ELECTRONIC NETWORKS: INTERNET AND BITNET

by Carolyn House, Member Services Librarian, NELINET

This presentation outlines the three major "services" of Internet: e-mail, ftp and telnet. Benefits of each are described and tools for more easily accessing sources on the network are discussed.

The internet is an international network of networks that are comprised of university, government, commercial and private computers. They communicate with each other using TCP/IP (Transmission Control Protocol/Internet Protocol), which are protocols that allow dissimilar computers to speak to each other.

E-mail provides the ability to communicate electronically with friends and colleagues world-wide. It also enables a user to participate in electronic discussion groups on topics ranging from library reference and cataloging to gardening and recipes.

File Transfer Protocol (ftp) provides the capability to connect to a remote computer site and get a file from that site. Free copies of shareware software, data files and Internet documentation are examples of resources available via ftp.

Telnet is the ability to logon to a remote computer and use its resources as if you were at that location. Telnet provides connections to library catalogs, Free-Nets, free information databases and commercial services around the globe.

Traveling the Internet is exciting, though not yet intuitive. To facilitate navigation through the network, tools such as WHOIS, ARCHIE, HYTELNET, and Gopher have been developed. WHOIS databases contain information about users; they are used to find e-mail addresses. ARCHIE databases provide ftp site, directory and file name information. HYTELNET provides telnet address information, as well as instructions for using telnet sites. Gopher is a menu-driven front-end to many of the sources and services of the Internet.
Electronic Networks: Internet and BITNET

We have chosen to focus this workshop on two major electronic networks, Internet and BITNET. These networks are very popular in the library community because of their research and education goals. There are many other electronic networks in the world, such as Prodigy and Compuserve, but networks such as these serve more commercial purposes. Many of you are already very familiar with the concept of electronic networks - OCLC has been providing services on their electronic network for over twenty years. The difference between OCLC and Internet or BITNET is the OCLC network is proprietary, which means you may only use and access OCLC services on their network. With BITNET and Internet you have access to hundreds of different services.

BITNET became popular in the early 1980’s in research institutions as a method of collaboration. BITNET allows the user to send electronic mail messages, to batch data file transfers, and conduct interactive messaging. BITNET allows a user to send and receive electronic mail messages and data files and perform interactive messaging (think of it as a phone conversation except you use the computer to communicate). BITNET offerings are strongest in the area of servers, providing access and administration for services such as electronic journals and discussion groups (listservs). BITNET has been overtaken by the more sophisticated Internet network. BITNET sites still exist, and gateways have been developed to connect BITNET and Internet sites.

The Internet is an international collection of computer networks, mostly based in the U.S., using the Internet Protocols (TCP/IP). These protocols allow different computer systems to communicate with one another. The Internet offers electronic mail, transfer of programs and data files (FTP), and allows a user to login to a remote computer and use the resources on the remote computer (Telnet). The Internet was started with by the Department of Defense in the early 1960’s with ARPANet and expanded with National Science Foundation grants and oversight. The National Science Foundation decided on a major upgrade and expansion of this network in 1987, and the growth of the network has exploded since that time.

One does not need both Internet and BITNET access. Internet users can reach the resources of both BITNET and Internet. BITNET users can communicate using e-mail with Internet and BITNET users (thanks to highspeed links established in the BITNET II project), but a BITNET user cannot use FTP and Telnet. Some users have both services, since historically BITNET preceded Internet access in many research institutions.

To ensure that the Internet is constantly upgraded to meet the demands of an expanding user base, to provide access to a wider constituency of users, and to make sure that libraries are not left out of the equation, the past two years have seen the development and passage of the High Performance Computing Act of 1991, more commonly known as the “NREN” bill. This law and related pending legislation will provide funding for the National Education and Research Network, which would include an upgrade of the present Internet, expanding access to libraries and K-12 schools. The money hasn’t been doled out yet for these purposes. The National Science Foundation will not be gradually get out of the business of operating and expanding the Internet. Librarians need to pay attention to this legislation, since who is going to pay for your library or information center’s access to Internet, and how much it will cost, will depend this funding.

Beyond the Walls: The World of Networked Information
This video was produced at Syracuse University in cooperation with NYSERNet, the New York state mid-level regional Internet provider. This video and an instructional workshop package may be purchased from NYSERNet, 111 College Place, Syracuse, NY 13244 (315-443-4120) for $95.00.
GLOSSARY

address
There are two separate uses of this term in Internet networking: "electronic mail address" and "internet address". An electronic mail address is the string of characters that you must give an electronic mail program to direct a message to a particular person. See "Internet address" for its definition.

anonymous ftp
The procedure of connecting to a remote computer as an anonymous or guest user, in order to transfer public files. See also FTP.

archie
A service which tracks the contents of over 800 anonymous FTP sites, allowing you to determine what files are available and from what source.

ARPANET
Advanced Research Projects Agency Network: A pioneering early 1960's network funded by ARPA. It served as the basis for early networking research as well as a central backbone during the development of the Internet.

ASCII
A standard coding technique for representation of information for computer usage and transmission. "7 BIT ASCII" contains 128 possible character values from hexadecimal 00 to 7F. "8 BIT ASCII" or "Extended ASCII" contains 256 possible character values from hexadecimal 00 to FF.

Async
A character-at-a-time communication technique.

backbone
High speed connection within a network which connects shorter, usually slower circuits. Also used in reference to a system that acts for a "hub" of activity.

bandwidth
The difference, in Hertz (Hz), between the highest and lowest frequencies of a transmission channel; the greater the bandwidth the "faster" the line.

BBN
Bolt, Beranek and Newman, Inc.: The Cambridge, MA company responsible for development, operation and monitoring of the ARPANET, and presently NearNet, the New England regional Internet provider.

BITNET
Because It's Time NETwork: A cooperative network of primarily academic institutions, serving more than 2,300 sites in 32 countries. The major services supported are e-mail, mailing lists and file transfer.

Client Server Model
The model of interaction in a distributed system in which a program at one site sends a request to a program at another site and awaits a response. The requesting program is called a client; the program satisfying the request is called the server.

dedicated line
With a dedicated line connection, the Internet provider brings a cable and a router to your site. Used with mainframes, minicomputers, and LANs, to connect multiple users at a site to the Internet.
This type of connection has an end user dialing into a host computer, using a microcomputer and modem, to reach the Internet.

The domain portion of an e-mail address indicates the name and type of organization the person is affiliated with. For example, in the address mj@nelinet.org, the domain portion is what follows the @ sign and indicates that the person is at the organization called NELINET.

To copy a file from a host computer to your microcomputer.

DIGITAL SIGNAL LEVEL 0. One 56 Kbps or 64 Kbps standard digital telecommunications channel.

DIGITAL SIGNAL LEVEL 1. An AT&T standard for the transmission of high speed data over T1C facilities (1.544 Mbps).

DIGITAL SIGNAL LEVEL 3. An AT&T standard for the transmission of high speed data over T3 facilities (44 Mbps).

A terminal which operates asynchronously using ASCII coding for communicating. These devices generally do not perform storage functions or any local operations available on a microcomputers or intelligent terminals.

Electronic Mail: allows people to send messages to each other over a telephone or data line using a computer and modem, or a dedicated line terminal.

A popular local area network technology invented by Xerox. Workstations communicate using a technology called CSMA/CD (carrier sense multiple access/collisions detection) in which if data are being sent by one node and it detects a collisions with other data, it waits and then retransmits. It is a comprehensive baseband data communications standard that interconnects computers and local area networks. The baseband transmission speed is rated at 10 Mbps. The standard version of Ethernet is defined by IEEE in 802.3, 10BASE2. A broadband version is defined in 10BASE3; Thin Ethernet using RG-58 coax cable is defined in 10BASE2, and a version using twisted pair cable is specified in 10BASET.

File Transfer Protocol: The Internet protocol (and program) used to transfer files between host computers.

For Your Information: Informal documents on how the Internet works. For example, answers to frequently asked questions and bibliographies.

Hardware and software connecting two dissimilar networks that adds security, flow control and protocol conversion. Gateways typically handle protocol-conversion operations across a wide spectrum of communications functions or layers. Gateways require software programming and central management. Gateways usually operate at the transport layer or above in
the OSI model and provide protocol translation as well as rouging. As a result of the more complex processing done in gateways, they are usually slower in speed than bridges or routers.

hostname

The name given to a computer.

internet

Interconnected networks that function as a single, large virtual network. These networks are composed of disparate computer systems throughout the world.

Internet (with a capital 'T')

The largest internet in the world consisting of large national backbone nets (such as MILNET, NSFNET) acting as one virtual network. The services available on Internet included e-mail, ftp and telnet.

internet address

An assigned number or name which identifies a host in an Internet. It has two or three parts: network number/name, optional subnet number/name and host number/name.

IP

Internet Protocol: The Internet standard protocol provides a common technology layer over dissimilar networks to move packets of data among host computers.

ISDN

Integrated Services Digital Network - A digitized telecommunications network being defined by CCITT in which data, voice, facsimile and video would be carried over the same communications channel using OSI standards.

Janet

Joint Academic Network - The United Kingdom's private wide area network which links higher education sites and research centers.

Kermit

A popular file transfer and terminal emulation communications program and protocol.

list

Mailing list on the network, also referred to as a conference.

listserv

On BITNET, an automated program for maintaining discussion lists, which takes care of additions to and removals from a list. It also provides archives of postings, back issues of electronic journals and useful documentation for uscrs. A "listserv" is the computer on which the listserv is operated.

message

For the purposes of this workshop, a message is an electronic mail document intended for a single recipient. See also Posting.

mid-level regional networks

Networks invested with the responsibility to provide Internet access to research and development institutions within their regions. There are about thirty of these networks in the United States and many are run on a state-wide basis. New England is served by two of these networks, NearNet and JYVNCNet.
NIC
Network Information Center: An organization which provides network users with information about services provided by the network. Such centers provide user assistance, document service, training, etc.

NOC
Network Operations Center: An organization that is responsible for maintaining a network. Tasks include monitoring, control, troubleshooting and support.

NREN
National Research Educational Network: Proposed successor to the Internet, financed by the "High Performance Computing Act of 1992", PL102-194. The NREN bill provides for the National Science Foundation to assist regional networks to upgrade their capabilities and for assisting colleges, universities, libraries and K-12 to connect to the Network.

NSF
National Science Foundation: Sponsors of the NSFNET.

NSFNET
National Science Foundation Network: The NSFNET is part of the Internet. The NSFNET is a highspeed "network of networks" which is hierarchical in nature. At the highest level is a network that spans the continental United States. Attached to that are mid-level networks and attached to the mid-levels are campus and local networks. It also has connections out in Canada, Mexico, Europe, and the Pacific Rim.

OSI
Open Systems Interconnect: a suite of protocols being developed by NISO to connect disparate computer systems worldwide. Although the Internet protocols are the de facto standard today, it is predicted that the OSI protocols will supersede the Internet protocols in the future, as they allow for more sophisticated network operations.

packet
A cluster of data transmitted on the network.

packet switch
Data transmission technique in which data is segmented and routed in packets.

posting
For the purposes of this workshop, an electronic mail document sent to a list for distribution to all subscribers of the list. See also Message.

protocol
A formal set of rules governing the format, timing, and error control of transmissions on a network.

RFC
Request For Comments: The document series, begun in 1969, which describes the Internet suite of protocols and related experiments. Not all RFCs describe Internet standards, but all Internet standards are written up as RFCs. See also FYI.

server
A computer that provides services to network users, such as shared access to a file system, a printer, a modem or an electronic mail system.
SLIP  Serial Line Internet Protocol: Enables a microcomputer to become an Internet host. Instead of dialing into a remote host, your microcomputer would be the host. SLIP software, such as FTP Software, is necessary to enable this connection.

TCP  Transmission Control Protocol: The Internet standard high-level protocol for transferring files from one computer to another.

Telenet  A public packet-switching network purchased by US Sprint. Now known as "SprintNet", this is a commercial network service and should not be confused with Telnet. See below.

TELNET  The Internet protocol which allows you to log onto a remote host computer.

terminal emulation  Software program that allows a microcomputer to look like and act as a mainframe or minicomputer terminal.

ULTRIX  UNIX-based operating system for Digital Equipment Corporation computers.

UNIX  An operating system developed by Bell Laboratories that supports multiuser and multitasking operations.

upload  To copy a file from your microcomputer to a host computer.

VMS  Virtual Memory System: A Digital Equipment Corporation operating system.

WHOIS  A program that allows you to search a database of e-mail addresses to find out who a given address belongs to.

X.25  A CCITT standard that defines a protocol for gaining access to public packet-switching networks. The latest (1988) version of this protocol is used in the OCLC packet-switch network.

e39.50  A NISO standard entitled "Information Retrieval Service Definition and Protocol Specification for Library Applications." It has important applications for library and information service vendors and it gives guidelines for format of queries, provides for the transfer of database records, and defines other record types. This standard is designed as an within the Open Systems Interconnection (OSI) protocol suite but is also being mapped into the TCP/IP protocol suite.
E-mail

E-mail means never having to lick a stamp again.

What is E-mail?

E-mail is the abbreviated form of the term electronic mail. Electronic mail allows an individual to send a message to another person on the network using a computer and a modem, or a dedicated line dumb terminal. The message is “delivered to a mailbox”, i.e. it is stored on a disk, where the recipient can retrieve it at any time. It is possible to indicate more than one addressee when sending e-mail.

Why use E-mail?

1. Delivery of electronic mail is much faster than standard mail delivery.
2. Delivery of electronic mail is less expensive.
3. If your message/posting fails to reach its intended address, it is returned to you immediately.
4. Reuse of material in electronic form is far easier because the text is already in machine readable form.

An example of the benefits of e-mail:

You are collaborating with someone to write an article, and you need to have her/him make comments on what you have written.

Common procedures:

a. You create the article on your word processor
b. You print the article and make a photocopy
c. You fax the article
d. They make a photocopy of the document
e. They make corrections
f. They fax it back to you
g. You make the corrections on your computer

E-mail procedures:

a. You create the article on your word processor and save it as an ASCII file
b. You send the file via e-mail
c. They receive the file, make corrections on the computer, and send the corrected file to you
d. You receive the file with the corrections and print the final copy
E-mail Addresses

Every user on an electronic network is provided with an e-mail address. This address identifies a user on the network. The address you are given by your network administrator is the address that must be used for you to receive messages. An e-mail address usually has at least two parts, username and organization, and is expressed as name@domain.

BITNET Addresses

The username is always to the left of the @ sign. The computer or organization is always to the right of the @ sign. The address should always have .bitnet at the end.

An example of a BITNET address is: njb@nellnet.bitnet

Internet Addresses

Internet e-mail addresses follow the domain name system. An e-mail address is constructed as follows: user@domain, with the domain specified at several levels. A typical domain is comprised of a machine name, an institution, and a top level domain.

An example of an Internet address is: jdoe@computer.university.edu

Top-Level Domains

- .edu Educational Institution
- .com Commercial
- .gov Government
- .mil Military
- .org Non-Profit Organization
- .net Network Operation and Information Centers

Country Codes

- .ca Canada
- .jp Japan
- .au Australia
- .il Israel
- .uk United Kingdom
- .se Sweden
- .us United States
Common Mail Commands

Whatever your mail system, you should be able to send a message/posting, reply to a message/posting, get a directory of your mail, etc. Check with your system administrator for the actual commands, and possible abbreviations for these functions.

- send - moves the e-mail from the sender's computer to the recipient's computer
- reply - respond to an e-mail message/posting
- read - read the text of an e-mail message/posting
- dir - display a list of e-mail messages/postings
- delete - erases e-mail messages/postings

An Example of an E-Mail Directory

```
MAIL> dir

<table>
<thead>
<tr>
<th>#</th>
<th>From</th>
<th>Date</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>IN%&quot;PACS-L#UHUFVM1.B</td>
<td>13-MAR-1992</td>
<td>Swiss OPACS</td>
</tr>
<tr>
<td>6</td>
<td>IN%&quot;<a href="mailto:harper@CONVEX.CS">harper@CONVEX.CS</a></td>
<td>13-MAR-1992</td>
<td>RE: MEDLINE on CD, also USA white</td>
</tr>
<tr>
<td>7</td>
<td>IN%&quot;moepmisa@TECNET1</td>
<td>13-MAR-1992</td>
<td>HELLO/QUESTIONS...</td>
</tr>
<tr>
<td>11</td>
<td>IN%&quot;moepmisa@TECNET1</td>
<td>13-MAR-1992</td>
<td>MORE QUESTIONS...</td>
</tr>
<tr>
<td>12</td>
<td>IN%&quot;<a href="mailto:ccho@CELLO.RPL">ccho@CELLO.RPL</a></td>
<td>13-MAR-1992</td>
<td>WANTED: CD-ROM</td>
</tr>
<tr>
<td>13</td>
<td>IN%&quot;<a href="mailto:geoff@BODLEIAN.E">geoff@BODLEIAN.E</a></td>
<td>13-MAR-1992</td>
<td>Seeking experiences of using Sun</td>
</tr>
<tr>
<td>14</td>
<td>IN%&quot;<a href="mailto:dancey@MILTON.U">dancey@MILTON.U</a></td>
<td>13-MAR-1992</td>
<td>RE: Hitachi cdr1503s - iso 96</td>
</tr>
<tr>
<td>15</td>
<td>IN%&quot;OPK%NHCU.bitnet</td>
<td>13-MAR-1992</td>
<td>RE: CDROMs work with OS/2</td>
</tr>
<tr>
<td>16</td>
<td>IN%&quot;<a href="mailto:silverton@MALA.B">silverton@MALA.B</a></td>
<td>13-MAR-1992</td>
<td>Manufacturing Disks</td>
</tr>
<tr>
<td>17</td>
<td>IN%&quot;<a href="mailto:CHARLESW@QUCDN.Q">CHARLESW@QUCDN.Q</a></td>
<td>13-MAR-1992</td>
<td>RE: INSIDE MACINTOSH on CDrom</td>
</tr>
<tr>
<td>18</td>
<td>IN%&quot;<a href="mailto:CHARLESW@QUCDN.Q">CHARLESW@QUCDN.Q</a></td>
<td>13-MAR-1992</td>
<td>RE: Write-Once</td>
</tr>
<tr>
<td>19</td>
<td>IN%&quot;<a href="mailto:pac@CERC.WVU.WVN">pac@CERC.WVU.WVN</a></td>
<td>13-MAR-1992</td>
<td>RE: Toshiba CD/Future Domain</td>
</tr>
</tbody>
</table>
```

Press RETURN for more...
Reading the E-Mail Header

Received: These lines are most commonly ignored, because they accumulate as the message travels. They list each computer or system the message has to travel through to get to your computer. Over the Internet, there is always one "Received:" and there may be as many as four or five.

Message-ID: This line is intended mainly for tracing mail routing, and you do not need to write down or remember this number. The number identifies the date and time of the message, and identifies where the message originated. Every "Message-ID:" is unique.

Date: This line contains the date and time (military time) the message was sent.

From: This line is the e-mail address of the person who sent the message. This is also the address you would use to reply to the message of a particular individual.

Sender: This line is added by the mail delivery person if From: was supplied by the user and does not match the real sender. This feature was designed to allow secretaries to send mail for their bosses or for a single person to send mail on behalf of a group.

To: This line lists the e-mail address of the recipients of the message. There may also be a "Cc:" line which lists additional addresses where the message was sent.

Subj: This line is used to list a brief description of the subject of the message. This will appear in the directory of your mail messages.

Example of an E-Mail Header

From: IN%v.verkade@lynx.northeastern.edu
To: IN%MMCKENNA@RCNVMS.RCN.MASS.EDU
CC:
Subj:NEASIS

Received: from helios.northeastern.edu by RCNVMS.RCN.MASS.EDU (PMDF #12408) id <01G1ZGF78GBKCG0D82@RCNVMS.RCN.MASS.EDU>; Wed, 25 Mar 1992 16:29:52 EST
Date: Wed, 25 Mar 92 16:29:52 EST
From: v.verkade@lynx.northeastern.edu
Subject: NEASIS
In-reply-to: <memo.1714109@lynx.northeastern.edu>
To: MMCKENNA@RCNVMS.RCN.MASS.EDU
Message-id: <memo.1746361@lynx.northeastern.edu>
Example of Message Received

#22 13-MAR-1992 15:31:05.04
From:IN%"RAYNIRO@sud.ed.ray.com"
To:IN%"MMCKENNA@RCNVMS.RCN.MASS.EDU"
CC:
Subj:RE: Case Studies

Received: from relay1.UU.NET by RCNVMS.RCN.MASS.EDU (PMDF #12408) id 
   <01GHLMUW8CKWZGZS@RCNVMS.RCN.MASS.EDU>; Fri, 13 Mar 1992 15:30 EST
   (5.61/UUNET-internet-primary) id AA19354; Fri, 13 Mar 92 15:30:27 -0500
Received: from rayssd.UUCP by uunet.uu.net with UUCP/RMAIL (queueing-rmail) id
   152823.3174; Fri, 13 Mar 1992 15:28:23 EST
Received: from SUD1.ED.RAY.COM by rayssd.ssd.ray.com (5.65/8.26) with SMTP ;
   Fri, 13 Mar 92 13:33:19 -0500
Date: Fri, 13 Mar 92 13:35 EDT
From: RAYNIRO@sud.ed.ray.com
Subject: RE: Case Studies
To: MMCKENNA@RCNVMS.RCN.MASS.EDU
Message-id: <9203131833.AA21324@ray.com>
X-VMS-To: IN%"MMCKENNA@RCNVMS.RCN.MASS.EDU"

Press RETURN for more...

MAIL>
#22 13-MAR-1992 15:31:05.04

Hi Mary! Please let Mary Jo know her message was received just fine.
   Thanks. —Ray Niro

MAIL>

Bounced Mail

When an e-mail address is incorrect in some way (the system name, user name, etc may be wrong) the mail system will bounce the message/posting back to the sender. There will be a message in the subject field noting that the message/posting was undeliverable.
LISTSERV

On BITNET, Listserv is an automated program for maintaining discussion lists. The program takes care of additions to and removals from a list. It also provides archives of postings, back issues of electronic journals and useful documentation for users. Any mail sent to the "list" is sent to all subscribers/members of the group. A listserver is the computer on which the listserv is operated.

Definitions

List Name
The 1-8 character name by which a distribution list is identified to the server. It will often end in "-L", eg. FACS-L, ILL-L

List userid
The network address/userid@node/mailbox to which mail and files must be sent in order to be redistributed to the list. The first part "userid" will always be the list name, while the second part "node" is the node name of the LISTSERV server. Example:UG-L@BITNIC.

LISTSERV userid
The network address of the LISTSERV server, e.g. LISTSERV@FRECPII.

List owner
The person(s) who maintain the list and who have authority to perform list-maintenance functions. You will sometimes get a message saying that "Your request has been forwarded to the list owner".

List moderator
The person who reviews material sent by users to the list before allowing the server to distribute them. If the list is controlled by a moderator you will get a message saying "Your mail has been forwarded to the list moderator". Most distribution lists do NOT have a moderator and mail received by the server is distributed "as is".

BULLETINS

Some network administrators will set up a Bulletin (an electronic bulletin board) to receive postings from a variety of Internet/BITNET interest groups, such as PACS-L or ILL-L. This eliminates the need for several people in an organization to subscribe to a given list/conference.

Because there are so many mail postings on a list/conference, using the Bulletin instead will prevent your mailbox from cluttering up with hundreds of messages if you go away and forget to unsubscribe.

A Bulletin utility permits a user to create a posting for reading by all users. Users are notified upon logging in that new postings have been added, and the topic of the posting. Actual reading of the postings is optional. Postings are automatically deleted when their expiration date has passed.
LISTSERV Subscription Information

ILL-L

A moderated discussion list for interlibrary loan staff.

Location: University of Vermont, Burlington, VT

Contact: Patricia Mardeusz, Bailey-Howe Library, University of Vermont, (802) 656-2242

Subscribe: Send the following e-mail message to listserv@uvmvm.bitnet
BITNET SUBSCRIBE ILL-L FirstName LastName

Unsubscribe: Send the following e-mail message to listserv@uvmvm.bitnet
BITNET UNSUBSCRIBE ILL-L FirstName LastName

INT-LAW / [Last Updated 28 Jan 1992]

INT-LAW (Foreign and International Law Librarians) is a list on BITNET for librarians and others interested in exchanging information related to foreign, comparative and international legal materials and issues. Selected topics in the six months since INT-LAW began include the READEX CD-ROM Index to United Nations documents, databases containing information on foreign and international law, the "European Court Reports", sources of information on careers in international law, GATT panel reports, the "National Trade Data Bank" CD-ROM, etc. INT-LAW came up on April 31, 1991. There are approximately 185 subscribers to INT-LAW at present, mainly from the U.S. Other countries represented include Canada, Mexico, and Germany.

Subscribe: Send the following e-mail message to LISTSERV@UMINN1.BITNET
BITNET SUBSCRIBE INT-LAW FirstName LastName

Subscribe: Send the following e-mail message to LISTSERV@VM1.SPCS.UMN.EDU
INTERNET SUBSCRIBE INT-LAW FirstName LastName

Unsubscribe: Substitute "UNSUBSCRIBE" for "SUBSCRIBE" in the above e-mail messages.

Moderator: Send any questions, comments, etc. to: Lyonette Louis-Jacques (L-LOU@UMINN1) or Mila Rush (M-RUSH@UMINN1). Mila Rush is the listowner.
LISTSERV Subscription Information

LIBREF-L

This list is a discussion of the changing environment of library reference services and activities. Topics include traditional reference services, patron expectations, staff training, as well the impact of CD-ROM and online searching on reference service. This forum serves as a professional networking and information source sharing ideas, solutions and experiences. This list is run from the LISTSERV at Kent State University and moderated by the Reference Librarians at Kent State University Libraries.

Subscribe: Send the following e-mail message to LISTSERV@kentvm.BITNET
BITNET SUB LIBREF-L Your Name

Subscribe: Send the following e-mail message to LISTSERV@kentvm.kent.edu
INTERNET SUB LIBREF-L Your Name

Unsubscribe: Substitute "UNSUBSCRIBE" for "SUBSCRIBE" in the above e-mail messages.

Please do NOT send this command to the list address LIBREF-L@KENTVM. Doing so will cause your request to be broadcast to all subscribers and will not cause your name to be added to the list.

Owners: Diane Kovacs (dkovacs@kentvm), Laura Bartolo (lbartolo@kentvm), Gladys Bell (gbell@kentvm), Mary LuMont (mlumont@kentvm), Julie McDaniel (jmcdaniel@kentvm), Carolyn Radcliff (cradcliff@kentvm), Kara Robinson (krobinso@kentvm), Barbara Schlomka (bschloma@kentvm)

MEDLIB-L

MEDLIB-L is a forum for librarians in the health sciences. Discussion will include practical and theoretical issues in both the public and technical service areas. This list may be used to exchange ideas, questions, concerns and announcements of particular interest to health sciences librarians.

Subscribe: Send the following e-mail message to LISTSERV@UBVM.BITNET
BITNET SUB MEDLIB-L yourfirstname yourlastname

Subscribe: Send the following e-mail message to
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PACS-L

The University Libraries and the Information Technology Division of the University of Houston have established this list that deals with all computer systems that libraries make available to their patrons, including CD-ROM databases, computer-assisted instruction (CAI and ICAI) programs, expert systems, hypermedia programs, library microcomputer facilities, locally-mounted databases, online catalogs, and remote end-user search systems. The list is open for general subscription.

Archives of PACS-L are stored in the PACS-L FILELIST. To receive a list of files send the command INDEX LISTNAME to LISTSERV@UHUPVM1.

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Contact: Charles Bailey <LIB3@UHUPVM1.BITNET@VM1.NODAK.EDU>
Owner: LIBPACS@UHUPVM1.BitNet
1. Never forget that the person on the other side is human.
2. Don't blame system administrators for their users' behavior.
3. Be careful what you say about others.
4. Be brief.
5. Proofread any message/posting you send to make sure the message/posting will not be misunderstood.
6. Include a descriptive subject line in your message/posting. When responding to a message/posting, the subject line should be the same with the word "RE:" at the beginning.
7. Think about your audience.
8. Be careful with humor and sarcasm.
9. Try not to send the same message/posting to several mailing lists.
10. Summarize if you are following up with the results from a previous inquiry.
11. If you are responding to a message/posting, include part of the original message/posting in your response, or refer to the contents of the original message/posting.
12. If requested, remember to send responses directly to the person involved - don't post the response for everyone on the list to read.
13. Read all follow-ups and don't repeat what has already been said.
14. Be careful about copyrights and licenses.
15. Cite appropriate references.
16. Don't overdo signatures. The main purpose of a signature is to help people locate you.
17. Avoid control characters.
18. Keep message/posting to only one subject. This allows the reader to quickly decide whether they need to read the message/posting.
Electronic Journals

There are a growing number of electronic journals available on both Internet and BITNET. Because they are relatively inexpensive to produce, subscriptions are free or low cost. To subscribe to an electronic journal, you generally only need to send an e-mail message to the publisher requesting a subscription.

For a complete list of electronic journals available on BITNET and Internet:

send e-mail to listserv@uoitawa.bitnet
messages: get ejourn1 directry
get ejourn2 directry

Below are examples of free e-journals of interest to librarians:

**ACONET**
Acquisitions Librarians Electronic Network.

send e-mail to cri@cornell.bitnet

**ALCTS NETWORK NEWS**
Association for Library Collections and Technical Services

send e-mail to listserv@ulcvm.bitnet
message: subscribe alcts firstname lastname

**MeckJournal**
Published by Meckler Publishing. It can be accessed two ways:

send e-mail to meckler@tigger.jvnc.net
message: subscribe meckjournal [your address]
or
telnet to nisc.jvnc.net
type nicol, no password is necessary

**Public Access Computer Systems Review**
This is sent automatically to PACS-L subscribers. For a list of article files:

send e-mail to listserv@uhupvm1.bitnet
message: index pacs-l
Community Computing: If It Plays in Peoria... Video

This video was produced by the National Public Telecomputing Network (NPTN).

Description of NPTN

NPTN is attempting to establish as many community computer systems throughout the country as possible. NPTN wishes to link these systems together in a common network for resource sharing. Some information services are available to all affiliate community computer systems. NPTN also takes positions on issues affecting community computing and develops new and innovative technology.

This is a non-profit organization which is funded completely by voluntary membership dues from the users of community computer systems, corporate and foundation grants and donations, and other fund-raising activities.

To obtain a free package which includes this video, informational brochures, and The Blue Book: A Guide to the Development of Free-Net Community Computer Systems, write to the address below:

National Public Telecomputing Network
BOX 1987
Cleveland, OH 44106
216-368-2733

A copy of this package is at the front of the room for your perusal during breaks.
FTP (File Transfer Protocol)

The FTP protocol is used to transfer a file between two host computers. FTP is also the command which initiates the transfer.

Most FTP sites are operated as a courtesy by an institution. You are encouraged to use FTP sites between the hours of 6 PM and 8 AM weekdays, and anytime on weekends, paying attention to time zone differences. These sites may have their regular computer operations overloaded if people are using their FTP facility during weekdays. Please use FTP sites with these guidelines in mind.

FTP Uses

The most common use of FTP is to connect to an FTP site, which is a computer facility which has agreed to store computer files in some spare storage space on their computer. The user may log into an FTP site and transfer (FTP) a file to their host computer. Most FTP sites only allow users to transfer files from an FTP site. You need special permission to be able to transfer a file to an FTP site.

FTP sites usually require users to log in to their systems using “Anonymous” as the user id. Hence, the term anonymous FTP site is frequently used. For the password, you are usually prompted to enter your e-mail address, or simply enter “guest”.

When you move a file from an FTP site to your host computer, you still may need to do one final step. This is to move the file from your host computer to your local microcomputer. This is accomplished by downloading the file to your computer. The most frequent program and protocol used for this procedure is Kermit. Moving the file between host computers is usually a very fast operation. Downloading the file from your host to your local microcomputer can be a very slow process. The file will be downloaded at the connection speed of your modem.

What’s available by FTP?

The greatest advantage of FTP is the ability to transfer computer programs across the network. BITNET allows for data files to be transferred, but not program files. FTP allows you to transfer both types of files over Internet.

Every type of computer program you can imagine can be found at some FTP site on the Internet. Documents are also commonly transferred by using FTP. A document may also be transferred using e-mail, but with e-mail you have to request it and then rely on someone else to send it to you. Using FTP, you simply go out and get the document yourself.

FTP Site Directories

When you reach an FTP site, you must determine what directory the file is kept in on the host computer. Files are arranged in directories on a mainframe/minicomputer in the same way they are arranged on a microcomputer hard disk. The following page has a list of FTP sites and popular FTP files which include the FTP address, and the directory in which you the FTP files are located.
Where to find FTP SITES

There are two fast routes to a directory of FTP Sites. The first is to obtain a huge document known as the list of FTP Sites. This enormous document has a strange arrangement (alpha by domain name, with little descriptive information of contents), and is quickly out of date. This is not the best route to take, although if you need a hardcopy list of FTP sites, here’s how to get it:

FTP to PILOT.NJIN.NET  Directory pub/ftp-list  Filename: FTP.LIST

The second option is to use an FTP finder program called ARCHIE. This is the McGill School of Computer Science Archive Server Listing Service. ARCHIE is really two software programs. The first maintains and updates a list of hundreds of FTP sites. The second allows a user to telnet to a server containing ARCHIE and search the database of FTP sites.

To use ARCHIE:

Telnet to: ARCHIE.SURA.NET  Login ARCHIE  See the ARCHIE help files for details on its use.

or

Telnet to: ARCHIE.UNLEDU  Login ARCHIE

Popular FTP Sites

<table>
<thead>
<tr>
<th>Hostname</th>
<th>Directory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>wsmr-simtel20.army.mil</td>
<td></td>
<td>IBM PC Archives</td>
</tr>
<tr>
<td>archive.umich.edu</td>
<td>(141.211.164.153)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Please use numeric address if possible as archives move occasionally.</td>
</tr>
<tr>
<td></td>
<td>/MAC</td>
<td>Macintosh software</td>
</tr>
<tr>
<td></td>
<td>/MSDOS</td>
<td>IBM PC software</td>
</tr>
<tr>
<td></td>
<td>/APLLE2</td>
<td>APLLE2 software</td>
</tr>
<tr>
<td>nnsc.nsf.net</td>
<td>/resource-guide</td>
<td>Internet Resource Guide</td>
</tr>
<tr>
<td></td>
<td>/internet-tour</td>
<td>“Tour of the Internet” - hypercard2</td>
</tr>
<tr>
<td>sumex-aim.stanford.edu</td>
<td></td>
<td>Macintosh Archive</td>
</tr>
<tr>
<td>ariel.unm.edu</td>
<td>/library</td>
<td>Library Information</td>
</tr>
<tr>
<td>ftp.utexas.edu</td>
<td>pub/netinfo/docs</td>
<td>Network Reading List</td>
</tr>
<tr>
<td>watsun.cc.columbia.edu</td>
<td>/kermit</td>
<td>Kermit</td>
</tr>
<tr>
<td>hydra.uwo.ca</td>
<td>/libsoft</td>
<td>Library Software Archive</td>
</tr>
</tbody>
</table>
TELNET

Telnet is the Internet protocol that allows you to connect to a remote host computer to use its resources. These include library catalogs, free information databases, commercial databases and a large number of miscellaneous services. "Telnet" is also the command used to initiate the connection to a remote computer over the Internet.

Why Use Telnet?

Telnet can provide low cost access to many resources. Many libraries have made their online catalogs accessible to anyone over the Internet without requiring accounts or passwords. Having access to these catalogs is advantageous for various reasons. It can help you to identify new materials on a topic in a collection that is stronger than the local collection. It allows you to evaluate the holdings of another institution, and opens up avenues for cooperative collection development. Especially beneficial is access to locally created specialized databases, such as indexes to a song or slide collection or to local newspapers. Finally, if you are considering purchasing a local OPAC system, you may telnet into other sites to test and evaluate the capabilities of various systems.

In addition to library catalogs, telnet provides the means to access commercial databases, such as OCLC's EPIC and FirstSearch, and Dialog, reducing the telecommunications costs for these services. Internet searchers can also reach Campus Wide Information Systems, Freenets, and databases on a wide variety of topics.

Where to Telnet

Several guides have been compiled that list sites to which you can telnet. Many of these directories are available in electronic form from various FTP sites. Following are documents which contain a mere sampling of what you can explore over the Internet via telnet.

Internet Resource Guide

The Internet Resource Guide is a comprehensive document which describes the major resources available over the Internet. These include library catalogs, data archives, online white pages, network information centers and supercomputer centers. It also identifies who can use the resources, explains how to reach them and lists contacts for more information.

    anonymous ftp to nscl.nsc.net
    directory = resource-guide
    filename = resource-guide.txt.tar.Z
    (or you can select single chapters)
Library OPACs

For comprehensive lists of Internet accessible public access catalogs there are documents which you can obtain electronically via anonymous ftp. Below are two. (Note: these are very long files - well over 100 pages.)

UNT's Accessing On-Line Bibliographic Databases
Provides an international list of accessible catalogs which includes the telnet address, how to log on and off, and usernames and passwords to use. Appendixes provide instructions for using various OPAC systems, e.g. Dynix, GEAC, INOPAC and NOTIS.

anonymous ftp to ftp.unt.edu
directory = library
filename = librarylist.txt

Internet-Accessible Library Catalogs and Databases
Lists over 100 online catalogs, Campus Wide Information Systems, and Bulletin Board Systems. Includes descriptions of the resources and how to access them. Also includes a list of printed resources.

anonymous ftp to ariel.lunr.edu
directory = library
filename = internet.library
or
e-mail to listserv@unmvm.bitnet
message = GET LIBRARY PACKAGE

Hundreds of libraries all over the world have made their online catalogs available over the Internet. There are far too many to list here, but here are two examples:

CARL - Colorado Alliance of Research Libraries
Provides access to member library catalogs, current article indexes and document delivery, informational databases, including the Internet Resource Guide and an electronic encyclopedia. Access to the system is not restricted; however, access to some of the databases is restricted.

telnet to pac.carl.org

MELVYL - University of California
The online catalog of nine University of California campuses and affiliated libraries. Also provides access to the current MEDLINE database, ISI's Current Contents. Some of the files have restricted use.

telnet to melvyl.ucop.edu
Campus Wide Information Systems

Campus Wide Information Systems generally include information on instruction, research, libraries and administration of a university. Some also include items on weather, restaurant listings, jobs and housing information.

Campus Wide Information Systems (CWIS)
This document list the Internet address, contact person, logon procedures for various campus wide information systems.

anonymous ftp to hydra.uwo.ca
directory = libsoft
file = cwis.txt

Freenets

Freenets are free community computer systems. They are similar to campus wide information systems, but provide a variety of services/information of interest to a community. They also provide electronic forums and discussion groups and access to other systems.

A file containing the most frequently asked questions about Freenets and bulletin board systems available via ftp.

ftp to polyalo.calpoly.edu
directory = pub
filename = alt.bbs.faq

Below are the addresses of three freenets you are encouraged to explore.

Cleveland Freenet

telnet to freenet-in-a.cwru.edu or
freenet-in-b.cwru.edu or
freenet-in-c.cwru.edu

Heartland Freenet

telnet to heartland.bradley.edu
login as bbguest

Youngstown Freenet

telnet to yfn.ysu.edu
login as visitor