 300/1200/2400(cps) 224MNP
815/226-8211 Rockford, IL 300/1200/2400(cps) 224MNP
816/472-1283 Kansas City, MO 300/1200/2400(cps) 224MNP
816/221-3817 Kansas City, MO 9600(cps) v.32/v.42
817/387-8900 Denton, TX 300/1200/2400(cps) 224MNP
817/685-2700 Ft. Worth, TX 300/1200/2400(cps) 224MNP
817/685-2737 Ft. Worth, TX 9600(cps) v.32/v.42
817/776-7090 Waco, TX 300/1200/2400(cps) 224MNP
817/751-9590 Waco, TX 9600(cps) v.32/v.42
818/506-6734 N. Hollywood, CA 300/1200/2400(cps) 224MNP
818/752-8045 N. Hollywood, CA 9600(cps) v.32/v.42
818/303-5780 Sierra Madre, CA 300/1200/2400(cps) 224MNP

818/303-3869 Sierra Madre, CA 9600(cps) v.32/v.42
818/786-6382 Van Nuys , CA 300/1200/2400(cps) 224MNP
818/988-9791 Van Nuys, CA 9600(cps) v.32/v.42
901/323-0220 Memphis, TN 300/1200/2400(cps) 224MNP
901/452-2470 Memphis, TN 1200(cps)VADIC
901/454-6851 Memphis, TN 9600(cps) v.32/v.42
903/753-1479 Longview, TX 300/1200/2400(cps) 224MNP
903/753-0596 Longview, TX 9600(cps) v.32/v.42
903/561-5565 Tyler, TX 300/1200/2400(cps) 224MNP
904/258-8433 Daytona Beach, FL 300/1200/2400(cps) 224MNP
904/377-5227 Gainesville, FL 300/1200/2400(cps) 224MNP
904/371-0661 Gainesville, FL 9600(cps) v.32/v.42
904/448-5624 Jacksonville, FL 300/1200/2400(cps) 224MNP
904/730-0046 Jacksonville, FL 9600(cps) v.32/v.42
904/871-0660 Panama City, FL 300/1200/2400(cps) 224MNP
904/432-1007 Pensacola, FL 300/1200/2400(cps) 224MNP
904/385-8699 Tallahassee, FL 300/1200/2400(cps) 224MNP
904/422-9604 Tallahassee, FL 9600(cps) v.32/v.42
907/563-8425 Anchorage, AK 300/1200/2400(cps) 224MNP
907/479-4102 Fairbanks, AK 300/1200/2400(cps) 224MNP
908/356-4747 Boundbrook, NJ 300/1200/2400(cps) 224MNP
908/935-0065 Eatontown, NJ 300/1200/2400(cps) 224MNP
908/935-0137 Eatontown, NJ 9600(cps) v.32/v.42
908/852-8502 Hackettstown, NJ 300/1200/2400(cps) 224MNP
908/914-0405 Toms River, NJ 300/1200/2400(cps) 224MNP
908/914-1954 Toms River, NJ 9600(cps) v.32/v.42
908/632-8755 Woodbridge, NJ 300/1200/2400(cps) 224MNP
908/632-9384 Woodbridge, NJ 9600(cps) v.32/v.42
909/622-5454 Pomona, CA, 300/1200/2400(cps) 224MNP
909/865-0553 Pomona, CA 9600(cps) v.32/v.42
909/354-5022 Riverside, CA 300/1200/2400(cps) 224MNP
909/358-0383 Riverside, CA 9600(cps) v.32/v.42
909/882-9626 San Bernardino, CA 300/1200/2400(cps) 224MNP
909/882-6646 San Bernardino, CA 9600(cps) v.32/v.42
912/435-9420 Albany, GA 300/1200/2400(cps) 224MNP
912/264-0351 Brunswick, GA 300/1200/2400(cps) 224MNP
912/929-0804 Macon, GA 300/1200/2400(cps) 224MNP
912/922-2179 Macon, GA 9600(cps) v.32/v.42
912/355-0222 Savannah, GA 300/1200/2400(cps) 224MNP
912/353-8559 Savannah, GA 9600(cps) v.32/v.42
913/843-0140 Lawrence, KS 300/1200/2400(cps) 224MNP
913/749-2900 Lawrence, KS 9600(cps) v.32/v.42
913/776-7111 Manhattan, KS 300/1200/2400(cps) 224MNP
913/232-9520 Topeka, KS 300/1200/2400(cps) 224MNP
913/232-1317 Topeka, KS 9600(cps) v.32/v.42
914/344-3800 Middletown, NY 300/1200/2400(cps) 224MNP
914/473-5991 Poughkeepsie, NY 300/1200/2400(cps) 224MNP
914/761-3163 White Plains, NY 300/1200/2400(cps) 224MNP
914/761-3203 White Plains, NY 1200 CPS VADIC
915/698-1111 Abilene, TX 300/1200/2400(cps) 224MNP
915/565-0970 El Paso, TX 300/1200/2400(cps) 224MNP
915/564-0380 El Paso, TX 9600(cps) v.32/v.42
915/561-5811 Midland, TX 300/1200/2400(cps) 224MNP
915/942-8787 San Angelo, TX 300/1200/2400(cps) 224MNP
916/661-7250 Davis, CA 300/1200/2400(cps) 224MNP
916/661-9296 Davis, CA 9600(cps) v.32/v.42

916/223-1144 Redding, CA 300/1200/2400(cps) 224MNP
916/568-0636 Sacramento, CA 300/1200/2400(cps) 224MNP
916/568-0241 Sacramento, CA 9600(cps) v.32/v.42
916/541-5940 So. Lake Tahoe, CA 300/1200/2400(cps) 224MNP
918/621-1000 Tulsa, OK 1200 CPS VADIC
918/621-1002 Tulsa, OK 300/1200/2400(cps) 224MNP
918/621-1036 Tulsa, OK 9600(cps) v.32/v.42
919/584-8808 Burlington, NC 300/1200/2400(cps) 224MNP
919/687-4300 Durham, NC 300/1200/2400(cps) 224MNP
919/687-4049 Durham, NC 9600(cps) v.32/v.42
919/272-4994 Greensboro, NC 300/1200/2400(cps) 224MNP
919/664-5800 Raleigh, NC 300/1200/2400(cps) 224MNP
919/664-5848 Raleigh, NC 9600(cps) v.32/v.42
919/392-4700 Wilmington, NC 300/1200/2400(cps) 224MNP
919/723-9471 Winston-Salem, NC 300/1200/2400(cps) 224MNP
919/724-9748 Winston-Salem, NC 9600(cps) v.32/v.42

BITNET

[BITNET \(history/background\)](#)

[Sending files via Bitnet](#)

[Selected BITNET magazines](#)

[Listservers](#)

Bitnet

BITNET is a telecommunications network that links users in academic institutions in the United States and in foreign countries. The purpose of BITNET is to facilitate communication among universities. Any university may use the network for either academic or administrative communications. Universities with any one of a large set of minicomputers and mainframes can easily become part of the network, since the communications software supports a wide variety of different hardware. The computers in BITNET are connected via leased telephone lines, and users can share information through electronic mail in the form of interactive messages, text files, and computer programs.

The network was founded in the spring of 1981 by establishing a link between the City University of New York CUNY and Yale University. At first, there was considerable doubt over whether the "network would ever reach a useful critical mass." Indeed, even though several dozen institutions had expressed an interest in joining such a service, in a survey conducted prior to implementing the network, only six universities were actually linked to BITNET by the end of 1981. Two years later, the network had grown to 19 sites with a total of 65 nodes. In the summer of 1988, there were over 1,500 nodes connected to the network.

BITNET's philosophy was that each subscribing academic institution would lease a line to the nearest existing network node and provide at least one connection point for future members. New members would thus increase the geographic distribution of the network. BITNET was a cooperative network in that each node contributed communications lines, storage and processing without charge to the other nodes. Moreover, the network relied heavily on volunteer efforts and informal agreements between universities to maintain and operate the network.

[Sending files via Bitnet
listservers](#)

Bitnet listservers

A program available on many BITNET connected computers that can act as a mail forwarding system and as a file repository. BITNET is another network that links many colleges and universities. It does not normally link to military or government institutions as does the Internet. The idea of mailing lists has been given new life with the advent of computer networks. Most of us are on mailing lists, be they for magazines, bills, or those silly pamphlets you get from your Senator. Computers have brought a whole new degree of speed and functionality to mailing lists, as you will see. In BITNET, mailing lists are used mainly to keep people with similar interests in contact. There are several formats in which this contact can take place. These are "forums", "digests", and "electronic magazines".

FORUMS are a good example of how the utility of mailing lists has been expanded in BITNET. Let's say that you have subscribed to a forum for people interested in COBOL (gack!). How you could subscribe to such a list will be described later. Someone (anyone!) on the mailing list sends mail to a server where the list is kept. This server forwards the mail to all of the people in the forum. When mail from a forum arrives in your computer mailbox, the header will look much like this:

Date: Fri, 10 Sep 88 23:52:00 EDT
Reply-To: COBOL Discussion List <COBOL-L@METRO>
Sender: COBOL Discussion List <COBOL-L@METRO>
From: Ted Kord <BEETLE@JLIVM>
Subject: No More Perform-Through-Varyings!
To: Daniel Lawrence Shaw <DANIEL@YALEVM>

This looks a little confusing, but there really isn't much to it. In this example, Ted Kord ("From:") sent mail to the COBOL-L list address. This server then forwarded the mail to everybody on the list, including Daniel Lawrence Shaw ("To:"). Note the line named "Reply-To:". This line tells your mail software that when you reply to the note that the reply should go to the list... meaning *everybody* on the list. People will in turn reply to your mail, and you have a forum.

This is usually very interesting, but it can lead to problems. First among these is the volume of mail you can receive. If you are in a very active forum, you can get 50 or more pieces of electronic mail in a single day. If you are discussing an emotional topic, expect more. Many people have a tendency to "flame". The speed and immediacy of electronic mail makes it very easy to whip out a quick, emotional, response, to which there will be similar replies. We advise you to take some time and think out your responses to forum postings before inadvertently starting a "flame war".

[subscribing to lists](#)

Subscribing to Listservers

A server that controls a mailing list is called a "list server." Most Most of these have the terribly original userid of LISTSERV. One of these servers can control subscriptions to many mailing lists.

The most difficult concept behind list servers is the difference between a LISTSERV and its list-ids. When you subscribe to a mailing list, you send the appropriate command to a LISTSERV. When you want to communicate to the people on the mailing list, you send mail to the list-id. For example, there is a list named LIAISON. To subscribe to this list, you would send a command to LISTSERV@BITNIC. You could then correspond with people on that mailing list by sending mail to LIAISON@BITNIC.

LIAISON is a list-id, a "satellite" of the LISTSERV. We mention this because many people make the mistake of sending commands by mail to list-ids. This annoys people to no end and creates a lot of unnecessary network traffic.

To subscribe to a lists, you would send a LISTSERV a SUBSCRIBE command, which has the following syntax:

```
SUBscribe listname your_full_name
```

In this example, Kristen Shaw is sending LISTSERV@BITNIC the command to subscribe to LIAISON:

```
VM/CMS:  TELL LISTSERV AT BITNIC SUB LIAISON Kristen Shaw
VMS/JNET: SEND LISTSERV@BITNIC "SUB LIAISON Kristen Shaw"
```

If you misspell your name when entering a SUBscribe command, simply re-send it with the correct spelling. To delete her name from the mailing list, Kristen would enter an UNSUBscribe command:

```
VM/CMS:  TELL LISTSERV AT BITNIC UNSUB LIAISON
VMS/JNET: SEND LISTSERV@BITNIC "UNSUB LIAISON"
```

Those are the basic commands you need to know in order to access LISTSERV controlled mailing lists.

Send/Tell

The MESSAGE (sometimes called "interactive message") is the fastest and most convenient method of communication available through BITNET. It is the network's equivalent of a telephone conversation. The difference is that the words are typed instead of spoken. The message you type is transmitted immediately (well, quickly) to its destination. In BITNET this destination is the network address (userid@node) of the person you want to contact. If the person you are contacting is logged on, the message will be displayed on their screen. If not, their computer will tell you so. In this case, your message is lost forever. In other words, no one is there to answer the phone. However, many people run a program which will act like an answering machine and hold your message until they log on.

The syntax to send messages depends on your computer and system software. People on VM/CMS systems would type something like this:

TELL userid AT node message

For example: TELL KRISTEN AT MARIST Hey Kristen, What's up?

People on VAX/VMS systems using the JNET networking software would use this syntax: SEND userid@node "message"

For example: SEND KRISTEN@MARIST "Hey Kristen, What's up?"

The quotes around the message are optional. However, the JNET networking for VAX/VMS will translate your entire message into upper-case characters if you DO NOT use them. Many people find receiving messages like that extremely annoying.

You should consult your local system documentation for more information on TELL or SEND and their capabilities. When a message arrives on your screen, it will look something like this:

FROM MARIST(KRISTEN): Hello! It's been a while, no?

Bitnet (sending files)

FILES are another way to communicate over BITNET. The text files and programs that you store on your computer can be transmitted to users at other nodes. People on VM/CMS systems would use a syntax like this:

`SENDFILE filename filetype filemode userid AT node`

For example: `SENDFILE BITNET USERHELP A KRISTEN AT MARIST`

The syntax for VMS/JNET systems is quite similar:

`SEND/FILE filename.extension userid@node`

For example: `SEND/FILE BITNET.USERHELP KRISTEN@MARIST`

The file sent is stored in the "electronic mailbox" of the recipient until he/she logs on. People on VM/CMS systems would use the RECEIVE or RDRLIST commands to process files sent to them in this way. People on VAX/VMS systems would use the RECEIVE command. You should check your local documentation for information on these commands.

SEND/FILE and SENDFILE are useful for sending programs or large volumes of data over the network. However, they shouldn't be used for everyday communication.



Selected BITNET magazines

AIR

AIR is a newsletter for people interested in institutional research and planning analysis. For a subscription, send mail to John Muffo, IRMUFFO@VTVM1.

ATHENE

Athene is a free network "magazine" devoted to amateur fiction written by the members of the online community. Athene does not limit itself to any specific genre, but will publish quality short stories dealing with just about any interesting topic, including: science fiction; fantasy; religion; mystery; computers; humor; psychology; sports; politics and/or business. To subscribe, mail a request to Jim McCabe, MCCABE@MTUS5. Be sure to mention if you want it in ASCII or Postscript.

BIOSPHERE Newsletter

BioSphere newsletter may be of interest for those of you concerned about the problems facing our environment. To get a subscription, send this command to LISTSERV@UBVM: SUB BIOSPH-L your_full_name. Back issues of the magazine are available from the server UMNEWS@MAINE (on the MAGAZINE disk).

CCNEWS

CNEWS is a weekly electronic magazine for campus computing center newsletter editors. In it they discuss common interests and concerns about delivery of news and information. These include desktop publishing, printing, operational aspects of developing newsletters, writing, and computing-related issues relevant to campus computing center information dissemination. The archive of CCNEWS also includes the full text of contributed articles from campus computing newsletters and other sources. You can subscribe to CCNEWS magazine by sending the command: SUB CCNEWS Your_Full_Name - Institution to LISTSERV@BITNIC.

DISTED

The On-Line Journal of Distance Education and Communication Special Interest Group has two primary concerns: First, it is concerned with distance education as the organized method of reaching geographically disadvantaged learners. Second, the Journal is interested in projects concerned with overcoming cultural barriers through the use of electronic communication. To subscribe, send the this command to LISTSERV@UWAVM via mail or message: SUB DISTED your_full_name

INTERNATIONAL INTERCULTURAL Newsletter

XCULT-L is an international intercultural newsletter written by undergraduate and graduate students at Penn State University who are enrolled in Speech Communication 497B: Cross-cultural Communication. Each week, students write on a topic being discussed in class. Topics range from non-dominant cultures in the U.S. to corporate cultures to the use nonverbal communication in international communication. Participants who receive the newsletter are encouraged to join in the discussions or contribute their own topics and issues. You can subscribe to XCULT-L by sending the command "SUB XCULT-L firstname lastname" to LISTSERV@PSUVM.

MEDNEWS

Mednews is a weekly electronic newsletter. Regular columns consist of medical news summary from USA Today, Center For Disease Control MMWR, weekly AIDS Statistics from the CDC, plus other interesting medical news items. To subscribe, send the following command to LISTSERV@ASUACAD via mail or message: SUB MEDNEWS Your_Full_Name.

NETWORK AUDIO BITS

Network Audio Bits and Audio Software Review is an electronic audio magazine devoted primarily to

Compact Disc and Vinyl LP Record reviews. Subscriptions are available by sending mail to MURPH@MAINE. Back issues are available from UMNEWS@MAINE (EMAGS disk).

THE PUBLIC-ACCESS COMPUTER SYSTEMS REVIEW

An electronic journal, the Public-Access Computer Systems Review, has been established on the Public-Access Computer Systems Forum (PACS- L@UHUPVM1). The PACS Review will cover all computer systems that libraries make available to their patrons, including CAI and ICAI programs, CD-ROM databases, expert systems, hypermedia systems, information delivery systems, local databases, online catalogs, remote end-user search systems, and other systems. To join the PACS Forum, send the following command to LISTSERV@UHUPVM1 via mail or message: SUBSCRIBE PACS-L Your_full_name.

PSYCHNET

Psychnet is a weekly newsletter keeping the psychology community informed and in contact. To subscribe, send mail to Robert C. Morecock, EPSYNET@UHUPVM1.

QUANTA

Quanta is a magazine devoted to Science Fiction and topics related to science fiction. It is published bi-monthly by Dan Appelquist (R746DA1@CMUCCVMB). Send mail to Dan to subscribe, submit material, or just to receive more info. Quanta is published in both straight ASCII and PostScript formats.

SCUP Newsletter

SCUP is a newsletter for people interested in college and university planning. For a subscription send mail to SCUP@TUFTS.

USSR-D

USSR-D (USSR news and information digest) is a regular digest of traffic culled from USSR-L (USSR news & information list), a public discussion and distribution list dedicated to the dissemination and analysis of non-classified news and information regarding the Union of Soviet Socialist Republics and its past and present (if not future) constituent Soviet Socialist Republics. To subscribe send the command Sub USSR-D Your_full_name to LISTSERV@INDYCMS.



Welcome to the University of Houston Libraries **Public-Access Computer Systems Forum**

Overview

The Public-Access Computer Systems Forum (PACS-L) is a computer conference that deals with all computer systems that libraries make available to their patrons. Utilizing PACS-L, users discuss topics such as CD-ROM databases, expert systems, hypertext programs, microcomputer labs, locally-mounted databases, network-based information resources, and OPAC's.

The conference does not deal with staff-oriented functions in integrated library systems (e.g., acquisitions, cataloging, circulation, and serials control), staff-oriented microcomputer use (e.g., spreadsheets and word processing), or mediated online searching.

While many users are librarians, PACS-L also serves computer specialists, faculty members, and others. The conference was founded in June 1989 by Charles W. Bailey, Jr. Currently, there are over 6,400 users in 56 countries. The conference is moderated by Dana Rooks and Jill Hackenberg. The Information Technology Division of the University of Houston provides technical support for the conference.

Messages sent to PACS-L are reviewed by the conference moderators, who distribute messages on appropriate topics to conference participants. PACS-L moderators reserve the right to reject any posting that we feel is not appropriate for PACS-L. Normally, PACS-L users receive 5-15 messages per day. Please do not send messages longer than about 250 lines; break long messages up into multiple shorter messages.

The University of Houston Libraries provides PACS-L as a public service. It does not verify the accuracy of submitted messages nor does it endorse the opinions expressed by message authors. Authors of PACS-L messages are solely responsible for content of their messages.

All messages to the conference are automatically archived. Users can search the message database for specific information using complex Boolean queries. The most reliable method of searching the database is to submit batch search jobs to the list server via e-mail messages. Search features include nested Boolean expressions, search limitation by date and time, and SOUNDEX searches.

An electronic journal, **The Public-Access Computer Systems Review**, was established in September 1989. The first issue was published in January 1990. The journal became refereed in November 1991. Articles are stored as individual files on the list server, and an annotated table of contents for each issue is sent out as an e-mail message to all PACS-L users. After looking over the table of contents, users can retrieve article files of interest. The journal is cataloged on OCLC and RLIN.

The first two volumes of The Public-Access Computer Systems Review are also available in book form from the American Library Association's Library and Information Technology Association (LITA). The price of each volume is \$17 for LITA members and \$20 for non-LITA members. To order, contact: ALA Publishing Services, Order Department, 50 East Huron Street, Chicago, IL 60611-2729, (800) 545-2433.

Volume one has a special section on SPIRES that describes how this powerful system is being used for locally mounted databases and campus-wide information systems, plus an in-depth symposium about staffing issues and public-access computer systems. It also has articles about Carnegie Mellon University's Library Information System II (and other innovative library automation systems), text

management software, CD-ROM LAN implementations and network licensing agreements, Z39.50, and other topics.

Volume two has a special section about major electronic serials on networks that includes papers by the editors and publishers of EJournal, The Electronic Journal of Communication, the Journal of the International Academy of Hospitality Research, New Horizons in Adult Education, the Newsletter on Serials Pricing Issues, Postmodern Culture, and PSYCOLOQUY as well as a guide to the important LISTSERV software. It also has a substantial symposium about network-based information resources and scholarly communication, plus a paper on machine-readable data files in libraries.

Volume three has papers on campus-wide information systems and tools, including UC Berkeley's Infocal Campus Information Service, HYTELNET, LIBS Internet Access Software, and nonbibliographic applications of Z39.50. It includes an in-depth investigation of the future of electronic publishing, a paper on The Online Journal of Current Clinical Trials, and a bibliography about electronic publishing on networks. It also contains papers on reshaping library services and staffing to support emerging electronic information systems; the Canadian Network for the Advancement of Research, Industry, and Education; and search failures in information retrieval systems.

All three volumes include columns by Walt Crawford and Martin Halbert, plus book reviews. Volume three introduced a new columnist, Priscilla Caplan. Topics covered include artificial intelligence, the Common Command Language, copyright and digital media, enhanced OPACs, help systems, hypermedia, Internet resources, and USMARC format integration.

Contact the Editor-in-Chief, Charles W. Bailey, Jr. (LIB3@UHUPVM1), for further information about the PACS Review.

An electronic newsletter, Public-Access Computer Systems News, is also distributed on PACS-L. The first issue was published in March 1990. Issues are sent out as messages on PACS-L. Back issues are stored on the list server. The newsletter is cataloged on OCLC and RLIN. For further information, contact the Co-Editor, Dana Rooks, LIBL@UHUPVM1.

Information Systems Instruction & Support, the Library, the University of California at Berkeley distributes its electronic newsletter, Current Cites, on PACS-L.

A second list, PACS-P, was established in January 1991 for users that want to receive PACS-L publications, but do not want to receive messages from PACS-L users. PACS-P serves over 1,420 users in 43 countries.

Selected Commands

To join PACS-L, send the following e-mail message to LISTSERV@UHUPVM1: SUBSCRIBE PACS-L First Name Last Name. (The UH list server also has an Internet address: LISTSERV@UHUPVM1.UH.EDU.)

To receive the PACS-L publications only (no messages from PACS-L users), send the following message to LISTSERV@UHUPVM1: SUBSCRIBE PACS-P First Name Last Name. Do NOT subscribe to both PACS-L and PACS-P; PACS-L users receive all publications as part of their subscription.

To sign off PACS-L, send the following e-mail message to LISTSERV@UHUPVM1: UNSUBSCRIBE PACS-L.

To stop PACS-L mail when you go on vacation, send the following e-mail message to LISTSERV@UHUPVM1: SET PACS-L NOMAIL.

To resume PACS-L mail delivery, send the following e-mail message to LISTSERV@UHUPVM1: SET PACS-L MAIL.

To determine what your PACS-L distribution settings are, send the following message to `LISTSERV@UHUPVM1`: `QUERY PACS-L`. This is a useful command to try if you stop receiving PACS-L mail. The moderators may have had to set you to `NOMAIL` because of problems with your e-mail account.

To send a message to the PACS-L, send your e-mail message to `PACS-L@UHUPVM1`.

To obtain a list of PACS-L users, send the following e-mail message to `LISTSERV@UHUPVM1`: `REVIEW PACS-L F=MAIL`.

To receive full documentation about searching the message database, send the following e-mail message to `LISTSERV@UHUPVM1`: `INFO DATABASE`. (A brief tutorial is also available. Send the message `GET SEARCH DOC F=MAIL` to `LISTSERV@UHUPVM1`.)

To see what files are available, send the following e-mail message to `LISTSERV@UHUPVM1`: `INDEX PACS-L F=MAIL`.

The file name for a PACS Review table of contents file starts with the word `CONTENTS`. For example: `CONTENTS PRV3N8`.

The file name for a PACS News issue file starts with the word `PACSNEWS`. For example: `PACSNEWS V3N16`.

The file name for a Current Cites issue file starts with the word `CURRENTC`. For example: `CURRENTC V3N12`.

To retrieve a file, send the following e-mail message to `LISTSERV@UHUPVM1`: `GET File Name File Type`.

To have a file sent via e-mail instead of via file transfer, add `"F=MAIL"` after the `GET` command. For example, to retrieve `CONTENTS PRV2N1` via e-mail, send the following e-mail message to `LISTSERV@UHUPVM1`: `GET CONTENTS PRV2N1 F=MAIL`.

To retrieve the cumulative index for volumes one to three of The Public-Access Computer Systems Review, send the following e-mail message to `LISTSERV@UHUPVM1`: `GET INDEX PRV1 F=MAIL`.

For More Information About PACS-L

Bailey, Jr., Charles W. "Electronic (Online) Publishing in Action . . . The Public-Access Computer Systems Review and Other Electronic Serials." Online 15 (January 1991): 28-35.

Bailey, Jr., Charles W. "The Public-Access Computer Systems Forum: A Computer Conference on BITNET." Library Software Review 9 (March-April 1990): 71-74.

Revised 6/1/93

Accessing Library Catalogs

[United States](#)

[Canada](#)

[Europe](#)

[Australia/New Zealand](#)

[Other](#)

Library Catalogs (other areas)

Hong Kong

Chinese University of Hong Kong

telnet vax.csc.cuhk.hk
or
telnet 137.189.6.8

Username: **LIBRARY**

Hong Kong Polytechnic

telnet LIBRARY.HKP.HK
or
telnet 158.132.6.15

Username: **LIBRARY**
Select option 1

Quit? Option 5 on menu

Hong Kong University of Science & Technology

telnet USTLIB.UST.HK
login: **library**

Israel

ALEPH (Automated Library Expandable Program - Hebrew University)

To gain access to any of the network OPACS, telnet to any one of the following university library computers:

Central ALEPH Computer	Telnet RAM2.HUJI.AC.IL or 128.139.4.207
Bar-Ilan University	Telnet ALEPH.BIU.AC.IL or 132.70.9.36
Ben-Gurion University	Telnet BGULIB.BGU.AC.IL
Haifa University	Telnet LIB.HAIFA.AC.IL or 132.74.1.100
Hebrew University	Telnet ALEPH.HUJI.AC.IL or 128.139.4.207
Technion	Telnet LIB.TECHNION.AC.IL or 132.68.1.20
Tel Aviv University	Telnet TAUVAX.TAU.AC.IL or 132.66.32.6
Weizmann Institute	Telnet WISLIB.WEIZMANN.AC.IL or 132.76.64.14

Username: **ALEPH**
No password is required

Taiwan

Academy Sinica Taiwan

telnet LAS.AS.EDU.TW
Login? **Library**

select v for VT100

Exit? Hit Q on the main menu



Library Catalogs (Australia)

AUSTRALIA BIBLIOGRAPHIC NETWORK

telnet ABN.NLA.GOV.AU

- 1 At the login prompt, type nla
- 2 Enter 19 as terminal type for VT100
- 3 At the On-line Services screen, type 1
- 4 Type ALL for daily news or just hit RETURN otherwise
- 5 Enter a valid ABN account name (requires account)

Exit? telnet escape key

AUSTRALIAN DEFENCE FORCE ACADEMY

University of New South Wales
Campbell, ACT 2601 telnet LIBRARY.ADFA.OZ.AU
or
telnet 131.236.1.13

Description:

The Defence Academy Library enquiry system provides access to the libraries catalog. The library has approximately 300,000 volumes with collection strengths in military history and Australiana.

1. When prompted for a destination, enter **LIBRARY**
2. When asked to login, type E

Exit? Pick X option from the main menu

AUSTRALIAN NATIONAL UNIVERSITY

Location: Canberra Australia

telnet LIBRARY.ANU.EDU.AU

Login: **library**

Exit? telnet escape key

CURTIN UNIVERSITY OF TECHNOLOGY

Location: Bentley, WA Australia

telnet CC.CURTIN.EDU.AU

or

telnet 134.7.70.1

Username: **GUEST**

Enter A for VT100 emulation

Exit? Enter E

DEAKIN UNIVERSITY

Location: Geelong, Victoria Australia

telnet LIBRARY.DEAKIN.OZ.AU

or

telnet 128.184.1.1

Login: (lower case)

Exit? return ~. return (tilde, dot, return)

EDITH COWAN UNIVERSITY

Location: Western Australia

telnet LIBRARY.cowan.edu.au

or

telnet 139.230.129.6

Username: **GUEST**

Vt100?: **Yes**

Exit? hit Control-D

GRIFFITH UNIVERSITY

Location: Nathan, QLD Australia

telnet LIBRARY.GU.EDU.AU

Exit? telnet escape key

MACQUARIE UNIVERSITY

telnet 137.111.161.100

MURDOCH UNIVERSITY

Location: Murdoch, WA 6150

telnet library.murdoch.edu.au

or

telnet 134.115.4.113

NORTHERN TERRITORY UNIVERSITY

Location: Casuarina, NT Australia

telnet LIB2.NTU.EDU.AU

Login:

Exit? Option 15 on main menu

ROYAL MELBOURNE INSTITUTE OF TECHNOLOGY

Location: Melbourne, VIC Australia

telnet CCANNEX02.XX.RMIT.OZ.AU

Press RETURN

When menu appears, select either VICNET96 or VICNET24

At "Which System?" prompt, enter **MATLAS**

Exit? Type END

UNIVERSITY OF QUEENSLAND LIBRARIES

Location: St. Lucia, 4072, QLD

telnet libsys.campus.uq.oz.au

or

telnet 130.102.206.17

Exit? Type **END**

UNIVERSITY OF WOLLONGONG LIBRARY

telnet wolfen.cc.uow.edu.au

or

telnet 130.130.68.4

login:

Exit? telnet escape key

VICTORIA UNIVERSITY OF WELLINGTON

Location: Wellington, New Zealand

telnet micom.vuw.ac.nz

press RETURN and wait for menu

Enter **LIB**

Library Catalogs (European)

U.K.

Denmark

Germany

Library Catalogs (Germany)

Universitaet des Saarlandes (German only catalog)

telnet UNISB.RZ.UNI-SB.DE

At / prompt, type .a logon ub,ub

Exit? type 0 (zero)

Universitaet Heidelberg (German only catalog. No english comands)

telnet VM.URZ.UNI-HEIDELBERG.DE

At the VM/SP screen hit TAB twice

Type **D VTAM** (return) on the command line

On the Bitte Waehlen Sie screen, type cicsub (return)

University of Konstanz

telnet POLYDOS.UNI-KONSTANZ.DE

Library Catalogs (England)

Many universities share the same telnet address:

telnet sun.nsf.ac.uk

or

telnet 128.86.8.7

At the login prompt, enter

Select desired catalog and enter line beginning UK.AC.

Aberdeen University	UK.AC.ABERDEEN.LIBRARY
Aston University	UK.AC.ASTON.GEAC
Bangor University	UK.AC.BANGOR.LIBRARY
Bath University	UK.AC.BATH.LIBRARY
Birmingham University	UK.AC.BIRMINGHAM.LIBRARY
Bristol University	UK.AC.BRISTOL.LIB
British Library	UK.BL.BLAISE (subscription only)
Brunel University	UK.AC.BRUNEL.LIBRARY
Cambridge	UK.AC.CAMBRIDGE.UNIVERSITY-LIBRARY
City of London PolyTech	UK.AC.CITY-POLY.TOWER-VAX
Cranfield Institute	UK.AC.CRANFIELD.LIBRARY
Dundee College of Tech	UK.AC.DUNDEE-TECH.LIBRARY
Dundee University	UK.AC.DUND.LIBB
Durham University	UK.AC.DURHAM.LIBRARY
East Anglia	UK.AC.EAST-ANGLIA.COMPUTING-CENTRE.INFO
Edinburgh University	UK.AC.EDINBURGH.GEAC
Glasgow University	UK.AC.GLASGOW.LIBRARY
Heriot-Watt Univ	UK.AC.HERIOT-WATT.LIBRARY
Hull University	UK.AC.HULL.LI.GEAC
Kent University	UK.AC.UKC.IRIS
Lancaster University	UK.AC.LANCASTER.LIBRARY
Leeds University	UK.AC.LEEDS.LIB
Leeds (Medical)	UK.AC.LEEDS.LIBCAT
Leicester Poly	UK.AC.LEICESTER.LIBRARY
Liverpool University	UK.AC.LIVERPOOL.LIBRARY
London Univ (Imperial)	UK.AC.IMPERIAL.LIB
London Univ (Kings)	UK.AC.KCL.LIB
London Univ (Q Mary)	UK.AC.QMC.LIB
Loughborough Univ	UK.AC.LOUGHBOROUGH.LIBRARY
Nottingham University	UK.AC.NOTTINGHAM.LIBRARY
Queens Univ - Belfast	UK.AC.QUEENS-BELFAST.LIBRARY
Rutherford Appleton Lab	UK.AC.RUTHERFORD.IBM-B
St Andrews Univ	UK.AC.ST-ANDREWS.LIB
Salford Univ	UK.AC.SALFORD.SAISO
Sheffield Univ	UK.AC.SHEFFIELD.LIBRARY
Stirling	UK.AC.STIRLING.LIBRARY
Strathclyde Univ	UK.AC.STRATHCLYDE.LIBRARY
Surrey	UK.AC.SURREY.SYSI
Sussex Univ	UK.AC.SUSSEX.LIBRARY
Swansea Univ	UK.AC.SWANSEA.LIBRARY
Thames Polytechnic	UK.AC.THAMES.LIB
Univ Wales-Cardiff	UK.AC.CARDIFF.LIBRARY
Univ of York	UK.AC.YORK.LIBRARY
Warwick Univ	UK.AC.WARWICK.OPAC

Username: **LIBRARY**
Enter 1 for VT100

Exit? type EXIT

Library Catalogs (Denmark)

Aalborg University

telnet auboline.bib.dk
or
telnet fishline.bib.dk

Press return.
At the > prompt, type

Exit? Use the telnet escape key

Aarhus University

telnet helios.aau.dk

login:
press escape at the att prompt, type
at the next prompt, type sol

Exit? Use the telnet escape key

[U.S. Library Catalogs \(A-M\)](#)

[U.S. Library Catalogs \(N-Z\)](#)

U.S. Library Catalogs (A-M)

[Abilene Library Consortium](#)
[Air Force Institute of Technology](#)
[Alaska \(University of\)](#)
[Albion College](#) [Argonne National Lab](#)
[Arizona State University](#)
[Auburn](#)

[Bates College](#)
[Boise State University](#)
[Boston University](#)
[Bowdoin College](#)
[Bowman Gray School of Medicine](#)
[Brigham Young University](#)
[Brown University](#)
[Brunswick College](#)

[Cal Institute of Technology](#)
[Cal Poly State University](#)
[Cal State Univ, Fresno](#)
[Cal State Univ, Long Beach](#)
[Carnegie Library of Pittsburgh](#)
[Carnegie Mellon Univ](#)
[Case Western Reserve Univ](#)
[Catholic University of America / Law Library](#)
[CUNY -City Univ of New York](#)
[Clemson University](#)
[Cleveland Public Library](#)
[Colby College](#)
[CARL](#)

[Dartmouth](#)
[Drexel University](#)
[Duke University](#)

[Eastern Michigan University](#)
[Ecole Polytechnique \(Montreal\)](#)
[Emory](#)
[Eureka service](#)

[Fairfield University](#)
[Florida State University System](#)

[Georgetown University Medical Center](#)
[George Mason University](#)
[Grambling State University](#)

[Harvard University](#)
[Humboldt State University](#)

[Indiana University](#)
[Iowa State University](#)

[Johns Hopkins](#)
[John Marshall Law School](#)

Kalamazoo
Kansas State
Kent State

La Salle University
Lawrence Livermore National Laboratory
Lehigh
Los Alamos National Laboratory

Maharishi International University
Maricopa Community College
Marquette
MIT
Michigan Tech
Minnesota State

Humboldt State University

telnet alexvon.humboldt.edu
or
telnet 137.150.180.11

Login: library

Exit? Select 2 on main menu

Grambling State University

telnet gopac.gram.edu

or

telnet 198.99.190.3

Exit? Control-Z

Albion College

telnet library.albion.edu

or

telnet 147.124.1.3

Exit? Select B on main menu

Bowman Gray School of Medicine

telnet 152.11.242.245

login: opac

Carnegie Library of Pittsburgh

telnet clp2.clpgh.ord

or

telnet 192.204.3.2

username: catalog

vt100 emulation

Exit? type QUIT

Maharishi International University

telnet vax1.miu.edu

or

198.247.58.1

username: library

Exit? type Ctrl-Y

Ecole Polytechnique (Montreal)

telnet 132.207.4.15

At *classe de service* prompt, enter: **biblio96**

Select English or Francais

Exit? Type END or FIN

Argonne National Lab

telnet aim.tis.anl.gov

login: aim

No password required

Fairfield University

telnet FAIR1.FAIRFIELD.EDU

or

telnet 192.160.243.1

Username: **LIB**

Exit? type **ex**

Brunswick College

telnet CLARA.BC.PEACHNET.EDU

or

telnet 131.144.98.50

login: **peach**

password: **peach**

Exit? Select **END** on main menu

John Marshall Law School

telnet catalog.jmls.edu

or

telnet 192.207.162.100

login: **catalog**

Exit? Type Q on main menu

Lawrence Livermore National Laboratory

telnet aish.llnl.gov

or

telnet 128.115.33.6

Username: **Patron**

Select 1 for OPAC

Exit? Type Q on main menu

Catholic University of America / Law Library

telnet columbo.law.cua.edu

or

telnet 136.242.148.1

Exit? Type Q on main menu

La Salle University

telnet connelly.lasalle.edu

or

telnet 139.84.10.251

Exit? Q on main menu

Drexel University

telnet library.drexel.edu

or

telnet 129.25.3.13

Exit? type **EX**

Eureka

telnet EUREKA-INFO.STANFORD.EDU

or

telnet 36.26.0.172

No login required Eureka is the new, easy-to-use search service from RLG. With Eureka, any individual or institution can search the online resources of the Research Libraries Group (RLG), including the RLIN bibliographic files and the CitaDel article-citation and document-delivery service. Eureka is easy for inexperienced users to use, yet powerful and flexible enough to satisfy even the most sophisticated searchers.

Eureka contains information about more than 20 million books, serials, sound recordings, musical scores, archival collections, and other kinds of material held in major research institutions, PLUS millions of article-level citations.

U.S. Library Catalogs (N-Z)

[New Mexico State](#)
[New York Public](#)
[New York State Library](#)
[New York University](#)
[Northeastrn Ohio Universities College of Medicine](#)
[Northwestern University](#)
[Notre Dame](#)

[Oberlin College](#)
[Occidental](#)
[Old Dominion](#)
[Ohio State](#)
[Oregon State](#)

[Penn State](#)
[Portland State](#)
[Pittsburg State University](#)
[Princeton Manuscript Collection](#)
[Princeton](#)
[Purdue](#)

[Rensselaer](#)
[Rice](#)
[RIT](#)
[Rockefeller](#)
[Rutgers University](#)

[Seattle Pacific University](#)
[Seton Hall University](#)
[Shawnee State University](#)
[Slippery Rock University](#)
[State Library of Pennsylvania](#)
[SUNY Binghamton](#)
[Sweet Briar College](#)

[Texas A&M](#)
[Texas Christian University](#)
[Texas Tech](#)
[Tufts](#)

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[University of Alabama-Birmingham](#)
[University of Alaska](#)
[University of Arizona](#)

[University of Buffalo](#)

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[University of Colorado at Colorado Springs](#)
[University of Connecticut](#)

University of Dayton
University of Delaware

University of Hawaii

University of Illinois at Urbana/Champaign
University of Illinois at Chicago
University of Iowa

University of Kansas

University of Maine
University of Maryland
University of Massachusetts (Boston)
University of Michigan
University of Minnesota
University of Missouri-Columbia
University of Missouri at Rolla
University of Missouri at St. Louis
University of Nebraska
University of Nevada-Las Vegas
University of New Mexico
University of North Carolina at Charlotte

University of Oregon

University of Pennsylvania
University of Pennsylvania School of Medicine
University of Pittsburgh

University of Tennessee-Knoxville
University of Tennessee-Memphis
University of Texas-Arlington
University of Texas-Austin
University of Texas-Dallas
University of Toledo

University of Utah

University of Vermont
University of Virginia
University of Virginia (LAW)

University of Washington
University of Wisconsin

Vanderbilt
Virginia Commonwealth
Virginia Tech

Washington University-St.Louis
Wayne State University
Wheaton College
Western Michigan
Wright State

Xavier University

Yale University

Yale University (LAW)

Sweet Briar College

telnet leo.lion.edu
or
telnet 192.69.117.2

Login: sblib
Select vt100 emulation

Exit? Select 15 on main menu

University of Alabama-Birmingham

telnet uabdpo.dpo.uab.edu
or
telnet 138.26.1.10

Terminal ID:**56**

Hit return at the DPO screen
Select LIB

Exit? Type STOP

Wheaton College (Mass)

telnet 155.47.2.2

login: **library**

Exit? Select option D on main menu

Seton Hall University

telnet shucat.shu.edu

or

telnet 149.150.4.2

login: **opac**

Exit? Telnet escape key

Slippery Rock University

TN3270 sruvm.sru.edu

or

TN3270 192.148.234.1

Tab to the command line and enter: **dial vse**

Clear screen with Control-Z

On the blank screen, enter LUSR

Exit? type stop

Pittsburg State University

telnet psuaxe.pittstate.edu
or
telnet 198.182.241.15

login LIBRARY
terminal: vt100

University of Connecticut

tn3270 UCONNVM.UCONN.EDU

or

tn3270 137.99.26.3

Clear the screen with Control-Z

Enter dial vtam on blank screen

Select B for catalog

Exit? type STOP, then EXIT on main menu

New York State Library

telnet nysl.nysed.gov
or
telnet 149.10.128.2

Login: public
password: p

Exit? Control-X

Seattle Pacific University

telnet jerome.spu.edu
or
telnet 192.190.33.7

Username: **PAC**

Exit? Type EX

University of Pennsylvania School of Medicine

telnet penninfo.upenn.edu 9010

or

telnet 130.91.72.80 9010

No login required

State Library of Pennsylvania

telnet 192.102.245.100

When connected, hit RETURN

Exit? Telnet escape key.

University of Alaska

telnet gnosis.alaska.edu

or

telnet 137.229.17.239

At the : prompt, type **hello, user.gnosis**

Exit? Type **/quit**

University of Virginia Law Library

telnet INNOPAC.LAW.VIRGINIA.EDU

or

telnet 128.143.28.43

login: **library**

Exit? select D on main menu

Yale University Law Library

telnet RINGDING.LAW.YALE.EDU

or

telnet 130.132.84.29

login: **library**

Exit? Select H on main menu

CENET (Cornell Extension NETwork)

telnet EMPIRE.CCE.CORNELL.EDU

or

telnet 132.236.89.2

login: **guest**

Welcome to CENET, the Cornell Extension NETwork. CENET is a product of the Extension Electronic Technology Group of Cornell Cooperative Extension.

CENET Main Menu

AGriculture (Information on various agricultural topics)

CENET (CENET information, settings and help)

COMMunity (Community education and resources)

FIELD crops (Field crops and agronomy information)

FOOD (Food and nutrition information)

FRUIT-vegetable Fruit and vegetable information GLOBal (Global awareness)

HUMAN-ecology (Info from College of Human Ecology)

NATural-resources (Forestry, wildlife, water & marine science)

NEWS (News bulletins, news releases and media information)

ORNamentals (Ornamental horticulture, floriculture, home/grounds)

PEST-management (Integrated pest management & pesticide info)

WEAther (Weather information)

YOUth (Information about youth programming)

FEEDback (Leave feedback for CENET staff)

Xavier University

telnet xulas.xu.edu
or
telnet 192.153.34.40

Login: **Library**

Exit? type B on main menu

Shawnee State University

telnet beartrack.shawnee.edu

or

telnet 146.85.4.6

Login: **Library**

Exit? Type Q on main menu

University of Washington

telnet uwin.u.washington.edu
or
telnet 140.142.42.1

Select I
Select LIB
Select UWLIB
Select LCAT

Exit? Type Q

University of Virginia

telnet ublan.acc.virginia.edu

press return until a >> prompt appears

>> c virgo

use vt100 emulation

Western Michigan University

telnet ccb9.merit.edu

or

telnet 35.1.48.150

Host? **WMU-FINDER**

Enter **VT100**

Select **1**

Exit? type X from Finder menu, then x again

Virginia Commonwealth

tn3270 VCUVM1.VCU.EDU

or

tn3270 128.172.1.25

On the VM screen, TAB down to Command prompt

Type **DIAL VTAM**

Enter L on the VTAM screen

Press ENTER when prompted to

Exit? Hit CTRL-Z, at blank screen type **LOGOFF**

at VTAM screen, type **UNDIAL**

Virginia Tech

telnet VTNET1.CNS.VT.EDU

or

telnet 128.173.5.4

At the CALL, DISPLAY, OR MODIFY prompt, type **CALL VTLS**

Hit RETURN once or twice

Exit? use telnet escape key

Washington University - St. Louis

telnet WUGATE.WUSTL.EDU

or

telnet 128.252.120.1

At the login: prompt, type **LUIS**

Choose VT100 as the terminal type

On the menu, choose option 1

Exit? use telnet escape key

Wayne State University

tn3270 CMS.CC.WAYNE.EDU

TAB to move down to COMMAND line
At the COMMAND line, type **DIAL VTAM**
At the WSUNET menu, type **LUIS**

(alternate method)

telnet CCB9.MERIT.EDU
or
telnet 35.1.48.150

At the Which Host prompt, enter **WSUNET**
At the WSUNET, type **LUIS**

Exit? tn3270: type **LOGOFF**
telnet: telnet escape key

Western Michigan University

telnet CCB9.MERIT.EDU

or

telnet 35.1.48.150

At the which host prompt, enter **WMU-FINDER**

Enter VT100 as terminal type

Select 1

Exit? Type X from the Finder menu, type X again

Wright State University

telnet DESIRE.WRIGHT.EDU

or

telnet 130.108.128.200

At the Username prompt, type **LIBNET**

At the Password prompt, type **LIBRARY**

Select 1 on the menu

Exit? telnet escape key

Yale University

telnet UMPG.YCC.YALE.EDU 6520

or

telnet 130.132.21.64 6520

or

tn3270 ORBIS.YALE.EDU

or

tn3270 130.132.21.133

Press RETURN

Exit? type STOP

University of Central Oklahoma

telnet AIX0.UCOK.EDU

or

telnet 192.206.65.2

type

when screen clears, press return

Quit? Escape XX

Vanderbilt University

telnet ctrvax.vanderbilt.edu

or

telnet 129.59.1.21

Username: **ACORN**

At SysAval Appl prompt, press return

Exit? Ctrl-Z

University of Wisconsin

telnet nls.adp.wisc.edu

or

telnet 128.104.198.20

Hit RETURN when prompted for terminal type

At the menu, TAB to the left of the NLS1 selection

Press RETURN

For Madison Catlog press RETURN

For Milwaukee Catalog enter **MIL**

Exit? Type **EXIT**

At the menu, TAB to the left of the QUIT selection, press return

University of Vermont

telnet LUIS.UVM.EDU
or
telnet 132.198.101.120

Hit RETURN
Enter VT100 as terminal type
Hit RETURN

Exit? type **QUIT**

University of Tennessee--Knoxville

telnet DCA.UTK.EDU

or

telnet 128.169.200.68

HOST NAME:

Exit? Use telnet escape key

University of Tennessee--Memphis

telnet UTMEM1.UTMEM.EDU

or

telnet 132.192.1.1

Username: **HARVEY**

Exit? press RETURN on main screen

University of Texas - Arlington

telnet ADMIN.UTA.EDU

or

telnet 129.107.1.103

As soon as you are connected, hit RETURN

TERMINAL TYPE: **VT100**

At the VTAM selection menu, type **NOTIS**

At the CICS Logo Screen, press RETURN

On the next screen, type **LUUT**

Exit? use telnet escape key

University of Texas - Austin

telnet UTCAT.UTEXAS.EDU

or

telnet 128.83.186.104

You will see a blank screen

Press RETURN once (more more if needed)

At the GO prompt press RETURN

ENTER TERMINAL TYPE:

Follow onscreen instructions

University of Texas-Dallas

tn3270 VM.UTDALLAS.EDU

Hit ENTER to clear login screen
Type

(alternate method)

telnet IBM.UTDALLAS.EDU

or

telnet 129.110.102.1

TERMINAL TYPE: **VT10X**

Hit ENTER to clear login screen
Type

Exit? tn3270 session: type **QUIT**

telnet session: use telnet escape key

University of Toledo

tn3270 UOFT01.UTOLEDO.EDU

Press RETURN on UT logo screen

At "enter one of the following commands...", enter **DIAL MVS**

When "dialed to mvs ####" appears, enter **UTMOST**

Exit? type **DISC**

University of Utah

tn3270 LIB.UTAH.EDU

or

tn3270 128.110.124.1

Hit TAB to get to COMMAND line

At the COMMAND line, type **DIAL UNIS**

Exit? use telnet escape key

University of Pittsburgh

telnet gate.cis.pitt.edu
or
telnet 130.49.1.252

Service:
Select:

Exit? hit CTRL-\

University of Pennsylvania

telnet pennlib.upenn.edu

or

telnet 128.91.200.32

enter **VT100** as terminal type

Exit? Use telnet escape key

University of Oregon

telnet JANUS.UOREGON.EDU

or

telnet 128.223.24.86

Press RETURN several times

Login:

Terminal type: enter

Enter to confirm

Exit? Type

Notre Dame

telnet IRISHMVS.CC.ND.EDU

or

telnet 129.74.4.5

ENTER COMMAND OR 'HELP':

Exit? Type x. Type bye

University of New Mexico

telnet BOOTES.UNM.EDU

or

telnet 129.24.8.2

Username: **STUDENT1**

Terminal type: **VT100**

On the Main menu, choose option 3

On the Library menu, choose option 1

Exit? Press CTRL-right bracket C
 on Library menu
 on Main menu

University of Nevada-Las Vegas

telnet LIBRARY.LV-LIB.NEVADA.EDU

or

telnet 131.216.2.133

Login: **LIBRARY**

Select V for type of terminal

Enter Y to confirm

Exit? Enter D

University of Missouri at St Louis

tn3270 UMSLVMA.UMSL.EDU

TAB down to COMMAND prompt

Enter **DIAL VTAM**

At the VTAM LOGON prompt, enter **LIBCICS**

Exit? Type #LOGOFF. At VTAM LOGON, enter **UNDIAL**

University of Nebraska

telnet UNLLIB.UNL.EDU

or

telnet 129.93.16.1

Login: **LIBRARY**

Select V for type of terminal

Enter Y to confirm

Exit? Enter **D**

University of Missouri at Rolla

tn3270 umrvmb.ums.edu

or

tn3270 131.151.1.1

press return

at the CP READ prompt, enter **DIAL VTAM**

Enter **LUMIN**

press return

Exit? Type #LOGOFF. /NET at the App Name prompt, then **UNDIAL**

University of Missouri-Columbia

tn3270 UMCVMB.MISSOURI.EDU

TAB down to command prompt

Enter **DIAL VTAM**

Enter **INFORMU** to access **INFORMU** service

At the VTAM LOGON prompt, enter **LIBCICS**

Exit? Type #LOGOFF At VTAM LOGON or UNDIAL, type UNDIAL

University of Minnesota

telnet LUMINA.LIB.UMN.EDU

or

telnet 128.101.92.3

When prompted for terminal type, enter 0 for VT100 emulation.

When prompted to do so, type PA

Select 1 at the Please indicate Your Menu Selection Here ===>

Exit?use telnet escape key.

University of Michigan

telnet HERMES.MERIT.EDU

or

telnet 35.1.1.6

HOST? enter **MIRLYN**

Terminal type: **VT100**

On the UofM screen, press RETURN

Exit? use telnet escape key

University of Massachusetts (Boston)

telnet LIBRA.CC.UMB.EDU

or

telnet 192.12.26.143

Username: **CATALOG**

Terminal type: enter 1 for VT100

Exit? type EXIT, END, or QUIT

University of Maryland

telnet VICTOR.UMD.EDU

or

telnet 129.2.16.2

Select **PAC** from the Available Services Menu.

Select 5 for VT100.

Press RETURN twice.

This system's coverage includes the University of Maryland System, University of Maryland Law Library, University of Maryland Baltimore County, University of Maryland College Park, University of Maryland Eastern Shore, and University of Maryland University College.

Exit? type //EXIT

University of Maine

telnet ursus.maine.edu
or
telnet 130.111.64.1

Login as
Enter v for VT100
Enter y to confirm

Exit? Type B

University of Kansas

telnet KUHUB.CC.UKANS.EDU

or

telnet 129.237.1.10

At the username prompt, type **RELAY**

At the SYSTEM? prompt, type **OCAT**

TERMINAL TYPE: **VT100**

On the CICS screen, type **OCAT**

Exit? type LOGOFF. Type **Q**

University of Iowa

telnet OASIS.UIOWA.EDU

or

telnet 128.255.254.2

Terminal type: **VT100**

Choose option 1 on the menu, OASIS

Exit? Type X on the main menu

University of Illinois at Chicago

tn3270 UICVM.UIC.EDU

or

tn3270 128.248.2.50

When signon screen appears, hit RETURN

Type **DIAL PVM**

Move cursor to first S of "S NOTIS" using TAB or arrow keys and press return

Exit? Type ##### Press CTRL-P 1

University of Illinois at Urbana/Champaign

telnet GARCON.CSO.UIUC.EDU

or

telnet 128.174.5.58

Login: **LCS**

Exit? Type EXIT

University of Hawaii

telnet STARMASTER.UHCC.HAWAII.EDU

or

telnet 128.171.7.8

At the Enter Class prompt, type **LIB**

At the terminal type menu, select 5 for VT100

Exit? type //EXIT

University of Delaware

telnet delcat.udel.edu

or

telnet 128.175.13.6

Press return

Terminal type: **VT100**

Press return

Type **NOTIS**

Exit? Use telnet escape key

University of Dayton

telnet UDAPRL.OCA.UDAYTON.EDU

or

telnet 131.238.1.14

At blank screen or the ! prompt , type **LOGIN PUB Password? type PUBLIC**, press return

Terminal type: **VT100**

When you see the "Welcome to the University of Dayton" screen you will be able to access Help Screens by typing ? and pressing return

Exit? Choose LOGOFF from the Main menu or enter Q

University of Colorado at Colorado Springs

telnet ARLO.COLORADO.EDU

or

telnet 128.198.26.129

When prompted for login code, enter **ARLO**

At the logo screen, hit RETURN

Exit? Pick option 12 on the menu, then use TELNET escape key

University of Arizona

telnet IDX.TELCOM.ARIZONA.EDU

or

telnet 129.196.252.3

Press RETURN repeatedly until something happens

Type GEAC for the main circulation system or LIBPAC for the Exit? use telnet escape key

University of Buffalo

telnet BISON.CC.BUFFALO.EDU

or

telnet 128.205.2.22

At the terminal type prompt, enter **VT100**

Press return

Exit? type **BYE**

University of California

telnet MELVYL.UCOP.EDU

or

telnet 195.35.222.222

When asked for terminal type, enter **VT100**

Press RETURN when prompted to

Type START LOOK for easy to use library system

Type START COM for command line library system

The library system is known as MELVYL. MELVYL contains library information for all university in the University of California system and the California State library.

Exit? Type END or STOP.

Type **LOGOFF**

Questions?

Contact: Clifford Lynch (lynch@postgres.berkeley.edu)

University of California-Berkeley

telnet GOPAC.BERKELEY.EDU

or

telnet 128.32.159.19

Exit? Type LOGOFF

University of Chicago

telnet OLORIN.UCHICAGO.EDU

or

telnet 128.135.12.95

At the ENTER CLASS prompt, type

When CONNECTED appears on the screen, press RETURN

Exit? Type LOGOUT

University of Cincinnati

telnet UC7171.UC.EDU

or

telnet 129.137.32.99

Terminal type: Enter **VT100**

Enter **UCLID**

Exit? use telnet escape key

Florida State University System

The Florida State University System includes Florida A&M, Florida Atlantic, Florida State, Florida International, University of Central Florida, University of Florida, University of North Florida, University of South Florida, University of West Florida. To access these Florida library systems:

tn3270 nervm.nerdc.ufl.edu

or

tn3270 128.227.212.10

press RETURN

type DIAL VTAM

On the NERDC VTAM IS ACTIVE screen, enter NERLUIS FCLSKYA

Exit? Type %OFF. At 'NERDC VTAM IS ACTIVE', enter UNDIAL

Georgetown Medical

telnet gumedlib2.georgetown.edu
or
telnet 141.161.40.4

At login prompt, enter medlib
password: dahlgren
enter netguest
hit RETURN several times...
select option 1

Exit? Press return on the menu, enter Q

George Mason University

tn3270 129.174.1.10

select option B

You may search the ERIC database by entering the PERI sub-system from the menu that appears once XLIBRIS has been selected (option B)

The ALAD database access the combined resources of the Washington Research Library Consortium

Exit? type STOP at any prompt.

Dartmouth

telnet LIB.DARTMOUTH.EDU

or

telnet 129.170.16.11

When prompted for terminal type, enter VT100

Duke University

telnet librot1.lib.unc.edu

or

telnet 128.109.181.2

Emory University

tn3270 EMUVM1.CC.EMORY.EDU

or

tn3270 128.140.1.4

Press RETURN

When CP READ appears, type DIAL VTAM

When VTAM screen appears, type LIB

When CICS screen appears, hit ESC and then 1

Exit? Use TN3270 escape key

Eastern Michigan

telnet ccb9.merit.edu

or

telnet 35.1.48.150

at the which host prompt, enter EMU-VAX

At the username prompt, enter NOTIS

Note: use keypad enter instead of RETURN

Exit? Hit CTRL-Z

Abilene Library Consortium

telnet ALCON.ACU.EDU

Username: ACUPAC

Exit? Type STOP.

Air Force Institute of Technology

telnet SABRE.AFIT.AF.MIL

or

telnet 129.92.1.10

At the USERNAME prompt, enter **AFITPAC**

At the PASSWORD prompt, enter **LIBRARY**

Exit? Hit CTRL-Z. Type **QUIT**

Auburn University

TN3270 AUDUCACD.DUC.AUBURN.EDU

or

tn3270 131.204.2.13

Push TAB until the cursor is in the APPLICATION field.

Type 01.

Press RETURN

Arizona State University

telnet CARL.LIB.ASU.EDU

or

telnet 129.219.10.8

At the destination prompt, enter CARL.

Enter 5 for VT100.

Press RETURN twice.

Exit? type //EXIT twice.

Bates College

telnet LADD.BATES.EDU

or

telnet 134.181.1.8

Enter v for VT100

Enter y to confirm

Exit? type D

Boise State University

CATALYST is the combined library system for Boise State University and Idaho State University.

telnet CATALYST.IDBSU.EDU

or

telnet 132.178.18.2

At the login prompt, type catalyst.

Press RETURN.

Select 4 for VT100 emulation.

Exit? Type E until main menu appears. Select Log Off

Boston University

telnet LIBRARY.BU.EDU

or

telnet 128.197.130.200

Exit? Type EXIT

Boston University's online Catalog (TOMUS) provides access to over one and a half million volumes and two and a half million microforms.

TOMUS is a Carlyle system and provides online help screens.

Bowdoin College

telnet phebe.bowdoin.edu

or

telnet 139.140.1.2

Login: library

Brigham Young University

tn3270 LIB.BYU.EDU

or

tn3270 128.187.11.1

Type BYLINE at the userid prompt.

Enter e on the next screen.

Exit? TN3270 escape key.

Brown University

TN3270 BROWNV.M.BROWN.EDU

or

tn3270 128.148.128.40

At the BROWN logon screen: TAB to command field.

Enter DIAL JOSIAH.

TAB to the JOSIAH choice on the screen.

Exit? Enter ESC 0.

Select option 4 from menu.

Enter ESC 3.

Enter CTRL-P 1.

Searching Josiah:

The Josiah Search Menu supports searches by author, title, subject, and author/title combinations. Help is available at any point by pressing the PF1 key. PF key alternatives are also supported by typing PF1 (or PF3, PF5, etc.) after any ">>" prompt.

California Institute of Technology

telnet libopac.caltech.edu
login? library

Cal-Poly

telnet library.calpoly.edu
or
telnet 129.65.20.21

login:? polycat

Exit? Hit CTRL-D

California State University, Fresno

telnet caticsf.csfresno.edu

or

telnet 129.8.100.15

login: public

Exit? type 0

California State University, Long Beach

telnet coast.lib.csulb.edu

or

telnet 134.139.50.1

enter VT100 for terminal type:

press RETURN a few times...

Exit? Use telnet escape key

Carnegie Mellon University

telnet library.cmu.edu

or

telnet 128.2.11.78

login: **library**

Exit? type ESC 6

Case Western University

telnet euclid.cwru.edu

or

telnet 129.22.120.199

City University of New York

tn3270 cunyvm.cuny.edu

press return at the login screen

type DIAL VTAM

tab cursor to CUNYPLUS and press RETURN

Hit CTRL-Z (clear screen)

type LUCU

Clemson University

TN3270 clemson.clemson.edu

Choose option B on the menu

Cleveland Public

telnet library.cpl.org

or

telnet 192.58.246.4

Hit Control-Z to start

Quit? Control-Z, then type **EXIT**

Colby University

telnet ladd.bates.edu

or

telnet 134.181.1.8

Enter v for VT100

Enter y to confirm

Select b on the menu

Select 1 on the next menu

Enter v for VT100

Enter y to confirm

Exit? Select X on Menu, then D on BATES menu

CARL

telnet pac.carl.org

or

telnet 192.54.81.128

Enter 5 for VT100 emulation

Harvard University

tn3270 hollis.harvard.edu

or

tn3270 128.103.60.31

Type hollis on the Harvard Univ./Office for Info Tech screen.

Exit? TELNET: hit ESCAPE xx. TN3270: use escape key

Indiana University

tn3270 IUIS3270.UCS.INDIANA.EDU

or

tn3270 129.79.210.200

Pick 4 on the menu.

(alternate method) telnet IUIS.UCS.INDIANA.EDU

or

telnet 129.79.2.203

Enter VT100 as the terminal type.

Pick 4 on the menu.

Exit? Enter Q. Enter Q again.

Iowa State University

telnet ISN.IASTATE.EDU

or

telnet 129.186.99.37

At the DIAL prompt, type **LIB**

At the ENTER TERMINAL TYPE prompt, type **VT100**

At the MVS welcome screen, type **SCHOLAR**

Exit? On the SCHOLAR command line, type QUIT.

Johns Hopkins University

telnet JHUVH.HCF.JHU.EDU

or

telnet 128.200.2.2

Enter 04 at the "Please enter one of the following" prompt.

Hit RETURN at the JHU/HAC logo screen.

At the command prompt, type DIAL JANUS.

When the port assignment appears, press RETURN

Exit? type #####.

Kalamazoo College

telnet CCB9.MERIT.EDU

or

telnet 25.1.48.150

At the Which Host prompt, enter KZOO-LIB.

Exit? type H from the main menu.

Kansas State University

tn3270 KSUVM.KSU.EDU

or

tn3270 129.130.1.1

Type LYNX.

(alternate method) telnet TELNET.KSU.EDU

or

telnet 129.130.1.10

Select destination as KSUVM.

Enter VT100 at terminal type prompt.

Type LYNX.

Exit? Type QUIT.

Kent State University

telnet CATALYST.KENT.EDU

or

telnet 131.123.1.9

Push RETURN.

At the ENTER TERMINAL TYPE prompt, enter VT100

At the SELECT APPLICATION prompt, enter D

At the CICS screen, enter LUKS

Exit? use telnet escape key

Lehigh

telnet ASA.LIB.LEHIGH.EDU

or

telnet 128.180.2.13

Exit? Type **END**

Maricopa Community Colleges

telnet LIB.MARICOPA.EDU

or

telnet 140.198.8.18

Username: enter LIB

"Which College?" enter PC, GC, GW, MC, SC, RS, SM, CG, PV, EM, DO, or EXIT

Exit? use CTRL/Z or use telnet escape key

Code Institution

CGCC	CHANDLER GILBERT COMMUNITY COLLEGE CENTER LIBRARY
GCC	GLENDALE COMMUNITY COLLEGE LIBRARY
GWC	GATEWAY COMMUNITY COLLEGE LIBRARY
MCC	MESA COMMUNITY COLLEGE LIBRARY
PCC	PHOENIX COMMUNITY COLLEGE LIBRARY
PVC	PARADISE VALLEY COMMUNITY COLLEGE LIBRARY
RSCC	RIO SALADO COMMUNITY COLLEGE LIBRARY/MEDIA SERVICES
SCC	SCOTTSDALE COMMUNITY COLLEGE LIBRARY
SMCC	SOUTH MOUNTAIN COMMUNITY COLLEGE LIBRARY
MCLI	MARICOPA CENTER FOR LEARNING AND INSTRUCTION

Also provides access to Magazine Index

Marquette University

telnet LIBUS.CSD.MU.EDU

or

telnet 134.48.20.1

At the login prompt, type m.

Select v at the TERMINAL prompt.

Exit? Enter Q

Massachusetts Institute of Technology

telnet LIBRARY.MIT.EDU

or

telnet 18.84.1.12

Press RETURN

Enter /V

Press RETURN

Exit? use telnet escape key

Michigan State University

tn3270 MAGIC.LIB.MSU.EDU

or

tn3270 35.8.2.99

At the VM370 screen, type DIAL MAGIC

At the Terminal Emulator screen, enter VT100

(alternate method) telnet MERIT-telnet-GW.MSU.EDU

or

telnet 35.8.2.56

At the Which Host? prompt, enter MAGIC

At the terminal id, enter VT100

Exit? use telnet or TN3270 escape key

Michigan Tech

telnet CCB9.MERIT.EDU

or

telnet 35.1.48.150

At the Which Host prompt, enter FOCUS

Press RETURN

Enter VT100 as terminal type

Press RETURN again

Exit? use telnet escape key

Minnesota State University

telnet MSUSGW.UMN.EDU

or

telnet 128.101.63.10

At the "enter destination" prompt, enter PALS

Location: Mankato, Minnesota USA

The PALS system contains information on many libraries including Austin Community College, Anoka-Ramsey Community College, Bemidji State University, Bethany Lutheran College/Seminary, Brainerd Community College, College of St. Scholastica, Concordia College in Moorhead, Fergus Falls Community College, Gustavus Adolphus College, Hibbing Community College, Itasca Community College, Inver Hills Community College, Fire Center, Lakewood Community College, Mankato State University, Minneapolis Community College, Minnesota Attorney General's Office, Minnesota Center for the Arts, Minnesota Dept of Health, Minnesota Dept of Human Services, Minnesota Dept of Jobs & Training, Minnesota Dept of Natural Resources, Minnesota Dept of Revenue, Minnesota Dept of Trade & Economic Development, Minnesota Dept of Transportation, Minnesota Historical Society, Minnesota Law Library, Minnesota Legislative Reference Library, Minnesota Office of Library Development and Services, Minnesota Planning Agency, Minnesota Pollution Control Agency, Mesabi Community College, Moorhead State University, Normandale Community College, North Dakota State University, North Hennepin Community College, Northland Community College, Rainy River Community College, Rochester Community College, Southwest State University, St. Mary's College of Winona, St. Olaf College, University of Minnesota Crookston, University of Minnesota Waseca, Vermilion Community, Willmar Community College, Winona State University, and Worthington Community College.

Exit? type **EN**

New Mexico State University

telnet LIBRARY.NMSU.EDU

or

telnet 128.123.18.115

At the : prompt, type hello user.libr01

When asked for terminal type, enter 5

When asked for location code, enter 0100

Exit? Enter /QUIT

New York Public Library

telnet nyplgate.nypl.org

or

telnet 192.94.250.2

Login:

password:

The following Databases are available:

NYPL Branch Libraries Catalog

Metropolitan Inter-Library Cooperative System Regional Catalog.

NYPL Dance Collection Catalog

New York University

telnet BOBCAT.NYU.EDU

or

telnet 128.122.138.2

Hit RETURN

Exit? type END

The OPAC lists more than 750,000 records, including many pre-1973 items and all material purchased after 1973. BobCat contains the holdings of NYU's Division of Libraries, as well as the consortium libraries of the New School for Social Research, the Parsons School of Design, the Cooper Union for the Advancement of Science and Art, and the New York Academy of Art.

Northeastern Ohio Universities College of Medicine

telnet SCOTTY.NEOUCOM.EDU

or

telnet 140.220.1.2

The initial prompt will request you to login to the system. Enter and press RETURN

Choose terminal type

Exit? type the word "quit" at any prompt to get back to the NEOCAT main menu. Select item "4" from the NEOCAT main menu

Northwestern University

tn3270 NUACVM.ACNS.NWU.EDU

or

telnet NUACVM.ACNS.NWU.EDU

or

telnet 129.105.16.1

If you used telnet, enter **for VT100 (as terminal type)**

TAB down to the COMMAND prompt

Type DIAL VTAM

Application ID: **LUIS**

Exit? Type STOP at any OPAC prompt. If on the University Center menu, type /bEXIT

Oberlin College

telnet OBIS.LIB.OBERLIN.EDU

or

telnet 132.162.32.20

No special login required

Exit? type at any prompt

Occidental College

telnet KITTY.OXY.EDU

or

telnet 134.69.1.10

Type OASYS at ENTER RESOURCE NAME prompt

login: type

Pick v as terminal type

Enter y to confirm

Exit? type D

Old Dominion University

telnet GEAC.LIB.ODU.EDU

or

telnet 128.82.24.75

Exit? Type END or QUIT

Ohio State

telnet LCS.US.OHIO-STATE.EDU

or

telnet 128.146.15.141

Choose 0 as your terminal type

Type HELP to see options

Exit? Use telnet escape key

Oregon State

telnet OASIS.KERR.ORST.EDU
or
telnet 128.193.162.13

Login: **OASIS**
Enter 1 for VT100 emulation

Exit? use telnet escape key

Pennsylvania State University

telnet LIAS.PSU.EDU

or

telnet 128.118.88.88

Normally, VT100 should be negotiated at this point. If you have terminal emulation problems, try typing
TERMINAL VT100 at the >>> prompt

Exit? Type EXIT at the >>> prompt

Portland State University

telnet PSULIB.CC.PDX.EDU
or
telnet 131.252.129.52

Login: type **DIALIN**
Terminal type: enter **VT100**

Exit? use telnet escape key

Princeton Manuscripts Catalog

tn3270 PUCC.PRINCETON.EDU

At the VM370 logo screen, hit RETURN

Type FOLIO

On the FOLIO welcome screen, hit RETURN

When the list of choices appear, choose 3

Exit? type LOGOFF

Princeton University

telnet CATALOG.PRINCETON.EDU

or

telnet 128.112.131.101

Type CALL 500 from # prompt

Exit? type LOGOFF

Purdue University

telnet thorplus.lib.purdue.edu

or

telnet 128.210.21.22

login: **catnet**

ONLINE CATALOG SELECTION MENU

help	Online Help
chi	The University of Chicago (U of C Online Catalog)
ill	The University of Illinois (LCS)
ind	Indiana University (IO)
mic	The University of Michigan (MIRLYN)
msu	Michigan State University (MAGIC)
min	The University of Minnesota (LUMINA)
nor	Northwestern University (LUIS)
ndu	The University of Notre Dame (UNLOC)
osu	The Ohio State University (LCS)
psu	Penn State University (LIAS)
pur	Purdue University (THOR)
wis	The University of Wisconsin (NLS)
quit	Quit the Program

Exit? type STOP

Rensselaer Polytech Institute

telnet INFOTRAC.RPI.EDU

or

telnet 128.113.1.31

Enter VT100 as terminal type

On the NIM screen, press RETURN

Exit? type STOP

Rice University

tn3270 LIBRARY.RICE.EDU

or

tn3270 128.42.73.2

When signon screen appears, hit TAB twice

On COMMAND ==> line, type DIAL LIBRIS

CTRL-Z to clear the screen

Exit? Use the TN3270 escape key

Rochester Institute of Technology

telnet RITVAX.ISC.RIT.EDU

or

telnet 129.21.200.5

Username: **LIBRRARY**

Press RETURN

Type 1

Exit? Type D. After the "connection closed" message, type 9

Rockefeller University

telnet LIBRARY.ROCKEFELLER.EDU

or

telnet 129.85.1.20

Login:

TERM: enter

Exit? choose the menu option for exit

Rutgers University

telnet LIBRARY.RUTGERS.EDU

or

telnet 128.6.241.3

Press RETURN

Exit? type END

Online Public Access Catalog

what libraries call the public interface for their bibliographic information systems (the electronic card catalog if you will)

Southern Methodist University

tn3270 VM.CIS.SMU.EDU

or

tn3270 129.119.64.2

When the sign-on screen appears, enter PONI

On the CICS screen, press CTRL-Z

Enter

Exit? use the TN3270 escape key

SUNY-Binghamton

tn3270 BINGVMC.CC.BINGHAMTON.EDU

or

tn3270 128.226.1.4

Press TAB twice

At the COMMAND prompt, type **DIAL VTAM**

Enter **ELIXIR**

Press RETURN several times

Exit? use the TN3270 escape key

Texas A&M

tn3270 TAMVM1.TAMU.EDU

or

tn3270 128.194.4.3

TAB down to Command prompt

Type **DIAL VTAM**

At the Texas A&M Statewide Network screen, type **NOTIS**

At the CICS screen, hit RETURN

(alternate method)

telnet VENUS.TAMU.EDU

or

telnet 128.194.4.1

Username: **VTAM**

At the Texas A&M Statewide Network screen, type **NOTIS**

At the CICS screen, hit RETURN

Exit? CTRL-Z

Texas Christian University

telnet GAMMA.IS.TCU.EDU

or

telnet 138.237.1.7

Username: **TCUCAT**

Exit? CTRL-Z, then option 6 on menu

Tufts University

telnet LIBRARY.TUFTS.EDU

or

telnet 130.64.128.1

Username: **TULIPS**

Exit? CTRL-Z, then **QUIT**

University of Akron

telnet LIBRARY.UAKRON.EDU

or

telnet 130.101.3.170

The initial system prompt (:) will request your response

At the colon prompt, enter the "hello user.clas01" sign-on command followed by a carriage return

At the prompt "Enter line number of the TERMINAL TYPE", the number 5 is the best first choice

If the "Enter Location Code" prompt appears after the system banner, enter the "0100" code to access the BIERCE library online catalog

Once you've done that and pressed (return), follow on-screen instructions

Exit? use telnet escape key

Library Catalogs - Canada

[Athabasca University](#)

[Brandon University](#)

[McGill University](#)

[McMaster University](#)

[Nova Scotia](#)

[University College of Cape Breton](#)

[University of Calgary](#)

[University of Kings College](#)

[University of New Brunswick](#)

[University of Prince Edward Island](#)

[University of Saskatchewan](#)

[University of Toronto](#)

[University of Western Ontario](#)

[University of British Columbia](#)

[York University](#)

University of Saskatchewan

telnet skdevel2.usask.ca
or
telnet skdevel.usask.ca

Request: **LIB**

Exit? type **END**

University of Saskatchewan also has information in the INFOACCESS database. To access:

telnet SKLIB.USASK.CA

USERNAME: **SONIA**

Exit? type **QUIT**

University of Toronto

telnet 128.100.100.32

Branch? type branch in **CAPS**

Exit? Use telnet escape key

University of Western Ontario

telnet GEAC.LIB.UWO.CA

or

telnet 129.100.2.18

Hit ENTER after "Current terminal type =vt100"

Exit? type Control-D

York University

telnet yorkline.yorku.ca

or

telnet 130.63.1.10

terminal type:

Exit? type X

University of British Columbia

telnet LIBRARY.UBC.CA

or

tn3270 LIBRARY.UBC.CA

University of New Brunswick

tn3270 UNBMVS

University of Prince Edward Island

telnet lib.cs.upei.ca

Username:

Exit? CTRL-Z

Kings College (University of)

telnet novanet.dal.ca

or

telnet 129.173.1.22

press RETURN to enter catalog

Exit? hit END or telnet escape key

Athabasca University

telnet AUCTUS.ADMIN.ATHABASCAU.CA

or

telnet 131.235.5.1

At Username: prompt, enter AUCAT

Exit? type QUIT

Brandon University

telnet library.brandonu.ca

or

telnet 142.13.16.4

At the Username: prompt, enter LIBCAT

Exit? type QUIT, EXIT or END

McGill University

tn3270 mvs.mcgill.ca

On the menu, choose option 2 (muse)
Hit return on the CICS screen.

Exit? type OFF

McMaster

tn3270 mcmvm1.cis.mcmaster.ca

TAB to the COMMAND prompt

Type DIAL VTAM

At the ENTER YOUR LOGONID prompt, enter super

At the ENTER PASSWORD prompt, enter session

At the SNA SYSTEMS INTERCONNECT screen, enter s

At the SERVICE SELECTION screen, hit F9

At the SUPERSESSION APPLICATION SELECTION screen, hit F3

Exit? use tn3270 escape key

Nova Scotia

telnet NOVANET.DAL.CA

or

telnet 129.173.1.22

To access:

Dalhousie University

Mount Saint Vincent University

Nova Scotia College of Art and Design

Technical University of Nova Scotia

University College of Nova Scotia

Exit? Hit END or the telnet escape key

Cape Breton

telnet novanet.dal.ca

or

telnet 129.173.1.22

Exit? hit END or the telnet escape key

University of Calgary

telnet develnet.ucalgary.ca

or

telnet 136.159.1.70

Request:

Select 0C as terminal

Hit return when screen blanks

Hit return again on U of Calgary screen

Exit? Use telnet escape key

Texas Tech University Library

telnet ttacs3.ttu.edu

or

telnet 129.118.1.4

Username? **TTUCAT**

For TTU Library: Option 1

For TTU Health Sciences: 2

Exit? From TTU Library: CTRL-Z

From Health Sciences: Use menu-based exit command

Virginia Military Academy (VMI)

telnet vax.vmi.edu

or

telnet 144.75.2.25

Username: **Library**

Exit? Select on Main Menu

University of North Carolina at Charlotte

telnet ALADDIN.UNCC.EDU

or

telnet 152.15.40.40

At CONNECT COMPLETE, hit RETURN

Login: **aladdin**

Exit? telnet escape key

Internet Locator/Navigation Tools

what is Archie?

what is CELLO?

what is Gopher?

what is Mosaic?

what is Veronica?

what is WAIS?

what is the World Wide Web (WWW)?

WINSOCK version of Cello released



Editor's note: excerpt of an email message announcing the availability of Cello. Click on the little cello icon for a sample screen display.

Cello v. 1.0 released

The Legal Information Institute is pleased to announce the release of Cello version 1.0. The release is available on <ftp.law.cornell.edu>, in the [pub/LII/Cello](#) directory. Take the file [cello.zip](#) and (optionally) one or more of the graphics viewers/sound players to be found in that directory (a partial listing appears below).

What Cello is

Cello is a multipurpose [WorldWideWeb](#) browser which permits you to retrieve information from the Internet in an easy-to-use, simplified hypermedia environment. Cello natively supports WWW, FTP, Gopher, CSO, Telnet and Usenet News, and supports WAIS and a variety of other protocols (eg. TechInfo, HyTelnet) through external gateways.

Cello runs in the MS-Windows environment using any of the common [Winsock](#) stacks (but see Conflicts section below). It is reported to run cleanly under OS/2 (with the latest patches from IBM) and Windows NT.

Cello requires a 386SX or better processor. We have seen it run with 2Mb of RAM using virtual memory (not a pretty sight), but 4Mb is the recommended minimum. We also strongly recommend the use of a 256-color video driver. Cello has a number of optimizations which make it especially suited for use over low-speed ([SLIP](#) and [PPP](#)) connections.

Features

- * Full support for inlined graphics in GIF, XBM, PCX, and BMP formats.
- * File saving and printing.
- * Editing support for local files via an external editor. Integration with the HTML Assistant Windows-based [HTML](#) helper/editor.
- * File caching ad infinitum using a file-based cache with user-specified "low water mark".
- * DDE and OLE drag-and-drop support. Cello can be invoked and controlled through the use of DDE macros in other programs. URL arguments on the command line are also supported.
- * "Peek mode", permitting partial retrieval of files of large or unknown size.
- * Local file mode for HTML delivery on standalone machines or machines with LAN connections only.
- * Support for a wide variety of FTP servers, including PC-based and IBM VM systems.
- * Support for HTML "mailto:" scheme.
- * Support for the full HTML+ ISO-LATIN character set, including specialized legal symbols, foreign characters, etc.

- * User-selectable sound players, viewers, editor, and Telnet and TN3270 clients.
- * Comprehensive online documentation in Windows Help format.
- * Simple user interface.
- * Fully extensible support for viewing downloaded files in an unlimited number of PC-binary file formats using the standard Windows Associate... scheme.

Not yet implemented (planned for future release):

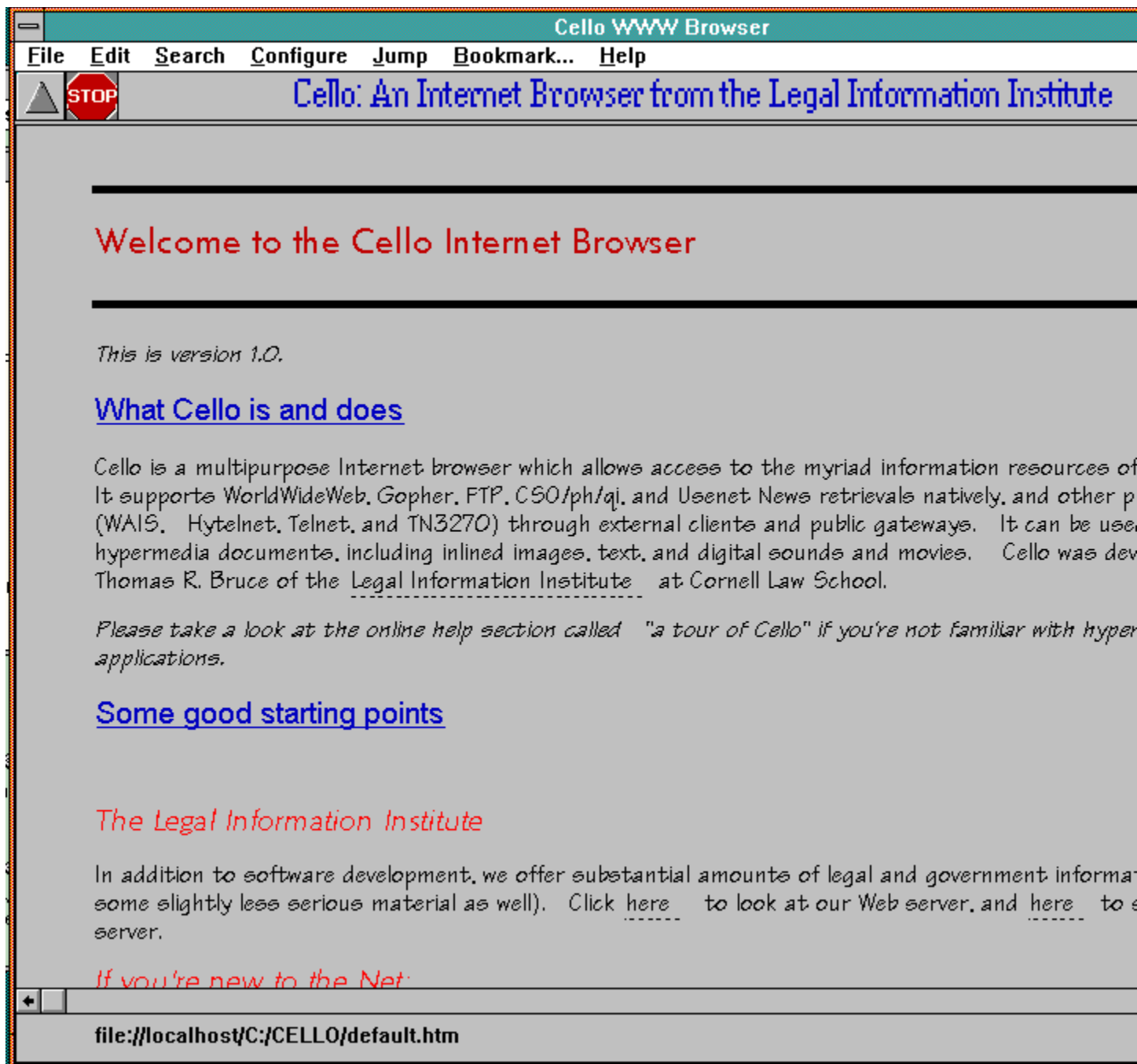
- * HTML forms
- * Authentication support
- * Firewall support.

Conflicts

Cello relies heavily on the use of asynchronous sockets, unlike many Winsock applications. Cello works reliably with properly configured networking setups from most major software vendors and shareware sources. As always, your mileage may vary.

Some users have reported problems with FTP Software's PC-TCP when retrieving multiple inlined images. Others do not have a problem. It may be that differences between PC-TCP releases account for this.

Enjoy using Cello.



Sample CELLO session

World Wide Web

telnet info.cern.ch
or
telnet 128.141.201.74 (SWISS)

telnet eies2.njit.edu
or
telnet 128.235.1.43 (USA (NJ))

telnet vms.huji.ac.il
or
telnet 128.139.4.3 (ISRAEL)

telnet info.funet.fi
or
telnet 128.214.6.100 (FINLAND)

Tim Berners-Lee (of the World Wide Web project) describes the Web this way: "The WWW project merges the techniques of information retrieval and hypertext to make an easy but powerful global information system. The WWW world consists of documents, and links. Indexes are special documents which, rather than being read, may be searched. The result of such a search is another (virtual) document containing links to the documents found. The Web contains documents in many formats. Those documents which are hypertext, (real or virtual) contain links to other documents, or places within documents.

All documents, whether real, virtual or indexes, look similar to the reader and are contained within the same addressing scheme. To follow a link, a reader clicks with a mouse (or types in a number if he or she has no mouse). To search and index, a reader gives keywords (or other search criteria). These are the only operations necessary to access the entire world of data."

Access to various documents, lists, and services.

Login: www



GMUtant
Editor

Florian Eggenberger's WWW overview

World Wide Web (client software)

World Wide Web is a system for browsing not only gopher databases but also hypertext. Rather than merely a menu of items and ascii text or images (as with gopher), hypertext allows fully formatted text.

WWW clients can also directly access the following servers:

- * WAIS
- * Network News
- * Gopher
- * Telnet
- * Anonymous FTP
- * TechInfo
- * X.500
- * WHOIS

If you'd like to try the World Wide Web, some of the browsers are available in the following directory:
"World Wide Web Clients"

It's available on

- * Terminal based browsers
- * PC Running Windows
- * Macintosh
- * X-Windows
- * NeXTStep

You can get WWW browsers by anonymous ftp to multiple locations throughout the world

Terminal based browsers

* Line-mode browser -> info.cern.ch, in /pub/www/bin or /pub/www/src * "Lynx" vt100 full screen browser
-> ftp2.cc.ukans.edu in /pub/lynx * For VMS (alpha) -> vms.huji.ac.il in www/www_client * Emacs w3-
mode (beta) -> moose.cs.indiana.edu in /pub/elisp/w3/

PC running MS Windows

- * Cello (beta) -> fatty.law.cornel.edu. /pub/LII/cello
- * Mosaic for Windows -> ftp.NCSA.uiuc.edu in PC/Mosaic

Macintosh

- * Mosaic for Macintosh (beta) -> ftp.ncsa.uiuc.edu in /Mac/Mosaic
- * Samba -> info.cern.ch in /ftp/pub/www/bin/mac

X-Windows

- * NCSA Mosaic for X -> ftp.ncsa.uiuc.edu in /Web/xmosaic
- * WWW Browser/Editor for X11 (beta) -> export.lcs.mit.edu in /contrib
- * MidasWWW (beta) -> info.cern.ch in /pub/www/src

NeXTStep

- * Browser-Editor on the NeXT -> info.cern.ch /pub/www/bin

Note that the best information you may get on WWW is only accessible by using a WWW browser. Thus,

you will have all the hypertext and hypermedia capabilities, and you will be sure you have the most up-to-date information.

University of Minnesota Gopher

telnet consultant.micro.umn.edu

or

telnet 128.101.95.9

login: gopher

term = (vt100) hit RETURN

Frequently referred to as the 'mother of all gophers

Allows remote login to many other Internet sites with LIBTEL.COM. Has RFCs on-line, campus information, weather service, phone books, connections to other gophers, "electronic" books, etc.

Hyper-G

telnet FINFO.TU-GRAZ.AC.AT

or

telnet 129.27.2.4

login: info

For English interface type: sprache englisch

Hyper-G offers both a hierarchical view and hyperlinks, as well as sophisticated queries.

Please direct any comments to fkappe@iicm.tu-graz.ac.at.

Nova Gopher

telnet NSTN.NS.CA
or
telnet 137.186.128.11

login: fred

Sample opening screen

1. About Gopher
2. Canadian Weather Forecasts
3. Internet Resources
4. NSTN Information
5. New Stuff
6. Newsletters
7. Other Information
8. Other gophers
9. White Pages

Oreilly Gopher

telnet GOPHER.ORA.COM

or

telnet 140.186.66.1

login: gopher

sample opening menu:

Internet Gopher Information Client v1.03

1. Computer Security
2. Distributed Computing Environment (DCE)
3. New Books and Editions
4. Pick
5. System Administration
6. UNIX & C Programming
7. Using UNIX
8. X Resource
9. X Window System
10. Textual Search on all catalog entries (?)

SUNET gopher

telnet 192.36.125.2

login: gopher

Needs vt100 emulation

sample opening menu:

1. Info about this Gopher Server.
2. Nordic Information Services
3. BASUN, The SUNET Info Server
4. CARL (TEL)
5. CCITT Blue Book
6. Databases via telnet
7. Ebone Information
8. Electronic Newsletters & Journals (unt.edu)
9. Infoservers in European Countries
10. International Library Services
11. Library of Congress (TEL)
12. Nordic Internet Libraries
13. Other Gopher and Information Servers
14. PD Software FTP Archive
15. Phone Books and E-Mail addresses
16. Requests for Comments (RFC)
17. Subject Tree
18. Trivia

University of Maryland gopher

telnet info.umd.edu
or
telnet 128.8.10.29

login: gopher

Welcome to the University of Maryland Information Service

The Information Revolution is here! There is a great deal of electronic information out there on nearly every topic under the sun that, until now, was inaccessible to the general public. From medical breakthroughs to the current weather conditions, forecasts, and weather satellite pictures to USA Today articles, the resources are nearly infinite. Now they are easily accessible to anyone with a PC, Macintosh, Unix, or NeXT machine and access to the Internet network via [WAIS](#), [Gopher](#), [Archie](#), [Hytelnet](#) and [World Wide Web](#).

As you explore this service, you will be experiencing first-hand the beginning phases of the "information revolution". The UofM Information Service is your connection to computing sites around the country and indeed around the world.

This system provides "gateways" via Gopher to such information retrieval services as WAIS, INFO, Hytelnet, Archie, and WWW as well as a number of other information services. Each of these systems operate quite differently so please view the "About..." items listed in this directory, for further information on Gopher, WAIS, Hytelnet, Archie, and WWW.

Clearly, the UofM bears no responsibility for the quality of data at other sites. The interfaces to the data are also, for the most part, beyond our direct control. Help may be available by entering a "?". Usually, the arrow keys will function, and generally, using "q", "Q", or "quit" will let you leave the outside service. Again, we urge you to review the information in the "About..." files which describe in more detail the peculiarities of the various services.

telnet gopher.unt.edu
or
telnet 129.120.1.42

login: gopher
Password: gopher



The Internet Gopher

The Internet Gopher (a client/server protocol) provides a distributed delivery system around which a **campus-wide information system** can readily be constructed. While providing a delivery vehicle for local information, Gopher facilitates access to other Gopher and information servers throughout the world.

An excellent guide to installing Gophers (both clients & servers) is available via anonymous [ftp](#) from [boombox.micro.umn.edu](#). Go to the [pub/gopher/docs](#) directory and retrieve the latest version. Note that the file is available in **Postscript** format only.



GMUrant
Editor

Using the UNIX gopher client

Hardly an exhaustive list, but logging onto one or two of these systems should help you flesh out your list of favorite sites.

[Hyper-G \(Technical University of Graz, Austria\)](#)

[Nova Scotia Technology Network](#)

[O'Reilly & Associates, Inc](#)

[SUNET Gopher \(Sweden\)](#)

[University of Maryland](#)

[University of Minnesota](#)

[University of North Texas](#)



GMUrant
Editor

related topic: [Veronica](#)

a few more gopher servers without descriptions:

[telnet panda.uiowa.edu](#)

[telnet gdunix.gd.chalmers.se](#) (swedish)

[telnet tolten.puc.cl](#) (chile)

[telnet wsuaix.csc.wsu.edu](#) (login: wsuinfo)

[telnet columbianet.columbia.edu](#)

How do you contact a gopher?

Ideally, You use a gopher "client" program that runs on your local PC or workstation. Lacking that connectivity, you can [telnet](#) to a machine that has a 'public' gopher client running. There are clients for the following systems. The directory following the name is the location of the client on the anonymous ftp site [boombox.micro.umn.edu](#) (134.84.132.2) in the directory [/pub/gopher](#).



related topic: a Windows [gopher+ client \(Hgoph\)](#)

Unix Curses & Emacs: [/pub/gopher/Unix/gopher1.12.tar.Z](#)
Xwindows (athena): [/pub/gopher/Unix/xgopher1.2.tar.Z](#)
Xwindows (Motif): [/pub/gopher/Unix/moog](#)
Macintosh Hypercard: [/pub/gopher/Macintosh-TurboGopher/old-versions *](#)
Macintosh Application : [/pub/gopher/Macintosh-TurboGopher *](#)
DOS ([clarkson](#)): [/pub/gopher/PC_client/](#)
NeXTstep: [/pub/gopher/NeXT/](#)

VM/CMS: [/pub/gopher/Rice_CMS/](#)
or
[/pub/gopher/VieGOPHER/](#)

VMS: [/pub/gopher/VMS/](#)
OS/2 2.x: [/pub/gopher/os2/](#)
MVS/XA: [/pub/gopher/mvs/](#)

Many other clients and servers have been developed by others, the following is an attempt at a comprehensive list.

A Macintosh Application, "MacGopher".
[ftp.cc.utah.edu:/pub/gopher/Macintosh *](#)

Another Macintosh application, "GopherApp".
[ftp.bio.indiana.edu:/util/gopher/gopherapp *](#)

A port of the UNIX curses client for DOS with PC/TCP
[oac.hsc.uth.tmc.edu:/public/dos/misc/dosgopher.exe](#)

A port of the UNIX curses client for PC-NFS
[bcm.tmc.edu:/nfs/gopher.exe](#)

A beta version of the PC Gopher client for Novell's LAN Workplace for DOS

[lennon.itn.med.umich.edu:/dos/gopher](#)

A VMS DECwindows client for use with Wollongong or UCX
[job.acs.ohio-state.edu:YGOPHER_CLIENT.SHARE](#)

* Note: these Macintosh clients require MacTCP.

Most of the above clients can also be fetched via a gopher client itself. Put the following on a gopher server: Type=1
Host=boombox.micro.umn.edu
Port=70
Path=
Name=Gopher Software Distribution.

Or point your gopher client at boombox.micro.umn.edu, port 70 and look in the gopher directory.

There are also a number of public telnet login sites available. The University of Minnesota operates one

on the machine "consultant.micro.umn.edu" (134.84.132.4).

It is recommended that you run the client software instead of logging into the public telnet login sites. A client uses the custom features of the local machine (mouse, scroll bars, etc.) A local client is also faster.

Using the Unix gopher client

the following excerpted from the EFF's Big Dummy's Guide to the Internet (2nd Edition).

Even with tools like Hytelnet and archie, telnet and ftp can still be frustrating. There are all those telnet and ftp addresses to remember. Telnet services often have their own unique commands. And, oh, those weird directory and file names!

But now that the Net has become a rich repository of information, people are developing ways to make it far easier to find and retrieve information and files. Gophers and Wide-Area Information Servers (WAISs) are two services that could ultimately make the Internet as easy to navigate as commercial networks such as CompuServe or Prodigy.

Both gophers and WAISs essentially take a request for information and then scan the Net for it, so you don't have to. Both also work through menus -- instead of typing in some long sequence of characters, you just move a cursor to your choice and hit enter. Gophers even let you select files and programs from ftp sites this way.

Let's first look at gophers (named for the official mascot of the University of Minnesota, where the system was developed).

Many public-access sites now have gophers online. To use one, type

gopher

at the command prompt and hit enter. If you know your site does not have a gopher, or if nothing happens when you type that, telnet to

consultant.micro.umn.edu

At the log-in prompt, type

gopher

and hit enter. You'll be asked what type of terminal emulation you're using, after which you'll see something like this:

```
Internet Gopher Information Client v1.03
Root gopher server: gopher.micro.umn.edu
```

- ```
--> 1. Information About Gopher/
 2. Computer Information/
 3. Discussion Groups/
 4. Fun & Games/
 5. Internet file server (ftp) sites/
 6. Libraries/
 7. News/
 8. Other Gopher and Information Servers/
 9. Phone Books/
 10. Search lots of places at the U of M <?>
 11. University of Minnesota Campus Information/
```

Press ? for Help, q to Quit, u to go up a menu

Assuming you're using VT100 or some other VT emulation, you'll be able to move among the choices with your up and down arrow keys. When you have your cursor on an entry that looks interesting, just hit

enter, and you'll either get a new menu of choices, a database entry form, or a text file, depending on what the menu entry is linked to (more on how to tell which you'll get in a moment).

Gophers are great for exploring the resources of the Net. Just keep making choices to see what pops up. Play with it; see where it takes you. Some choices will be documents. When you read one of these and either come to the end or hit a lower-case q to quit reading it, you'll be given the choice of saving a copy to your home directory or e-mailing it to yourself. Other choices are simple databases that let you enter a word to look for in a particular database. To get back to where you started on a gopher, hit your u key at a menu prompt, which will move you back "up" through the gopher menu structure (much like "cd .." in ftp).

Notice that one of your choices above is "Internet file server (ftp) sites." Choose this, and you'll be connected to a modified archie program -- an archie with a difference. When you search for a file through a gopher archie, you'll get a menu of sites that have the file you're looking for, just as with the old archie. Only now, instead of having to write down or remember an ftp address and directory, all you have to do is position the cursor next to one of the numbers in the menu and hit enter. You'll be connected to the ftp site, from which you can then choose the file you want. This time, move the cursor to the file you want and hit a lower-case s. You'll be asked for a name in your home directory to use for the file, after which the file will be copied to your home system. Unfortunately, this file-transfer process does not yet work with all public-access sites for computer programs and compressed files. If it doesn't work with yours, you'll have to get the file the old-fashioned way, via anonymous ftp.

In addition to ftp sites, there are hundreds of databases and libraries around the world accessible through gophers. There is not yet a common gopher interface for library catalogs, so be prepared to follow the online directions more closely when you use gopher to connect to one.

Gopher menu entries that end in a / are gateways to another menu of options. Entries that end in a period are text, graphics or program files, which you can retrieve to your home directory (or e-mail to yourself or to somebody else). A line that ends in <?> or <CSO> represents a request you can make to a database for information. The difference is that <?> entries call up one-line interfaces in which you can search for a keyword or words, while <CSO> brings up an electronic form with several fields for you to fill out (you might see this in online "White Pages" directories at colleges).

Gophers actually let you perform some relatively sophisticated Boolean searches. For example, if you want to search only for files that contain the words "MS-DOS" and "Macintosh," you'd type

### **ms-dos and macintosh**

(gophers are not case-sensitive) in the keyword field. Alternately, if you want to get a list of files that mention either "MS-DOS" or "Macintosh," you'd type

### **ms-dos or macintosh**

### **Some Gopher Commands (unix client)**

- a** Add a line in a gopher menu to your bookmark list.
- A** Add an entire gopher menu or a database query to your bookmark list.
- d** Delete an entry from your bookmark list (you have to hit v first).
- q** Quit, or exit, a gopher. You'll be asked if you really want to.
- Q** Quit, or exit, a gopher without being asked if you're sure.
- s** Save a highlighted file to your home directory.
- u** Move back up a gopher menu structure
- v** View your bookmark list.
- =** Get information on the originating site of a gopher entry.
- >** Move ahead one screen in a gopher menu.
- <** Move back one screen in a gopher menu.



## HGopher

*InfoPop editor's note: Here's an excerpt from an e-mail message that came across the net recently, describing a Gopher+ client for Windows. Latest version as of this writing (2/8/94) is 2.4)*



gopher

ANNOUNCING THE AVAILABILITY OF HGOPHER Version 2.3 and HNGOPHER Version 2.3

A Gopher+ Client For Windows 3.1

New features since Beta 2.2

- \* HGopher now comes with a CSO Viewer called HGCSO.
- \* You can now obtain info on the server.
- \* You can decide when the Multiview symbol will be shown.
- \* INFO, Admin and Abstracts can be viewed in a viewer of your choice.
- \* Dot stuffing method changeable.
- \* Supports Panda I Type.
- \* recognizes HTML documents.
- \* You can set the Main Menu Font.
- \* Percentage Feedback bars on items with estimated size.
- \* Search String can be a parameter
- \* Copy to file now presents a reasonable file name.
- \* New copy to Directory mode.
- \* Now can force files to be saved with extension of your choice.
- \* Can add new view types without leaving HGopher.

Requirements

### WINSOCK VERSION

- \* MS Windows 3.1 (not tested with Windows 3.0) Or Windows NT.
- \* Winsock DLL and TCP/IP+Packet support layer.

### PC NFS VERSION

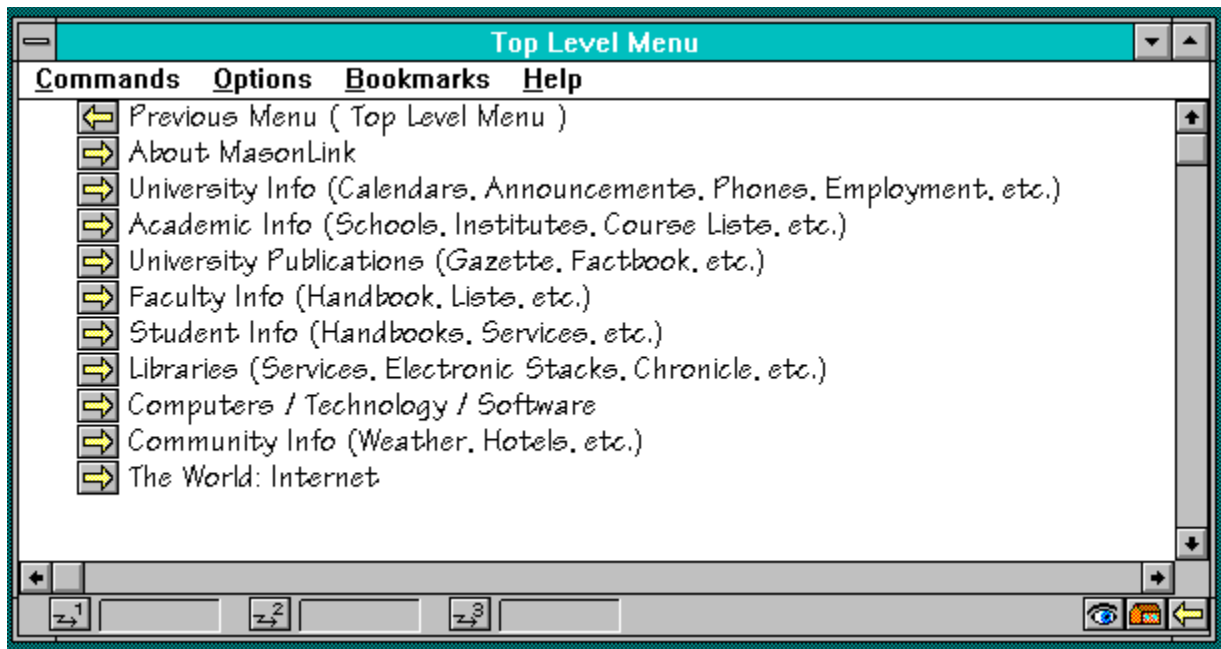
- \* MS Windows 3.1 (not tested with Windows 3.0)
- \* PC NFS Version 4 or version 5 (may work with other versions)  
NOTE: you can also use the Winsock version with PC NFS 5.0 and I suggest you do, as support for the native PC NFS version may be withdrawn at some point.

Available for anonymous ftp from **lister.cc.ic.ac.uk**

hgopher2.3.zip (Winsock Version) (Binary mode required)  
hngopher2.3.zip (Sun PC NFS Version) (Binary mode required)

Screen snapshot of Hgopher in action





Here's a sample screen showing the HGopher client retrieving the opening menu from a gopher server (actually one we run here in the library systems office of Fenwick -- MasonLink (fenwick.gmu.edu) -- which serves as our [CWIS](#)).

Yes, as you might guess from looking at this sample, you can use any TrueType font with the Hgopher client.

Yes, the 'gopher' protocol got its name from the mascot of the University of Minnesota ('the Golden Gophers').

## Clarkson Drivers

The Clarkson Drivers (originally developed and distributed by Clarkson University) are a set of freeware packet drivers (that's software). These 'drivers' enable a PC running Novell Netware (that is; using the IPX protocol) to also support TCP/IP (enabling gopher, telnet, ftp, and other applications). You can obtain these drivers from several ftp sites, here's one:

```
ftp boombox.micro.umn.edu
cd pub/gopher/PC_Client/drivers
```

## VERONICA

### Very Easy Rodent-Oriented Net-wide Index to Computerized Archives

Developed by Steve Foster and Fred Barrie at the University of Nevada. Here are comments by Mr. Foster:

"Veronica offers a keyword search of most gopher-server menus in the entire gopher web. As Archie is to FTP archives, Veronica is to gopherspace. Unlike Archie, the search results can connect you directly to the data source. Imagine an Archie search that lets you select the data, not just the host sites, directly from a menu. Because Veronica is accessed through a gopher client, it is easy to use, and gives access to all types of data supported by the gopher protocol."

"Veronica was designed as a response to the problem of resource discovery in the rapidly-expanding gopher web. Frustrated comments in the net news- groups have recently reflected the need for such a service. Additional motivation came from the comments of naive gopher users, several of whom assumed that a simple-touse service would provide a means to find resources

"The result of a Veronica search is an automatically-generated gopher menu, customized according to the user's keyword specification. Items on this menu may be drawn from many gopher servers. These are functional gopher items, immediately accessible via the gopher client just double- click to open directories, read files, or perform other searches -- across hundreds of gopher servers. You need never know which server is actually involved in filling your request for information. Items that are appear particularly interesting can be saved in the user's bookmark list."

"Notice that these are NOT full-text searches of data at gopher-server sites, just as Archie does not index the contents of ftp sites, but only the names of files at those sites. Veronica indexes the TITLES on all levels of the menus, for most gopher sites in the Internet. 258 gophers are indexed by Veronica on Nov. 17, 1992; we have discovered over 500 servers and will index the full set in the near future. We hope that Veronica will encourage gopher administrators to use very descriptive titles on their menus."

"To try Veronica, select it from the gopher server (consultant.micro.umn.edu), or point your gopher at:

Name=Veronica (search menu items in most of GopherSpace)  
Type=1  
Port=70  
Path=1/Veronica Host=futique.scs.unr.edu

"Veronica is an experimental service...as we expect that the load will soon outgrow our hardware, we will distribute the Veronica service across other sites in the near future."

"Please address comments to: gophadm@futique.scs.unr.edu"



GMUtant  
Editor

The Veronica FAQ from 02/08/94

## Veronica FAQ

*An excerpt from the FAQ*

Common Questions and Answers about veronica, a title search and retrieval system for use with the Internet Gopher.

The current version of this FAQ can be retrieved through gopher at veronica.scs.unr.edu, in the veronica directory.

FAQ by Steven Foster and Fred Barrie .

Archive-name: veronica-faq

Last-modified: 1994/02/08

What is veronica?

How can I connect to veronica?

How can I get info about the location of items I am interested in?

Why do I need to use 'item descriptor' to get context and host info?

How can I get my server into the veronica database?

How can I keep my server out of the veronica database?

How often is the database updated?

Where can I get the software to run veronica?

Where can I get the veronica dataset?

Why can't I get a reply from a veronica server?

Why doesn't my server show up in veronica searches?

How do I compose veronica search queries and use the veronica options?

## **What is veronica?**

Veronica is a service that maintains an index of titles of gopher items, and provides keyword searches of those titles. A veronica search originates with a user's request for a search, submitted via a gopher client. The result of a veronica search is a set of gopher-type data items, which is returned to the gopher client in the form of a gopher menu. The user can access any of the resultant data items by selecting from the returned menu.

A veronica search typically searches the menus of hundreds of gopher servers, perhaps all the gopher servers that are announced to the Internet.

At present, there are no "veronica clients" per se; veronica is accessed through normal gopher clients. veronica is tightly integrated with the gopher protocol.

The veronica service comprises two functions:

- 1). Harvesting menu data from gopher servers, and preparing it for use;
- 2). Offering searches of that database to gopher clients.

These two functions are not necessarily provided by the same host computer. Most users and administrators of veronica search servers will not need to be concerned with the first phase of the process. Operators of veronica query-engines can obtain a prepared dataset for use with the query server.

Veronica evolved as a solution to the problem of resource discovery in the rapidly-expanding gopher meta-burrow. At the University of Nevada, there was an outcry for an easy way to find gopher-based information without doing a menu-by-menu, site-by-site search.

## How can I connect to veronica?

Veronica must be accessed through a gopher client.

Assuming you have a gopher client, use it to connect to a gopher server which offers a link to a veronica server.

If your local gopher server does not already have a link to veronica, use gopher to go to the server at `gopher.micro.umn.edu` ( port 70 ). Choose the menu item "Other Gopher and Information Servers". Choose veronica from that menu. In step-by-step form it is like this:

1. gopher to `gopher.micro.umn.edu` by typing:

```
gopher gopher.micro.umn.edu 70
```

Note that this is a unix-client example. Other clients will have a different way of specifying the server.

2. go to the directory named

```
"8. Other Gopher and Information Servers/"
```

3. select that item

4. go to the item named

```
"2. Search titles in Gopherspace using veronica/"
```

5. select that item. This item is a gopher link to the veronica directory at the University of Nevada.

6. There are several searches and documents in this directory. Help files and announcements and will be posted here. This menu contains links to all the announced veronica servers. Choose any server by clicking on its entry; if it give the message "Too many connections" or "Cannot connect", you can try one of the other servers.

When you choose a search item, you will be prompted to enter a keyword or keywords to define your title search. The simplest way to search with veronica is to enter a single word and hit the RETURN key. It does not matter whether the word is upper-case or lower-case.

The veronica server will return a gopher menu composed of items whose titles match your keyword specification. These items are culled from the menus of (potentially) many gopher servers. As with any gopher menu, you access an item of interest by double-clicking it or hitting the <return> key.

If you want to include veronica service on the menu of your local gopher server, you can find the gopher-item-descriptor for veronica from this menu at Minnesota; ask the administrator of your local gopher server to include a link to that item on your local menu.

If you DO NOT have a gopher client, you may access gopher and veronica by telneting to one of the telnet-accessible anonymous [gopher](#) clients.

### **How do I get information on items of interest?**

Most gopher clients offer a "get information" command or an "item descriptor" menu choice. On a macintosh it usually is "command i"; on a unix curses client it will be an equal sign "="; on a NeXT it also is a "command i". On the PC gopher clients, choose "item inspector" from the "FILE" menu.

This key sequence will give information about the current item on the gopher menu. The item-description will include the hostname of the gopher server which provides the item. The item-description also includes the path (directory) of the item on its gopher server.



## **Veronica - Item Descriptors**

### **Why do I need to use "item descriptor" to get host and context information?**

One simple answer to this is that three-times as many lines would be needed on the screen to provide host and path information as well as title information. The menus returned by veronica are often lengthy, even without this information. Since the item- description function is included in most gopher clients, its use makes for more compact screens.

There is a deeper answer, of course ...

The veronica server is designed to work with the query-type item of all gopher clients. It can only return one set of data in reply to each query, in accord with the gopher protocol. There is no chance for further negotiation between the client and server. The veronica-search server could return visible lines about the host and context of each item, but it would need to do so for all items, tripling the size of the return as mentioned above. The only alternative is to design special gopher CLIENTS which either submit a follow-up query to the veronica server, requesting more information, or which present the item-descriptor in more palatable format. Work is underway to define a client-server negotiation protocol to allow followup queries, using the gopher+ clients and servers. Meanwhile, clients just are not capable of this feature.

And deeper yet ...

Context means many things ... Is it adequate to know the host, path and type of an item, or do you want to know the last update time, the number of links to that item in the entire gopher network, a unique internet-id for that data item, the names of veronica servers referencing that item, and so forth? The gopher+ protocol and other emerging protocols will allow us to maintain some of this information. The veronica developers at Nevada feel that it is preferable to use these standards as they become available, rather than to define ad-hoc document identifiers, etc. which are specific only to veronica.

**How can I get my server into the veronica database?**

Explicit registration is generally not required. The veronica data-collection software will find your gopher server IF it is registered with the Mother Gopher at Minnesota, OR IF it is referenced on the menu of another gopher server which is registered at Minnesota. Of course, the veronica data-harvesting algorithm will not be able to access your server if you have restricted access to your local site.

## **How can I keep my server out of the veronica database?**

Sometimes gopher-administrators do not want their site to be indexed. The administrator of such a server will need to mail to [veronica@veronica.scs.unr.edu](mailto:veronica@veronica.scs.unr.edu), and request their site not be included.

This design is based on the well-founded assumption that any registered gopher server, or a server accessible via the menu of a registered server, is intended to be accessible to users at any internet node. The gopher protocol achieves its utility through this sort of sharing; gopher servers are provided with the "-s" option should it be necessary to implement site restrictions.

With the implementation of Gopher+ protocols, the veronica+ protocol will allow gopher administrators to set a "veronica-index-off" flag.

As an interim solution a gopher administrator can create a file named "no-index" (without the quotes) so that all sub level menus beneath that directory will not be indexed. This solution should work for all gopher servers. Gopher administrators can use gopher servers ability to mask gopher titles from .link or .cap files. An example of this is:

In .link format:

```
Name=Really cool title like "About this Gopher"
Path=./no-index
In a file in the .cap subdirectory named no-index
Name=Really cool title like "About this Gopher"
```

**How often is the database updated?**

Every week or (at worst) two weeks.

### **Veronica - software availability**

The veronica server software can be obtained by anonymous ftp from [veronica.scs.unr.edu](ftp://veronica.scs.unr.edu). The veronica server code is in the directory "veronica-code". The current version ( June 24 ) of the veronica server is 0.5 It runs on most flavors of unix boxes, requires a perl interpreter and dbm, and about 360 MB for the dataset. (data of June 21 '93) The server host should also have a good deal of swap space.

### **Veronica - Obtaining the data set**

You can anonymous-ftp the full veronica dataset from [veronica.scs.unr.edu](http://veronica.scs.unr.edu), in the "veronica-data" subdirectory.

This data has been processed to eliminate redundant references, to avoid loops in the gopher network, and to remove most data that is known to be highly transient.

If you are trying to set up a veronica server, PLEASE take a copy of this data, rather than initiating more gopher-tree processes.

## **Veronica - troubleshooting**

### **Why can't I get a reply from a veronica server?**

Sometimes one of the veronica servers is down, or is unreachable because of network trouble. In that case, try another server.

Another common problem is that the gopher client "hangs" because the results of the veronica search includes items of some type not recognized by the client.

For example, a search will commence and there is some indication that it is working, like a spinning wheel on a Mac or on a Unix client. However, when the wheel stops spinning the Gopher client says "Nothing available".

The problem is that some gopher clients can not handle certain objects (e.g., a PC client is unable to understand a Unix sound file). Many clients are written to treat as empty any directories containing non-standard or unrecognized datatypes.

The solution will be in the Gopher+ protocol. That protocol will allow a client and server to have a "conversation" about what types of data the client can and cannot handle.

**Why doesn't my server show up in veronica searches?**

Most commonly this is because your server was not accessible during the time we last collected data.

Be sure your server is registered with the Mother of Gophers, or is referenced on the menu of a server which IS registered. Be sure you have not restricted off-site access.

If these don't work, send mail to [veronica@veronica.scs.unr.edu](mailto:veronica@veronica.scs.unr.edu)



## Veronica - Query composition

### How do I compose veronica search queries, and use various veronica options?

The simplest veronica search is just a single word, followed by a RETURN. The following answer is from the document "How to compose veronica queries", and was current on June 24, 1993.

The search understands the logical operators AND, NOT, OR, (, and ). Adjacent keywords without an intervening logical operator are treated as though conjoined by an AND.

Interpretation of the query starts from the right-hand, interpreting operators as encountered. If in doubt about order of interpretation, USE PARENTHESES!

Search keywords are NOT case-sensitive.

### RESTRICTING THE SEARCH TO CERTAIN GOPHER TYPES

You can limit the data returned by veronica to certain gopher item types. This restriction is done by adding a -t type specifier to your query.

The -t flag may appear anywhere in the search specification. For instance: "women -t1" returns links to gopher DIRECTORIES whose name contains "women". "-t1 women" does exactly the same thing.

NOTE that there must NOT be any spaces between the -t and the type specifier.

You may specify MORE THAN ONE type in the query. DO NOT use separate -t specifications to do this; simply put all the types together (with no spaces) after the -t. For example:

"-ts1 mac" returns links to gopher DIRECTORIES or SOUNDS with the word "mac" in the name.

"women -t18" returns links to gopher DIRECTORIES or TELNET links, whose name contains the word "women".

Official gopher types, from the Gopher Protocol Document, are:

- 0 item is a file
- 1 item is a directory
- 2. item is a CSO (qi) phonebook server
- 3 ERROR
- 4 item is a BinHexed Mac file (discouraged)
- 5 item is a DOS binary archive of some kind (discouraged)
- 6 item is a Unix uuencoded file (discouraged)
- 7 item is an Index-Search server
- 8 item is a pointer to a telnet session
- 9 item is a binary file of some sort
- + redundant server ( same a previous server )

### USING THE OPTIONS

Just include the options in the search query. They will work with any gopher client. You can put options before the query words, after the query words, or even between query words.

DO NOT cluster more than one option behind a single hyphen; instead, use a separate hyphen for each separate option. For example:

gopher -t1s -l -m400

This example requests 400 items containing the word "gopher", and specifies that we want only items whose type is "directory" or "sound", and that we want a link-file containing the results.

#### **EXAMPLES:**

Search on the keyword "internet". This will return a menu list of (at most) 200 records that have the word internet in the title field. Just type:

internet

Search on the keyword "internet", but specify 1000 items instead of the default 200. Type: internet

-m1000

or

-m1000 internet

Search on the keywords "chicken" and "wine". This returns a menu list of (at most) 200 records that have BOTH "chicken" and "wine". Type:

chicken and wine

Search for the keywords "chicken" or "wine", specifying directories only. This returns a menu list of records that have EITHER chicken or wine, and which are GOPHER DIRECTORY entries. Type:

chicken or wine -t1

or

-t1 chicken or wine

Examples for the operator "NOT":

chicken not wine

(will search for all titles with the word chicken BUT NOT the word wine)

chinese food not msg

(will search for our health nuts all the titles with the words chinese AND food BUT NOT msg. Remember there is an implied AND between two words)

The metacharacter "\*" matches anything at the TRAILING END of a search word.

chicken\* (will search for all titles with the word chicken, chickens, ...)

chicken\* or wine\* (will search for all titles with the word chicken, chickens, ... OR wine, wines, wineries, ...)

## ARCHIE

### Internet ARCHIVE Listing Service

Archie is a system to allow you to rapidly locate the various public domain programs stored on the hundreds of sites across the Internet. Archie retrieves the recursive directory listings of over 800 sites containing some one million files (over 50 gigabytes!) in round robin fashion over the course of a month. These listings are then processed and added to the database.

### Archie telnet addresses



GMUrant  
Editor

[a bit more info on arche](#)

## **Telnet addresses for Archie Servers**

Use any of these addresses (all contain identical data):

telnet archie.mcgill.ca  
telnet 132.206.2.2  
telnet 132.206.51.1  
telnet archie.funet.fi (Finland/Europe)  
telnet archie.au (austrailia)  
telnet archie.doc.ic.ac.uk (UK/Europe)  
telnet archie.sura.net  
telnet cs.huji.ac.il (Israel)  
telnet archie.ans.net  
telnet archie.rutgers.edu  
telnet 128.6.18.15  
telnet ds.internic.net  
telnet 198.49.45.10

Login: archie (return)

For example, to see where IPWIN is available, you could enter the following command during a telnet (interactive) session:

prog IPWIN (return)                      (assume the name is IPWIN121.EXE)

You'll receive back a listing of servers and the directory on each where the file is stored.

## Archie

*the following text was written by Peter Deutsch, Computing Centre, McGill University (peterd@cc.mcgill.ca).*

Few other areas in the field of computer science hold out such promise for significant performance gains in the coming years as the field of computer networking. While even a single computer allows the user to access and process information faster and more accurately than ever before, joining large numbers of such computers together with the communications tools needed for users to easily share information and resources promises the prospect of a true "electronic highway" for information exchange unlike anything seen to date.

A principal requirement for the creation of this brave new world of networked information was the creation of a standard set of protocols and communication mechanisms to allow users on disparate networks to share information. Such mechanisms have allowed the creation of the Internet, a global network of networks that now span the globe, connecting millions of users on hundreds of thousands of computers.

The Internet now connects universities, colleges and other centres of learning with commercial research and development groups throughout the world. It serves as both a live testbed for on-going networking research and a daily communications tool for thousands of users in fields far removed from networking and computer science. One recent survey estimates that the Internet currently has over 535,000 attached hosts in over 30 countries, with a user community estimated at over three million people.

The existence of this global information service has in turn spurred the development of mechanisms for locating and exchanging information. Distributed file systems, on-line file archiving mechanisms, electronic mail and bulletin boards and expert systems for locating and accessing technical expertise are all services that exist now on the Internet.

The huge size (and continued rapid growth) of the Internet offer a particular challenge to systems designers and service providers in this new environment. Before a user can effectively exploit any of the services offered by the Internet community the user must be aware of both the existence of the service and the host or hosts on which it is available. Adequately addressing this "resource discovery problem" is a central challenge for both service providers and users wishing to capitalize on the possibilities of the Internet.

[What is the archie service](#)

[Why use Archie](#)

[The Archie Service today](#)

[The 'whatis' database](#)

[Using Archie](#)

[Miscellaneous information](#)

**What is the archie service?**

The archie service is a collection of resource discovery tools that together provide an electronic directory service for locating information in an Internet environment. Originally created to track the contents of anonymous ftp archive sites, the archie service is now being expanded to include a variety of other on-line directories and resource listings.

Users can access an archie server either through interactive sessions (provided they have a direct Internet connection) or through queries sent via electronic mail messages (provided they can at least gateway electronic mail messages onto the Internet).

Interactive access to archie may be through a conventional telnet session to a machine running an archie server or through a program that has been integrated into a larger system, such as the Prospero network distributed file system. Additional stand-alone clients are now being tested and are available over the network.

**Why use Archie?**

The existence of the archie service allow those seeking information maintained by an archie server to limit their network search to a set of questions to a known server. The responses in turn offer pointers to specific Internet service providers. Once the existence and location of specific information or services has been determined using archie, traditional networking tools can be used for final access.

Programs have already been created that integrate an archie client with the ftp file transfer program or into larger information access services. This allows a user to first locate and then access information from archie sites using a single program.

**Archie today**

Currently, archie tracks the contents of over 800 anonymous ftp archive sites containing some 1,000,000 files throughout the Internet. Collectively, these files represent well over 50 Gigabytes (50,000,000,000 bytes) of information, with additional information being added daily. Anonymous ftp archive sites offer software, data and other information that can be copied and used without charge by anyone with connection to the Internet.

The archie server automatically updates the listing information from each site about once a month, ensuring users that the information they receive is reasonably timely, without imposing an undue load on the archive sites or network bandwidth.



## **The "whatis" database**

In addition to offering access to anonymous ftp listings, archie also permits access to the "whatis" description database. This database is a collection of descriptions that includes the name and a brief synopsis for over 3,500 public domain software packages, datasets and informational documents located on the Internet.

Additional "whatis" databases are scheduled to be added in the coming months. Planned offerings include listings for the names and locations of on-line library catalogue programs, the names of publicly accessible electronic mailing lists and compilations of Frequently Asked Questions lists and archive sites for the most popular Usenet "newsgroups" or bulletin boards. Suggestions for additional descriptions or locations databases are welcomed and should be sent to the archie developers at "archie-l@archie.mcgill.ca".

Service providers are also encouraged to send in details of their offerings to the archie maintainers so that the server tracking software can be configured to automatically perform updates when site information changes. An automatic registration mechanism has also been proposed that would allow service providers to make their service available without human intervention. This feature is expected to be integrated into an upcoming release.

## Using Archie

Users with direct Internet connectivity can try out an interactive archie server using the basic "telnet" command (available at most sites). To use, telnet to the host "archie.mcgill.ca" (132.206.2.3) and login as user "archie" (there is no password needed). A banner message giving latest developments and information on the archie project will be displayed and then the command prompt will appear. First-time users should try the "help" command to get started.

Users with only email connectivity to the Internet should send a message to "archie@archie.mcgill.ca", with the single word "help" in either the subject line or body of the message. You should receive back an email message explaining how to use the email archie server, along with details of an email-based ftp server operated by Digital Equipment Corporation that will perform ftp transfers through email requests.

Demo archie clients are stored on archie.mcgill.ca in the subdirectory "archie/clients" and may be obtained using anonymous ftp. There are several such clients and others are currently being tested. Additional work is planned in this area in the coming months and details will be announced in the archie banner message displayed on login.

Documentation for the archie system is still limited, but what there is is also available for anonymous ftp from the same host under the directory "archie/pub".

## **Archie (Miscellaneous Information)**

The archie service began as a project for students and volunteer staff at the McGill University School of Computer Science. It is now offered as a network resource by a number of sites. At the time this article was prepared, archie servers are being operated as "archie.mcgill.ca" (by McGill University in Montreal, Canada), "archie.funet.fi" (by FUnet in Finland) and "archie.au" (by AARnet in Australia). The source to the archie project has been distributed to a number of U.S. sites and additional North American servers are expected to be operational soon.

The archie project continues to grow in part because of the feedback and response from users. Suggestions for improvements and additional features are especially welcome. Please let us know what you think...

Contacting the archie people:

Email addresses:

Please send comments, suggestions and bug reports to "archie-l@archie.mcgill.ca". This address reaches the implementors of archie.

There is also the "archie-people@archie.mcgill.ca" mailing list. This list is for people interested in developments and progress of the archie project and is open to all who wish to subscribe.

Surface mail address:

UNIX Support Group,  
Computing Centre,  
McGill University,  
room 200, Burnside Hall,  
805 Sherbrooke Street West,  
Montreal, Quebec  
CANADA H3A 2K6

Phone: (514) 398-3709

## WWW Topics

This is an overview of a series of postings describing the concept of the World-Wide Web and guiding anyone who is interested in obtaining and setting up the software required to access the Web.

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*EMBnet Switzerland is a project funded by the University of Basel, the Swiss National Science Foundation, and industrial contributions from Digital Equipment and Silicon Graphics (in alphabetical order).*

[What is the WWW?](#)

[What is available on the Web?](#)

[How to get to the WWW](#)

[Overview of WWW client software](#)

[Installing CERN line-mode browser](#)

[What are URLs?](#)

[What is HTML?](#)

## **What is the World-Wide Web?**

There are now over two million registered computers on the Internet providing a huge amount of information. Fortunately, the access to these often widely dispersed data has been facilitated by the development of network information delivery systems such as Gopher and the World-Wide Web (WWW, W3). These interactively working network tools are based on the client-server model: The user runs locally a client program that can communicate with a server program on a (remote) host computer. In order to access the information, the client sends the user's request to the server (using a standardized format called a protocol). The server handles the request and sends the response to the user.

The Gopher project was developed at the University of Minnesota and has now evolved in a powerful system for offering information across the net. The information appears to the user as a series of nested menus, resembling the organization of a file system.

The World-Wide Web has been described as a "wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents". It was invented at the European Centre of Particle Physics (CERN), Switzerland. Basically WWW and Gopher are similar: Both systems allow the user to browse information across the Internet without the necessity to login. However, WWW is much more powerful and flexible than Gopher. Whereas a Gopher menu is a list of items, WWW appears to the user as a text document and can take full advantage of text formatting. WWW documents are written in hypertext (text that contains links to other text). Selecting certain words within a WWW document via mouse or keyboard causes other documents to be opened, no matter where on the Internet these documents are. In addition, WWW documents can contain links not only to other text, but also to images, sounds and movies.

The WWW world is growing very fast. There are already more than 200 WWW servers on the Internet providing a large amount of information, not accessible by other network tools. Moreover, WWW provides a single consistent user-interface to access information of other services such as Gopher, FTP, and News. Not surprisingly, the programs (called WWW clients) that allow to access these data are in use at hundreds, if not thousands, of sites on the Internet today. An overview of currently available WWW client software will be given in part 5 of this series of postings.

## What is Available on the Web?

The Web provides a vast array of information covering almost any biological research area but, unfortunately, these data are widely dispersed and it is therefore often difficult to find something of interest. To solve this problem, a number of people have begun to catalogue the data into lists organized by subject, provider, or access method. Resources of interest for biologists include:

- Abstracts of articles in press
- Biology news and documents
- Graphics and general software
- Guides and tutorials
- Job offers
- Journal indexes and databases
- Sequence databases
- Software for biology

A comprehensive list of locations of biological information archives can be found in Una Smith's "A Biologist's Guide to Internet Resources". Services that provide on-line help to find useful information available on the Web include the Meta-Index of NCSA, CERN's Virtual Library, the Nova-Links created by Rob Kabacoff, and Joel's Hierarchical Subject Index. Keith Robinson at Harvard University maintains a list of WWW servers providing information of interest for biologists. These on-line services are accessible by any WWW client. Written in hypertext they provide a convenient and quick route to everything on the Web. A number of other sites provide similar services using Gopher servers. These sites are accessible by WWW clients as well but lack the hypertext functionality of WWW. Biology-relevant Gopher sites include Don Gilbert's IUBio service, Rob Harper's Finnish EMBnet BioBox, and Reinhard Doelz's list of the European Biology Gopher tree. A list of some WWW starting points for an exploration of Web resources that might be useful for biologists will be given in part 13 of this series of postings.

The rules that computers use to exchange messages are called protocols. Most network retrieval systems use their own protocol with limited access to other protocols. In contrast, the HTTP protocols used by WWW servers and clients allows to communicate to other systems including Gopher, WAIS, and FTP. Thus, WWW clients provide access to anything on:

- \* WWW sites (>200)
- \* Gopher sites (>1000)
- \* WAIS sites (>100)
- \* anonymous FTP sites (>1000)
- \* Usenet News, etc.

This feature makes the WWW system one of the most comprehensive network retrieval tool. In addition, WWW clients are easy to use and - depending on the user's operating system - there are character based as well as graphical interfaces available.

## How to get to the WWW

To access the information provided by remote WWW sites you need a program (called WWW client or browser) that allows to communicate with the remote WWW server. The browser may either be locally installed or on a remote computer. If you are directly connected to the Internet it is recommended to install the client software locally. The disadvantage of accessing the Web by a remotely running client is a lack of full functionality and poorer performance.

The audience of this series of postings is assumed to have no WWW client locally installed. Nevertheless you may want to try out what WWW looks like before installing a browser yourself. Fortunately, there are some sites that let you access the Web by remote login. Such services are provided by:

The University of Kansas:  
(requires a vt100 terminal)

- 1) enter the command you need to open a "telnet" session
- 2) connect to "ukanaix.cc.ukans.edu"
- 3) at the login prompt enter "kufacts"
- 4) use the arrow keys to select an item of interest
- 5) press <enter> to follow the link
- 6) for help press "?", enter "q" to quit

The Finnish University and Research Network (FUNET): (requires a vt100 terminal)

- 1) enter the command you need to open a "telnet" session
- 2) connect to "info.funet.fi"
- 3) at the login prompt enter "www"
- 4) select "www" as service
- 5) select "lynx" as interface
- 6) use the arrow keys to select an item of interest
- 7) press <enter> to follow the link
- 8) for help press "?", enter "q" to quit

The European Centre for Particle Physics (CERN) Switzerland:

- 1) enter the command you need to open a "telnet" session
- 2) connect to "info.cern.ch"
- 3) enter a number to follow the corresponding link
- 4) enter "Help" for help, or "Quit" to quit

Both CERN's LineMode browser and the fullscreen browser "Lynx" are available as C source code or in executable forms for several platforms.

## Overview of WWW client software

If your computer is directly connected to the Internet and you want to use WWW, you should install a browser. The advantages of a locally running browser are full functionality and better performance. WWW browsers are available for most environments including:

- \* AIX
- \* HP-UX
- \* IRIX
- \* MacOS 7.x
- \* MS Windows 3.x
- \* NeXTStep
- \* OSF/1
- \* Ultrix
- \* VMS
- \* X11/Motif

WWW browser software is copyrighted but usually free for academic use. The programs can be downloaded by anonymous FTP as C source code or in executable forms. WWW browsers currently available include (there may be other software products that do the same job):

- \* CERN's LineMode browser:

This is the basic text-only interface that works on nearly any platforms. Binaries for HP, Mac, NeXT, PC with PC-NFS socket library, IBM RS/6000, SGI, Sun, and VM can be obtained from the European Laboratory for Particle Physics (CERN), Switzerland.



GMUrant  
Editor

[installing CERN line mode browser](#)

- \* Lynx:

This is a character-based browser that provides a full-screen interface for UNIX and VMS platforms and is very easy to use. Binaries for IBM RS/6000, DEC Alpha VMS (Multinet), DEC Alpha OSF1, Sun 4, DEC Mips, DEC VAX (Multinet) can be obtained from the University of Kansas.

- \* NCSA's [Mosaic](#):

This is a graphical interfaces for users on X-Windows, MacOS 7.x, and MS-Windows 3.x. Binaries for DEC Alpha, DEC Mips, HP 9000/730, IBM RS/6000, Mac, PC Windows, SGI, Sun Solaris, Sun SunOS can be obtained from the National Centre of Supercomputing Applications (NCSA), Illinois.



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Editor

[more info on WWW client software](#)



## Installing CERN line-mode browser

CERN's LineMode browser is the basic text-only interface that works on nearly any platforms. The files required to run this WWW browser on your computer can be retrieved by anonymous FTP from sites including (it is quite likely that this may change over time):

### Sweden

ftp.sunet.se

```
/pub/www/bin binary
/pub/www/src source
```

### Switzerland

info.cern.ch

```
/pub/www/bin binary
/pub/www/src source
```

Important: in order to prevent unnecessary network traffic it is recommended to download the files from a server as close as possible to your location. To get a complete list of sites providing the CERN software use "archie" (ask a local expert).

Transfer the browser software from the host to your computer:  
(Note: hit the <return> key at the end of each command.)

- 1) enter the command you need to open a "FTP" session
- 2) type "open" at the ftp prompt and enter the Hostname (see above)
- 3) at the login prompt type "anonymous"
- 4) enter your email address
- 5) type "cd " and enter the Location of the binary (see above)
- 6) type "ls", you will get a directory listing
- 7) check whether a name of a directory corresponds to your machine type
- 8) if so, type "cd " and enter the name of the directory
- 9) type "ls", you will get a file listing
- 10) check whether the binary `www_***` is available

If the binary is available:

- 11) type "binary"
- 12) type "get `www_***`" (replace \*\*\* with the appropriate version number, this will load the binary to your local disk and may take some time)
- 13) type "bye" at the ftp prompt
- 14) make the binary executable (on UNIX systems type "chmod ugo+x " followed by the filename)

That's it! Go ahead and execute it. If you need on-line help: type "Help" at the command line.

If the binary is not available:

(Note: requires "Make" and programs to process tar.Z-files.)

- 11) type "cd " and enter the Location of the C source (see above)
- 12) type "ls" and check whether the archives "`WWWLibrary_***.tar.Z`" and "`WWWLineMode_***.tar.Z`" are available
- 13) type "binary"
- 14) type "get `WWWLibrary_***.tar.Z`" (replace \*\*\* with the appropriate version number)
- 15) type "get `WWWLineMode_***.tar.Z`"
- 16) type "bye" at the ftp prompt The following descriptions apply to UNIX systems. On other systems,

the commands may be different.

Uncompress and unwrap the two archive files:

- 1) type "uncompress" followed by the filename
- 2) type "tar xvf" followed by the filename
- 3) change to the directory "WWW" that has been generated
- 4) read the "\*.txt" files
- 5) change to the directory "LineMode", type "ls"

The subdirectories listed, reflect the machine types to which the browser has already been ported. Change to the subdirectory for your type of machine. Edit the "Makefile" (ask a local expert). Change to the directory "WWW" and type "BUILD". You should then get a executable file `www_***` in the subdirectory for your type of machine. To try it out, change to this subdirectory and type "www". If you need on-line help: type "Help" at the command line. For more information, consult the "User Guide for the WWW Line Mode Browser" in the directory "WWW/LineMode/Default".

## What are URLs

*excerpted from a series of WWW overviews by Florian Eggenberger*

One of the most powerful aspects of the World-Wide Web is that it allows to access nearly any kind of data and network service. In order to locate such object on the Internet, the Web uses Uniform Resource Locators (URLs). URLs specify the access method, the address of the host computer, the port to connect to, and the path and name of the object.

The format is:

access method://host.domain/path/objectname

Examples may look like this:

http://test.unibas.ch:80/  
provides access to a WWW server on port 80

ftp://guru.cern.ch/  
provides access to an anonymous ftp server

gopher://gopher.beta.test.unibas.ch/  
provides access to a gopher server

news:embnet.net-dev  
provides access to a news server (Note the absence of "//")

telnet://test.unibas.ch  
opens an interactive telnet session

file://test.unibas.ch/file.txt  
retrieves a text file from a remote machine

file://localhost/device1/document.txt  
opens a text file or WWW document on device1 of a local UNIX or VMS system (Note that some browsers require the file suffix "html" to recognize a WWW document)

file:///disk1/document  
opens a text file or a WWW document on disk1 of a local Mac  
(Note the use of "///")

file:///C:/document.txt  
opens a text file or a WWW document on drive C: of a local DOS machine  
(Note the use of "///" and "|")

WWW browsers let you specify URLs either directly or by selecting hypertext in the WWW document you are presented with. This will cause the browser to send a request to open the URL specified. Selecting hypertext in a WWW document will take you to related information, which may also have pointers to related information. So don't worry if you don't know the URL of the information you want, simply follow the logical chain of hypertext links to get the information.

## What is HTML?

source: series of WWW overviews by Florian Eggenberger

HTML stands for Hypertext Markup Language and is the standard language of the World-Wide Web. HTML files usually end with the suffix ".html" and are in ASCII (plain text) format though the access protocol of WWW allows 8 bit transfer. HTML documents are composed of elements that start with a tag, followed by the content of the element, followed by the ending tag. The tags contain information about properties of the whole document, about the format of the document, and about hypertext links to other objects. Some elements have neither content nor ending tags. They are called empty. The format of non-empty elements is:

`<TAG> content </TAG>`

HTML is case-insensitive. "`<TAG>`" is equivalent to "`<tag>`" or "`<TaG>`". Spaces, tabs, and carriage returns are not significant in HTML. WWW browser ignore any carriage return and multiple spaces are collapsed into a single space unless the `<PRE>` tag has previously been used (see below).

Elements used in HTML include:

`<TITLE> text </TITLE>`  
specifies the title of a document

`<Hn> text </Hn>`  
specifies the nth level of heading (where n is a number between 1 and 6)

`<P>`  
specifies the end of a paragraph

`<UL> <LI> first item <LI> second item </UL>`  
specifies an unnumbered list of two items

`<OL> <LI> first item <LI> second item </OL>`  
specifies an numbered list of two items

`<PRE> text </PRE>`  
specifies preformatted text  
(causes spaces, new lines, and tabs to be significant)

`<A HREF = "URL of document to be linked"> linkname </A>`  
specifies a link to a document, makes the "linkname" the hyperlink to the document to be linked

`<IMG SRC = "filename.GIF">`  
specifies an image to be included in the document  
(this is an HTML extension)

HTML documents can be created by any text editors, but if you are going to create a lot of WWW documents, then a HTML editor is recommended. An example of a simple HTML document has been provided in the previous part of this series of postings. You may want to modify this document. So, go ahead and open the document using a WWW browser. View the source code, make changes according to your preferences, save the changes and reload the document to make your changes effective (how to do this, depends on the browser software you have installed on your machine).

## **The WELL: Small Town on the Internet Highway System**

by Cliff Figallo (fig@well.sf.ca.us) September, 1993

*This document was adapted from a paper presented to the "Public Access to the Internet" meeting sponsored by the John F. Kennedy School of Government at Harvard University in May, 1993.*

Cliff Figallo writes "...you may distribute and quote from this piece as you wish, but please include the request that my name and contact information be included with any quotations or distribution. Thank you."

### Introduction

#### A very brief biography of The WELL

A less brief biography of The WELL

#### Birth

#### Initial Design and Rule making

#### Staff

#### Maintaining a History

#### Connections

#### Community

### Conclusion

## Introduction

The Internet serves as a routing matrix for electronic mail messages, file transfers and information searches. Internet sites, those machines and sub-networks that are "internetworked", have thus far served mostly as file archives, email addresses and administrative caretakers for their locally serviced users. Historically, these sites have been universities, corporations or military and government installations. With the popularization and commercialization of the Internet, new models of Internet sites are connecting to the web of high speed data lines.

One unique Internet site, accessible by anyone with an Internet account, is The Whole Earth Lectronic Link (hereafter referred to by its popular name, The WELL). In the future, the Internet will certainly feature many small, homegrown, regional commercial systems like The WELL. Such systems will pay for their own operations and for their Internet connections through user fees, handling all of the billing and administrative tasks relating to their users, developing their own local community standards of behavior and interaction. Their users will often leave the "home" system, going out through Internet gateways to other regional systems or searching for information in the myriad databases of the Net. Internet voyagers will drop in to visit the unique communities they find outside their home systems, sampling the local cultural flavors and meeting and conversing with the individuals who inhabit those systems.

The main attractions of these local Internet "towns" will prove to be their characteristic online conversations and social conventions and their focus on specialized fields of knowledge or problem solving. The WELL is a seminal example of what these small pioneering towns on the Internet highway system will be like.

The WELL is a computer-mediated public conferencing and email system linked to the Internet through BARRNet, the regional Internet vendor. The WELL's headquarters are located in Sausalito, California. It is co-owned by Point Foundation (producers of Whole Earth Review and the Whole Earth Catalogs) and Rosewood Stone, a financial investment company owned the founder and ex-owner of Rockport Shoes.

The WELL was, from its founding in 1985 until January of 1992, accessible to its users only via direct or packet switched dialup. It had carried stored-and-forwarded USENET news groups since soon after startup. These files were imported via regular phone links with Internet-connected sites. Among its users were some small minority of students, academics and technical professionals with Internet accounts on other systems. The feasibility of the WELL connecting to the Internet increased steadily through the 1980s until financial, technical and political conditions allowed it to happen. It is significant, though, that the character of the WELL developed under conditions of relative network isolation. Indeed, part of the justification given by BARRNet, the regional Internet service provider, for allowing a commercial system like the WELL to connect through their facilities was the unique character of the WELL as an established system with thriving and interesting discussion, and its perceived value as an information- generating resource for the Net. The WELL would, they figured, make an interesting and potentially rewarding stopover on any user's Internet Tour.

The WELL is often associated with the term "online community". The idea that community can develop through online interaction is not unique to the WELL. But the WELL, because of its organizational and technical history, has survived primarily through the online personal interaction of its subscribers and staff rather than through successful business strategy developed by its owners and managers. The discussion and dialog contained and archived on the WELL are its primary products. The WELL "sells its users to each other" and it considers its users to be both its consumers and its primary producers. Databases of imported information and libraries full of downloadable software are scarcely present. Third-party services such as stock-trading news, wire services, airline reservation access and software vendor support have never been offered to any significant extent.

The WELL today counts around 7,000 paying subscribers. It has a growing staff of over 12 and a gross annual income approaching \$2 million. It is a small but healthy business and has historically spent very little on advertising and promotion. It gets far more than its share of free publicity and notoriety through the Press coverage as compared to much larger commercial systems. This is so in spite of what most

people would consider a "user-hostile" interface and relatively high pricing.

The WELL had a rather unique upbringing. I will describe its early growth and the foundations of its character in the rest of this paper. I do this from the point of view of having been the person in charge for six years, though I took great pains to de-emphasize the "in charge" part whenever possible. I tried to focus more on maintenance and the distribution of responsibility through the user community rather than on control. Though my record for making the WELL a technical showpiece is not without blemish, my main emphasis was in preserving and supporting the exercise of freedom and creativity by the WELL's users through providing an open forum for their interaction.

It is my assertion that the actual exercise of free speech and assembly in online interaction is among the most significant and important uses of electronic networking; and that the value of this practice to the nation and to the world may prove critical at this stage in human history. I regard the WELL as a sample of the kind of small, diverse, grassroots service provider that can and should exist in profusion, mutually accessible through the open channels on the Internet.

The possibility that the future "Internet" (or whatever replaces it) may be dominated by monolithic corporate-controlled electronic consumer shopping malls and amusement parks is antithetical to the existence and activity of free individuals in the electronic communications world, each one able to interact freely with other individuals and groups there.

## **A Very Brief Biography of the WELL**

Founded in 1985 by Stewart Brand and Larry Brilliant as a partnership of Point and NETI, the WELL came online in February of 1985 and began taking paying customers April 1, 1985. Its initial staff of one full-time and one part-time employee grew to 12 paid employees and well over one hundred online volunteers by 1992. As of this date, The WELL runs on a Sequent multi-processor mini-computer located in a cramped room in a small office building next to the houseboat docks in Sausalito, California. The WELL has full Internet connectivity which is currently offered for the use of its subscribers at no surcharge. Most users call in to the WELL over regular phone lines and modems, and most long distance customers reach the WELL using an X.25 commercial packet network for an additional \$4.00 per hour. An increasing number of users are logging in to the WELL via the Internet, many using Internet accounts on commercial gatewayed systems rather than the packet switching nets.

The WELL's notable achievements are many, not the least of which is that it has survived for eight years while so many other startup systems, though much better-funded, have failed. The Electronic Frontier Foundation was born largely out of the free speech ferment that exists on the WELL and out of discussions and debate that go on there concerning the unique legal and regulatory paradoxes that confront users, managers and owners of systems in this new communications medium. These discussions also attract a population of journalists who find cutting edge ideas and concepts arising constantly in the WELL's forums. Many other formal and informal organizations and collaborations that are effecting the world today call the WELL home.



## **The WELL - Birth**

The WELL was the conceptual and partnered creation of Larry Brilliant and Stewart Brand. They agreed to have their respective organizations cooperate in establishing and operating a computer conferencing network that could serve as a prototype for many regional (as opposed to national) commercial systems. "Let a thousand CompuServe's bloom," is how Brilliant put it.

Initial funding came from Brilliant's company, Networking Technologies International (NETI) in the form of a leased VAX 11/750 computer and hard disks, UNIX system software, a "conferencing" program called Picospan, and a loan of \$90,000. Point Foundation, the non-profit parent corporation of Whole Earth Review, contributed the name recognition of "Whole Earth", the personal attraction of having Stewart Brand to converse with online and the modest but important promotional value of constant mention in the small circulation but influential "Whole Earth Review" magazine.

Business goals for The WELL were, from its inception, purposefully flexible. But the idea that interesting discussion would attract interesting discussants was at the core of the theory that drove the WELL's growth. Initially, many free accounts were offered to people who had, at one time or another, been associated with Whole Earth publications and events, or who were known by Whole Earth staff to be likely productive and attractive participants (referred to, tongue-in-cheek, as "shills"). In April of 1985, the WELL began offering subscriptions at \$8 per month plus \$3 per hour.

## **The WELL - Initial Design and Rule making**

The WELL presented its first users with the sole disclaimer: "You own your own words." The owners of the WELL sought to distance themselves from liability for any text or data posted or stored online by WELL users while, at the same time, providing a free space for creative, experimental and unfettered communication. An alternative interpretation of the original disclaimer (now referred to as YOYOW) held that rather than only laying responsibility for WELL postings at the feet of the author, the phrase also imparted copyrighted ownership of postings to the author under the implied protection and enforcement of the WELL. Management and ownership resisted the onus of their serving as legal agent for the WELL's users, recognizing the potential expense and futility of pursuing people for electronically copying and using customers' words. Thus, the evolving interpretation of YOYOW provided fuel for years' worth of discussion on the topics of copyright, intellectual property and manners in electronic space.

A general aversion to the making and enforcement of rigid rules has continued at the WELL although incendiary incidents and distressing situations have occasionally brought calls for "more Law and Order" or absolute limits to speech. WELL management rejected these calls, resisting being put in the role of policeman and judge except where absolutely necessary, and espousing the view that the medium of online interpersonal communication was (and still is) too immature, too formative to be confined by the encumbrances of strict rules and restrictive software. The imposition by management of arbitrary limitations on language and speech, aimed at protecting the feelings or sensibilities of small groups of people could not possibly protect all people's feelings and sensibilities. Besides, by stifling free and open dialog, we might have lost our chance to discover what kinds of interaction really worked in this medium. Interaction in public access systems seemed to be much more productive, innovative, educational and entertaining where there were fewer prohibitions imposed by system management. If limitations were to be imposed and enforced, they could be handled best from within the user population on a "local", not system wide basis. The creation of private interactive areas where such local rules held sway allowed public forums to retain their openness while providing more regulated "retreats" for those who felt they needed them.

## **The WELL - Staff-Customer Collaboration**

Immediately after opening the system to public access, the small WELL staff and the original participants began the collaborative process of designing of a more friendly interface from the raw Picospan software. Picospan included a toolbox of customization utilities that could be used to make changes on a system-wide or at-user's-option basis. Picospan was tightly- integrated with the UNIX operating system and could therefore provide transparent access to programs written to operate in the UNIX environment. The libertarian, anti-authoritarian philosophy of Picospan's author, Marcus Watts, showed through in its design which prevented un-acknowledged censorship by system administrators, forum moderators (hosts) or authors themselves. Picospan also allowed topics (discussion threads) to be "linked" into several forums at once...a feature that aids the cross-pollination of ideas and groups through the system. The influence that Picospan has had on the WELL's development as a community and hotbed of discussion cannot be underestimated. Its display of topics as continuously- scrolling dialog documents (rather than as fragmented collections of individually-displayed responses) had a tremendous effect on user involvement in ongoing discourse.

## **Staff Background**

The background of four of The WELL's non-technical senior managers--people who worked there during its first seven years--must be considered very significant to the formation of the WELL's open and independent culture.

The first director of the WELL, Matthew McClure and myself, his successor, both spent the decade of the 1970's living in an intentional community of some renown called The Farm as did the WELL's first customer service manager, John Coate, and his successor, Nancy Rhine.. Undoubtedly, this experience of living cooperatively in multi-family situations in a community that reached a peak population of over 1500 adults and children, had a profound influence on the style of management of The WELL. Principles of tolerance and inclusion, fair resource allocation, distributed responsibility, management by example and influence, a flat organizational hierarchy, cooperative policy formulation and acceptance of a libertarian-bordering- on-anarchic ethos were all carryovers from our communal living experience. John Coate is known for having been integral to the setting of a tone of the WELL where users and staff intermingled both online and at the WELL's monthly office parties. He has authored a widely-distributed essay on "Cyberspace Innkeeping" based on lessons learned in dealing with customers in his time at the WELL..

## **The WELL - Maintaining a History**

An important component to the establishment of community in any setting or medium is a historical record of its environs, its people, and their works and the relationships and organizations that defined the direction of the collective entity. For a variety of reasons besides the security of backups, the WELL still has a significant portion of its online interaction saved on archived tape, on its user-accessible disks and in the possession of many of its conference hosts who have made a practice of backing up topics on their home machines before retiring them from the WELL. WELL users were always vocal in their insistence that a history be kept and went so far as to create an Archives conference where topics judged of historical significance from other areas of the WELL were linked and eventually "frozen" for future reference. These valuable conversational threads, this "history" of the WELL, contributes to its depth and feeling of place and community. New users and veterans alike can refer to these archives for background to current discussion and to sample the flavor of the WELL from its early days. When new users, experiencing the same revelations that stirred WELL veterans years ago, bring up their own interpretations of "you own your words", they are referred to the several preserved topics in Archives where lengthy online deliberations on the subject have been preserved..

## **The WELL - Connections**

Originally, only direct dial modems could be used to reach the WELL, but by the end of its first year of operation, an X.25 packet system was in place allowing long distance users to reach the WELL at reasonable cost. The WELL kept its San Francisco focus because local callers had cheaper access and could stay online longer for the same cost, but national and international participants were now more encouraged to join in.

Also, in 1986, Pacific Bell conducted a test of a regional packet-switched network for which the WELL was enrolled as a "beta" site. For most of a year, users from most of the San Francisco Bay Area were able to dial in to the WELL without phone toll charges. This fortuitous circumstance helped boost the WELL's subscription base and connected many valuable customers from the Silicon Valley area into the growing user pool.

Over time, the percentage of users from outside of the Bay Area climbed slowly but steadily. As word spread through frequent unsolicited articles in the press, the WELL became known as a locus for cutting edge discussion of technical, literary and community issues, and it became even more attractive to long distance telecommunicators.

On January 2, 1992, the WELL opened its connection to the Internet through the regional provider, BARRNet. After much debugging and adjustment and a complete CPU upgrade, full Internet service access was offered to WELL customers in June of 1992. Staff and users opened an Internet conference on the WELL where discussions and Q&A take place and where new features, discoveries and tools are shared. The Internet conference serves as a "living manual" to the resources, use and news of the Net.

## **The WELL - Community**

In a medium where text is the only means of communication, trust becomes one of the most difficult but essential things to build and maintain. With no audible or visual clues to go by, the bandwidth for interpersonal communication is quite thin. There are, though, ways in which trust can be built even through the small aperture of telecommunicated text.

By being deliberately non-threatening, owners and managers can eliminate one of the major barriers to trust on the system. One of the most menacing conditions experienced by new users of public conferencing systems is that of hierarchical uncertainty. Who holds the Power? What is their agenda? What are The Rules? Who is watching me and what I do? Do I have any privacy? How might a "Big Brother" abuse me and my rights? The WELL Whole Earth parentage brought with it a historical reputation of collaboration between publisher and reader. Whole Earth catalogs and magazines were widely-known for soliciting and including articles and reviews written by their readers. Whole Earth customers knew that the publications had no ulterior motives, were not owned and controlled by multi-national corporations and did not spend their revenues on making anyone rich. Readers supported the publications and the publications featured and came clean with the readers. We strove to continue that kind of relationship with our customers on the WELL although the immediacy of feedback often made openness a tricky proposition.

We realized that we were in a position of ultimate power as operators of the system; able to create and destroy user accounts, data, communications at will. It was incumbent on us, then, to make clear to all users our assumptions and the ground rules of the WELL in order to minimize any concerns they might have about our intentions. Our aim was to be as much out front with users as possible. Indeed, John Coate and I took the initiative, posting long autobiographical stories from our communal past, inviting users to join us in problem-solving discussions about the system and the business around it, confessing to areas of ignorance and lack of experience in the technical end of the business, and actively promoting the users themselves as the most important creators of the WELL's product.

Staff members were encouraged to be visible online and to be active listeners to user concerns in their respective areas of responsibility. Staff took part in discussions not only about technical matters and customer service, but about interpersonal online ethics. When the inevitable online quarrels surfaced, staff participated alongside users in attempts to resolve them. Over time, both staff and users learned valuable lessons and a "core group" of users began to coalesce around the idea that some kind of community was forming and that it could survive these periodic emotional firestorms. The ethical construct that one could say whatever one wanted to on the WELL, but that things worked best if it was said with consideration of others in mind, became ingrained in enough peoples' experience that community understandings developed. These "standards" were not written down as rules, but are noted conspicuously in the WELL's User Manual and are mentioned online as observations of how things really seem to work. Productive communication in this medium can take place if it is done with care.

Beginning in 1986, the WELL began sponsoring monthly face-to-face gatherings open to all, WELL user or not. Initially, these Friday night parties were held in the WELL's small offices, but as attendance grew and the offices became even more cramped, the potluck gatherings, still called WELL Office Parties (or WOPs) moved to other locations, eventually finding a regular home at the Presidio Yacht Club near the foot of the North end of the Golden Gate Bridge. These in-person encounters have been an integral and important part of the WELL's community-building. They are energetic, intense, conversation-saturated events where people who communicate through screen and keyboard day after day get to refresh themselves with the wider bandwidth of physical presence. Often, the face to face encounter has served to resolve situations where the textual communications have broken down between people.

## **Collaboration Part II**

The WELL was a bootstrap operation from its initial investment in 1985. As a business venture, it was undercapitalized and struggled constantly to stay ahead of its growth in terms of its technical infrastructure and staffing. At the same time, it stuck to the ideal of charging its users low fees for

service. The undercapitalization of the WELL and the low user charges combined to force management into a constant state of creative frugality. From the first days of operation, the expertise and advice of users was enlisted to help maintain the UNIX operating system, to write documentation for the conferencing software, to make improvements in the interface and to deal with the larger problems such as hardware malfunctions and upgrades.

Over the years, many tools have been invented, programmed and installed at the suggestion of or through the actual labor of WELL users. In an ongoing attempt to custom design the interface so as to offer a comfortable environment for any user, the WELL has become, if not a truly user-friendly environment, a very powerful tool kit for the online communications enthusiast. One of the basic tenets of the WELL is that "tools, not rules" are preferred solutions to most people-based problems. Menu-driven tools were created to give control of file privacy to users, allowing them to make their files publicly-readable or invisible to others. The "Bozo filter", created by a WELL user, allows any user to choose not to see the postings of any other user. Some WELL veterans, after years of teeth-gritting tolerance of an abrasive individual, can now be spared any online exposure to or encounter with that individual.

Other tools have been written to facilitate file transfers, to allow easy setup of USENET group lists, to find the cheapest ways to access the WELL, and to extract portions of online conversations based on a wide range of criteria. These tools have all been written by WELL users, who received only free online time in exchange for their work, or by WELL employees who were once customers.

Free time on the WELL (comptime) has always been awarded liberally by WELL management in exchange for services. At one time, half of the hours logged on the WELL in a month was uncharged, going to comptime volunteers or staff. Hosting conferences, writing software, consulting on technical issues and simply providing interesting and provocative conversation have all earned users free time on the WELL. Much as we would have liked to pay these valuable people for their services, almost to a person they have continued to contribute to the WELL's success as a business and public forum, demonstrating to us that they considered the trade a fair one.

## **The WELL - Conclusion**

As can be seen, the WELL developed from its unusual roots in some unique ways. The purpose of this piece is not to advocate more WELL clones on the Net, but to demonstrate that if the WELL could make it, other systems of the WELL's size and general description could spawn from equally unique circumstances around the country and offer their own special cultural treasures to the rest of the world through the Internet. What has been learned at the WELL can certainly be of value when planning new systems because the WELL experiment has demonstrated that big funding bucks, elegant interface design, optimum hardware and detailed business planning are not essential to growing a thriving online community and, in the WELL's case, a successful for-profit business. More important is that the owners and managers of the systems openly foster the growth of online community and that there be a strong spirit of open collaboration between owners, managers and users in making the system succeed. These critical elements of viable community systems are attainable by local and regional civic networks, small organizations and entrepreneurs with limited funding and technical skills... and some heart.



## About Cliff Figallo

Cliff Figallo (fig@eff.org) is a Wide Area Community Agent who also works part time as Online Communications Coordinator for the Electronic Frontier Foundation. Before coming to work at EFF, Cliff was Director of the Whole Earth Lectronic Link for six years (Aug '86 through July '92). Cliff now lives in the San Francisco area and works remotely at his job using the Internet, Pathways, the WELL, CompuServe and America Online daily. He can be reached via email at the following addresses:

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## **The Internet Timeline**

*From "Hobbes' Internet Timeline v1.1", by Robert Hobbes Zakon*

Important dates in the development of the Internet

### **1960s**

Packet-switching networks

- Paul Baran, RAND: "On Distributed Communications Networks"
- no single outage point

### **1967**

ACM Symposium on Operating Principles

- Plan presented for a packet-switching network

### **1968**

Network presentation to the Advanced Research Projects Agency (ARPA)

### **1969**

ARPANET commissioned by DOD for research into networking

- Uses Network Control Protocol (NCP) through Information Message Processors (IMP) developed by Bolt Beranek and Newman, Inc. (BBN)
- First node at UCLA and soon after at Stanford Research Institute (SRI), UCSB, and U of Utah.

First Request for Comment (RFC): "Host Software" by Steve Crocker

### **1970**

ALOHAnet developed by Norman Abrahamson, U of Hawaii (:sk2:)

### **1971**

15 nodes (23 hosts): UCLA, SRI, UCSB, U of Utah, BBN, MIT, RAND, SDC, Harvard, Lincoln Lab, Stanford, UIU(C), CWRU, CMU, NASA/Ames

### **1972**

International Conference on Computer Communications with demonstration of ARPANET between 40 machines organized by Bob Kahn.

InterNetworking Working Group (INWG) created to address need for establishing agreed upon protocols.

Chairman: Vinton Cerf.

### **1973**

First international connections to the ARPANET: England and Norway

### **1975**

Operational management of Internet transferred to DCA (now DISA)

BBN opens Telenet, commercial version of ARPANET (:sk2:)

### **sometime during the 70s**

Store and Forward Networks

- Used electronic mail technology and extended it to conferencing

HM Elizabeth, Queen of the United Kingdom sends out an e-mail (anyone know the exact year?)

### **1976**

uucp (unix-to-unix copy) developed at AT&T Bell Labs and distributed with UNIX one year later.

### **1977**

THEORYNET created at U of Wisconsin providing electronic mail to over 100 researchers in computer science (using uucp).

## **1979**

Meeting between U of Wisconsin, DARPA, NSF, and computer scientists from many universities to establish a Computer Science Department research computer network.

USENET established using uucp between Duke and UNC.

## **1981**

BITNET, the "Because Its Time (There) NETwork"

- Started as a cooperative network at the City University of New York.
- Provides electronic mail and listserv servers to distribute information.
- Unlike USENET, where client s/w is needed, electronic mail is the only tool necessary.

CSNET (Computer Science NETWORK) comes into being providing a dial-up capability to electronic mail. Many universities feeling left out of ARPANET, join CSNET.

## **1982**

INWG establishes the Transmission Control Protocol (TCP) and Internet Protocol (IP), as the protocol suite, commonly known as TCP/IP, for ARPANET.

- This leads to one of the first definition of an "internet" as a connected set of networks, specifically those using TCP/IP, and "Internet" as connected TCP/IP internets.

## **1983**

Name server developed at U of Wisconsin, no longer requiring users to know the exact path to other systems.

CSNET / ARPANET gateway put in place

ARPANET split into ARPANET and MILNET with the latter becoming integrated with the Defense Data Network created the previous year.

Desktop workstations come into being, many with Berkeley UNIX which includes IP networking software. Need switches from having a single, large time sharing computer connected to Internet per site, to connection of an entire local network.

Berkeley releases 4.2BSD incorporating TCP/IP (:mpc:)

## **1984**

Domain Name Server (DNS) introduced.

Number of hosts breaks 1,000

## **1986**

NSFNET created (backbone speed of 56Kbps)

- NSF establishes 5 super-computing centers to provide high-computing power for all.
- ARPANET bureaucracy keeps it from being used to interconnect centers and NSFNET comes into being with the aid of NASA and DOE.
- This allows an explosion of connections, especially from universities.

Cleveland Freenet (start of NPTN) comes on-line (:sk2:)

## **1987**

NSF signs a cooperative agreement to manage the NSFNET backbone with IBM, MCI, and Merit Network, Inc.

1000th RFC: "Request For Comments reference guide"

Number of hosts breaks 10,000

Number of BITNET hosts breaks 1,000

## **1988**

Internet worm burrows through the Net

## **1989**

Number of hosts breaks 100,000

NSFNET backbone upgraded to T1 (1.544Mbps)  
RIPE (Reseaux IP Europeens) formed (by European service providers) to ensure the necessary administrative and technical coordination to allow the operation of the pan-European IP Network. (:glg:)

#### **1990**

ARPANET ceases to exist  
First relay between a commercial electronic mail carrier (MCI Mail) and the Internet through the Clearinghouse for Networked Information  
Electronic Frontier Foundation is founded by Mitch Kapor

#### **1991**

Commercial Internet eXchange (CIX) Association, Inc. formed by General Atomics (CERFnet), Performance Systems International, Inc. (PSInet), and UUNET Technologies, Inc. (AlterNet) (:glg:)  
WAIS released by Thinking Machines Corporation  
Gopher released by University of Minnesota

#### **1992**

Internet Society is chartered  
World-Wide Web released by CERN  
Number of hosts breaks 1,000,000  
NSFNET backbone upgraded to T3 (44,736Mbps)  
InfoPop/DOS appears...

#### **1993**

InterNIC created to provide specific Internet services: (:sc1:)  
- directory and database services (AT&T)  
- registration services (Network Solutions Inc.)  
- information services (General Atomics/CERFnet)  
US White House comes on-line:  
Internet Talk Radio begins  
Businesses and media take notice of the Internet  
Mosaic for MS Windows released

#### **1994**

Communities begin to be wired up to the Internet  
US Senate and State of California provide information servers

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Comments or corrections should be sent to [hobbes@hobbes.mitre.org](mailto:hobbes@hobbes.mitre.org).

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Hobbes' Internet Timeline FAQ:

Q: Why did you compile Hobbes' Internet Timeline?

A: For use in the Internet courses I teach.

Q: How do I get Hobbes' Internet Timeline?

A: For now, you can send an e-mail to [timeline@hobbes.mitre.org](mailto:timeline@hobbes.mitre.org). You will receive an automated reply with the Timeline. For comments/corrections please use [hobbes@hobbes.mitre.org](mailto:hobbes@hobbes.mitre.org).

Q: What do you do at MITRE?

A: I wear the following hats: Internet Evangelist, HCI Engineer, Systems Integrator, System Administrator,

Instructor, He with the Most Toys

Q: Is your license plate really NET SURF?

A: Yes, and there is a frame around it with INTERNET at the top, and my e-mail address at the bottom.  
(My wife is too embarrassed to drive it.)

Hobbes' Internet Timeline was compiled from a number of sources, with some of the stand-outs being:

Cerf, Vinton (as told to Bernard Aboba). "How the Internet Came to Be." This article appears in "The Online User's Encyclopedia," by Bernard Aboba. Addison-Wesley, 1993.

Hardy, Henry. "The History of the Net." Master's Thesis, School of Communications, Grand Valley State University.

Hauben, Ronda. "From ARPANET to Usenet News." The Amateur Computerist, Volume 5, No. 3-4, Story 1.

Kulikowski, Stan II. "A Timeline of Network History." Unpublished?

Quarterman, John. "The Matrix: Computer Networks and Conferencing Systems Worldwide." Bedford, MA: Digital Press. 1990

Internet growth summary compiled from output of the zone program available at  
<ftp://ftp.nisc.sri.com/pub/zone>

Contributors to Hobbes' Internet Timeline have their initials next to the contributed items in the form (:zzz:) and are:

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The author is on an eternal genealogical search. If you know of someone whose last name is Zakon or could spare 1 minute to check your local phone book, please e-mail any info (i.e., name, phone, address, city) to [rhz@po.cwru.edu](mailto:rhz@po.cwru.edu); your help is greatly appreciated.

## **excerpted from RFC 1594 Commonly asked "New Internet User" questions**

March 1994

Request for Comments: 1594

FYI: 4

Obsoletes: 1325

Category: Informational

Authors:

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FYI on Questions and Answers

Answers to Commonly asked "New Internet User" Questions

Abstract

This FYI RFC is one of two FYI's called, "Questions and Answers" (Q/A), produced by the User Services Working Group of the Internet Engineering Task Force (IETF). The goal is to document the most commonly asked questions and answers in the Internet.

[Introduction](#)

[Acknowledgements](#)

[I just got an Internet account. What do I do now?](#)

[How do I find out if a computer is on the internet?](#)

[How do I get a list of all hosts on the internet?](#)

[What is the IAB?](#)

[What is the IETF?](#)

[What is the IRTF?](#)

[What is the Internet Society?](#)

[What is the IANA?](#)

[What is a NIC? a NOC?](#)

[What is the Internet Registry?](#)

[What is an InterNIC?](#)

[How do I find an email address](#)

[What is Usenet?](#)

## **RFC 1594 - Introduction**

New users joining the Internet community have the same questions as did everyone else who has ever joined. Our quest is to provide the Internet community with up to date, basic Internet knowledge and experience.

Future updates of this memo will be produced as User Services members become aware of additional questions that should be included, and of deficiencies or inaccuracies that should be amended in this document. Although the RFC number of this document will change with each update, it will always have the designation of FYI 4. An additional FYI Q/A, FYI 7, is published that deals with intermediate and advanced Q/A topics.

## **RFC 1594 Acknowledgements**

The following people deserve thanks for their help and contributions to this FYI Q/A: Matti Aarnio (FUNET), Susan Calcarì (InterNIC), Corinne Carroll (BBN), Vint Cerf (MCI), Peter Deutsch (Bunyip), Alan Emtage (Bunyip), John Klensin (UNU), Thomas Lenggenhager (Switch), Doug Mildram (Xylogics), Tracy LaQuey Parker (Cisco), Craig Partridge (BBN), Jon Postel (ISI), Matt Power (MIT), Karen Roubicek (BBN), Patricia Smith (Merit), Gene Spafford (Purdue), and Carol Ward (Sterling Software/NASA NAIC).



## **I just got on the Internet. What can I do now?**

You now have access to all the resources you are authorized to use on your own Internet host, on any other Internet host on which you have an account, and on any other Internet host that offers publicly accessible information. The Internet gives you the ability to move information between these hosts via file transfers. Once you are logged into one host, you can use the Internet to open a connection to another, login, and use its services interactively (this is known as remote login or "TELNETing"). In addition, you can send electronic mail to users at any Internet site and to users on many non-Internet sites that are accessible via electronic mail.

There are various other services you can use. For example, some hosts provide access to specialized databases or to archives of information. The Internet Resource Guide provides information regarding some of these sites. The Internet Resource Guide lists facilities on the Internet that are available to users. Such facilities include supercomputer centers, library catalogs and specialized data collections. The guide is maintained by the Directory Services portion of the InterNIC and is available online in a number of ways. It is available for anonymous FTP from the host [ds.internic.net](http://ds.internic.net) in the resource-guide directory. It is also readable via the InterNIC gopher ([gopher internic.net](gopher://internic.net)). For more information, contact [admin@ds.internic.net](mailto:admin@ds.internic.net) or call the InterNIC at (800) 444-4345 or (908) 668-6587.

Today the trend for Internet information services is to strive to present the users with a friendly interface to a variety of services. The goal is to reduce the traditional needs for a user to know the source host of a service and the different command interfaces for different types of services. The Internet Gopher (discussed more in the "Questions about Internet Services" section) is one such service to which you have access when you join the Internet.

### **How do I find out if a site has a computer on the Internet?**

Frankly, it's almost impossible to find out if a site has a computer on the Internet by querying some Internet service itself. The most reliable way is to ask someone at the site you are interested in contacting.

It is sometimes possible to find whether or not a site has been assigned an IP network number, which is a prerequisite for connecting an IP network to the Internet (which is only one type of Internet access). To do so, query the WHOIS database, maintained by the Registration Services portion of the InterNIC. You have several options about how to do such a query. The most common currently are to TELNET to the host rs.internic.net and invoke one of the search interfaces provided, or to run a WHOIS client locally on your machine and use it to make a query across the network.

The RIPE Network Coordination Center (RIPE NCC) also maintains a large database of sites to whom they have assigned IP network numbers. You can query it by TELNETing to info.ripe.net and stepping through the interactive interface they provide.

### **How do I get a list of all the hosts on the Internet?**

You really don't want that. The list includes more than 1.5 million hosts. Almost all of them require that you have access permission to actually use them. You may really want to know which of these hosts provide services to the Internet community. Investigate using some of the network resource discovery tools, such as gopher, to gain easier access to Internet information.

## What is the IAB?

The Internet Architecture Board (IAB) is concerned with technical and policy issues involving the evolution of the Internet architecture. IAB members are deeply committed to making the Internet function effectively and evolve to meet a large scale, high speed future. The chairman serves a term of two years and is elected by the members of the IAB. The IAB focuses on the TCP/IP protocol suite, and extensions to the Internet system to support multiple protocol suites.

The IAB performs the following functions:

- Reviews Internet Standards,
- Manages the RFC publication process,
- Reviews the operation of the [IETF](#) and [IRTF](#),
- Performs strategic planning for the Internet, identifying long-range problems and opportunities,
- Acts as an international technical policy liaison and representative for the Internet community, and
- Resolves technical issues which cannot be treated within the IETF or IRTF frameworks.

The IAB has two principal subsidiary task forces:

- Internet Engineering Task Force (IETF)
- Internet Research Task Force (IRTF)

Each of these Task Forces is led by a chairman and guided by a Steering Group which reports to the IAB through its chairman. For the most part, a collection of Research or Working Groups carries out the work program of each Task Force.

All decisions of the IAB are made public. The principal vehicle by which IAB decisions are propagated to the parties interested in the Internet and its TCP/IP protocol suite is the Request for Comments (RFC) note series and the Internet Monthly Report.



GMUrant  
Editor

Ed Krol on who governs the internet

## **RFC 1594 What is the IETF?**

The Internet has grown to encompass a large number of widely geographically dispersed networks in academic and research communities. It now provides an infrastructure for a broad community with various interests. Moreover, the family of Internet protocols and system components has moved from experimental to commercial development. To help coordinate the operation, management and evolution of the Internet, the IAB established the Internet Engineering Task Force (IETF).

The IETF is a large open community of network designers, operators, vendors, and researchers concerned with the Internet and the Internet protocol suite. The activity is performed in a number of working groups organized around a set of several technical areas, each working group has a chair, and each area is managed by a technical area director. The IETF overall is managed by its chair and the Internet Engineering Steering Group (IESG), which is made up of the area directors.

The IAB has delegated to the IESG the general responsibility for the resolution of short- and mid-range protocol and architectural issues required to make the Internet function effectively, and the development of Internet standards.

**What is the IRTF?**

To promote research in networking and the development of new technology, the IAB established the Internet Research Task Force (IRTF). The IRTF is a set of research groups, generally with an Internet focus. The work of the IRTF is governed by its Internet Research Steering Group (IRSG).

In the area of network protocols, the distinction between research and engineering is not always clear, so there will sometimes be overlap between activities of the IETF and the IRTF. There is, in fact, considerable overlap in membership between the two groups. This overlap is regarded as vital for cross-fertilization and technology transfer.

## **(RFC 1594) What is the Internet Society?**

The Internet Society is a relatively new, professional, non-profit organization with the general goal of fostering the well-being and continued interest in, and evolution and use of the Internet. The Society (often abbreviated ISOC) is integrating the IAB, IETF, and IRTF functions into its operation.

The following goals of the Society are taken from its charter:

- A. To facilitate and support the technical evolution of the Internet as a research and education infrastructure, and to stimulate the involvement of the scientific community, industry, government and others in the evolution of the Internet;
- B. To educate the scientific community, industry and the public at large concerning the technology, use and application of the Internet;
- C. To promote educational applications of Internet technology for the benefit of government, colleges and universities, industry, and the public at large;
- D. To provide a forum for exploration of new Internet applications, and to stimulate collaboration among organizations in their operational use of the global Internet.

More information about the Internet Society is available for anonymous FTP from the host: isoc.org in the directory: isoc. Information is also available via the ISOC gopher, accessible via "gopher isoc.org" if you are running a gopher client.

## What is the IANA?

The task of coordinating the assignment of values to the parameters of protocols is delegated by the Internet Architecture Board (IAB) to the Internet Assigned Numbers Authority (IANA).

These protocol parameters include op-codes, type fields, terminal types, system names, object identifiers, and so on. The "Assigned Numbers" Request for Comments (RFC) documents the currently assigned values from several series of numbers used in network protocol implementations. Internet addresses and Autonomous System numbers are assigned by the Registration Services portion of the InterNIC. The IANA is located at USC/Information Sciences Institute.

Current types of assignments listed in Assigned Numbers and maintained by the IANA are:

- Address Resolution Protocol Parameters
- BOOTP Parameters and BOOTP Extension Codes
- Character Sets
- Domain System Parameters
- Encoding Header Field Keywords
- ESMTP Mail Keywords
- Ethernet Multicast Addresses
- Ethernet Numbers of Interest
- Ethernet Vendor Address Components
- IANA Ethernet Address Block
- ICMP Type Numbers
- IEEE 802 Numbers of Interest
- Internet Protocol Numbers
- Internet Version Numbers
- IP Option Numbers
- IP Time to Live Parameter
- IP TOS Parameters
- Internet Multicast Addresses
- Inverse Address Resolution Protocol
- Machine Names
- Mail Encryption Types
- Mail System Names
- Mail Transmission Types
- MILNET X.25 Address Mappings
- MILNET Logical Addresses
- MILNET Link Numbers
- MIME Types
- MIME/X.400 Mapping Tables
- Network Management Parameters
- Novell Numbers
- Operating System Names
- OSPF Authentication Codes
- Point-to-Point Protocol Field Assignments
- Protocol Numbers
- Protocol and Service Names
- Protocol/Type Field Assignments
- Public Data Network Numbers
- Reverse Address Resolution Protocol Operation Codes
- SUN RPC Numbers
- TCP Option Numbers
- TCP Alternate Checksum Numbers
- TELNET Options
- Terminal Type Names



Version Numbers

Well Known and Registered Port Numbers

X.25 Type Numbers

XNS Protocol Types

For more information on number assignments, contact: [IANA@ISI.EDU](mailto:IANA@ISI.EDU).

## **RFC 1594 What is a NIC? What is a NOC?**

"NIC" stands for Network Information Center. It is an organization which provides network users with information about services provided by the network.

"NOC" stands for Network Operations Center. It is an organization that is responsible for maintaining a network.

For many networks, especially smaller, local networks, the functions of the NIC and NOC are combined. For larger networks, such as mid-level and backbone networks, the NIC and NOC organizations are separate, yet they do need to interact to fully perform their functions.

## **RFC 1594 What is the InterNIC?**

The InterNIC is a five year project partially supported by the National Science Foundation to provide network information services to the networking community. The InterNIC began operations in April of 1993 and is a collaborative project of three organizations: General Atomics provides Information Services from their location in San Diego, CA; AT&T provides Directory and Database Services from South Plainsfield, NJ; and Network Solutions, Inc. provides Registration Services from their headquarters in Herndon, VA. Services are provided via the network electronically, and by telephone, FAX, and hardcopy documentation.

General Atomics offers Information Services acting as the "NIC of first and last resort" by providing a Reference Desk for new and experienced users, and midlevel and campus NICs. The InterNIC Reference Desk offers introductory materials and pointers to network resources and tools.

AT&T services include the Directory of Directories, Directory Services, and Database Services to store data available to all Internet users.

Network Solutions, Inc. (NSI) provides Internet registration services including IP address allocation, domain registration, and Autonomous System Number assignment. NSI also tracks points of contact for networks and domain servers and provides online and telephone support for questions related to IP address or domain name registration.

All three portions of the InterNIC can be reached by calling (800) 444-4345 or by sending a message to [info@internic.net](mailto:info@internic.net). Callers from outside the U.S. can telephone +1 (619) 445-4600. Extensive online information is available at host [is.internic.net](http://is.internic.net), accessible via gopher or TELNET.

## **RFC 1594 What is the IR?**

The Internet Registry (IR) is the organization that is responsible for assigning identifiers, such as IP network numbers and autonomous system numbers, to networks. The IR also gathers and registers such assigned information. The IR delegates some number assignment authority to regional registries (such as NCC@RIPE.NET and APNIC-STAFF@APNIC.NET). However, it will continue to gather data regarding such assignments. At present, the Registration Services portion of the InterNIC at Network Solutions, Inc., serves as the IR.

## **RFC 1594 How do I find someone's email address?**

There are a number of directories on the Internet; however, all of them are far from complete. Many people can be found, however, via the InterNIC WHOIS services, or KNOWBOT. Generally, it is still necessary to ask the person for his or her email address.

## **How do I use the WHOIS program at the InterNIC Registration Services?**

There are several ways to search the WHOIS database. You can TELNET to the InterNIC registration host, rs.internic.net. There is no need to login. Type "whois" to call up the information retrieval program, or choose one of the other options presented to you. Help is available for each option. You can also run a client of the WHOIS server and point it at any whois database you'd like to search. Pointing a client at the whois server ds.internic.net will enable you to query the databases at three hosts: ds.internic.net, rs.internic.net, and nic.ddn.mil.

For more information, contact the InterNIC at (800) 444-4345 or the registration services group at (703) 742-4777.

## **How do I use the Knowbot Information Service?**

The Knowbot Information Service is a white pages "meta-service" that provides a uniform interface to heterogeneous white pages services in the Internet. Using the Knowbot Information Service, you can form a single query that can search for white pages information from the NIC WHOIS service, the PSI White Pages Pilot Project, and MCI Mail, among others, and have the responses displayed in a single, uniform format.

Currently, the Knowbot Information Service can be accessed through TELNET to port 185 on hosts cnri.reston.va.us and sol.bucknell.edu. From a UNIX host, use "telnet cnri.reston.va.us 185". There is also an electronic mail interface available by sending mail to netaddress at either cnri.reston.va.us or sol.bucknell.edu.

The commands "help" and "man" summarize the command interface. Simply entering a user name at the prompt searches a default list of Internet directory services for the requested information. Organization and country information can be included through the syntax: "userid@organization.country". For example, the queries "droms@bucknell" and "kille@ucl.gb" are both valid. Note that these are not Domain Names, but rather a syntax to specify an organization and a country for the search.

## **What is the White Pages at PSI?**

Performance Systems International, Inc. (PSI), sponsors a White Pages Project that collects personnel information from member organizations into a database and provides online access to that data. This effort is based on the OSI X.500 Directory standard. To access the data, TELNET to WP.PSI.COM and login as "fred" (no password is necessary). You may now look up information on participating organizations. The program provides help on usage. For example, typing "help" will show you a list of commands, "manual" will give detailed documentation, and "whois" will provide information regarding how to find references to people. For a list of the organizations that are participating in the pilot project by providing information regarding their members, type "whois -org \*".

Access to the White Pages data is also possible via programs that act as X.500 Directory User Agent (DUA) clients.

For more information, send a message to WP-INFO@PSI.COM.

## **RFC 1594 What is USENET? What is Netnews?**

USENET is the formal name, and Netnews a common informal name, for a distributed computer information service that some hosts on the Internet use. USENET handles only news and not mail. USENET uses a variety of underlying networks for transport, including parts of the Internet, BITNET, and others. Netnews can be a valuable tool to economically transport traffic that would otherwise be sent via mail. USENET has no central administration.

### **How do I get a Netnews feed?**

To get a Netnews feed, you must acquire the server software, which is available for some computers at no cost from some anonymous FTP sites across the Internet, and you must find an existing USENET site that is willing to support a connection to your computer. In many cases, this "connection" merely represents additional traffic over existing Internet access channels.

One well-known anonymous FTP archive site for software and information regarding USENET is `ftp.uu.net`. There is a "news" directory which contains many software distribution and information sub-directories.

It is recommended that new users subscribe to and read `news.announce.newusers` since it will help to become oriented to USENET and the Internet.

### **What is a newsgroup?**

A newsgroup is a bulletin board which readers interested in that newsgroup's particular topic can read and respond to messages posted by other readers. Generally, there will be a few "threads" of discussion going on at the same time, but they all share some common theme. There are approximately 900 newsgroups, and there are more being added all the time.

There are two types of newsgroups: moderated and unmoderated. A moderated newsgroup does not allow individuals to post directly to the newsgroup. Rather, the postings go to the newsgroup's moderator who determines whether or not to pass the posting to the entire group. An unmoderated newsgroup allows a reader to post directly to the other readers.

### **How do I subscribe to a newsgroup?**

You don't subscribe to a newsgroup. Either you get it on your machine or you don't. If there's one you want, all you can do is ask the systems administrator to try to get it for you.



