Guide to Network Resource Tools

EARN Association

September 15, 1993

Document Number: 2.0

Guide to Network Resource Tools

Notice

This document is available in electronic format from: **LISTSERV@EARNCC.BITNET**

Send the command: **GET filename** where the filename is either:

NETTOOLS PS	(Postscript)
NETTOOLS MEMO	(plain text)

Document version: 2.0

ISBN 2-910286-03-7

(ISBN 2-910286-01-0 Version 1.0)

Preface to the Second Edition

When the first version of the **Guide to Network Resource Tools** was released, we had no idea how popular it would become, and how quickly it would spread beyond the EARN community. While much had already been written on these tools, a booklet with brief explanations and instructions struck a responsive chord.

In this second edition, we have tried to expand the scope, both in terms of the number of networking tools covered and the size of the audience at which it is aimed. While the Internet continues to grow at an explosive rate, there is still a large community of users, within EARN and beyond, with only electronic mail connectivity to the world-wide network. We have tried to show how they too can utilize these networking tools.

The work of many people is reflected here, but we owe our greatest debt of thanks opers and authors of the network tools and documentation. Their work serves as the basis for this guide.

We also wish to thank all those who have provided comments, criticisms and suggestions for the guide. Many of the improvements in the second edition are the result of their feedback and encouragement. In particular, we have benefitted from the cooperation of the RARE Working Group on Information Services and User Support. We look forward to close collaboration with them on future editions of this guide as well as on other projects.

The **Guide to Network Resource Tools** has been produced by the staff of the EARN Association, under the direction of the EARN Group on Information Services. Any errors or inaccuracies in this guide are the sole responsibility of the EARN staff. We welcome and encourage your feedback. Please send comments, criticisms, corrections, suggestions for future editions and even praise to the electronic mail address:

EARNDOC@EARNCC.BITNET

If you have any questions or queries on the use of these tools or on other aspects of networking, and you are in an EARN member country, you can get help and advice by sending your questions by electronic mail to the EARN consulting service at: **NETHELP@EARNCC.BITNET**

The EARN Staff

Contents

Introduction

As the worldwide academic computer network grows and expands far beyond its previous confines, so the resources and services available on the network evolve and multiply at a dizzying rate. The typical user is hardpressed to keep up with this explosive growth. Fortunately, a number of tools are available to facilitate the task of locating and retrieving network resources, so that users anywhere can utilize texts, data, software and information for public access. Facilities to explore public domain software repositories, to consult mailing list archives and databases, to retrieve directory information and to participate in global group discussions are now available to all.

The key to exploiting these resources is a *server*, special software on a computer somewhere in the network which accepts requests (or queries or commands) and sends a response automatically. The requestor does not have to be working on the same computer (or even in the same part of the world) in order to use the server. Many servers accept requests via electronic mail, so that often the requestor needs not even be on the same computer network as the server. In many cases, servers are interconnected so that once you have established contact with one server, you can easily communicate with other servers as well.

Today, many users have powerful computers on the desktop, with advanced graphical, audio and storage capabilities, which are connected to the network. This fact has given rise to what is known as the *client-server* model. Users can have special software on their local computer called a which can utilize the capabilities of that computer and can also communicate with a server on the network. These clients provide an easy-to-use, intuitive user interface, allow use of pointing devices such as a mouse, and exploit other local features. The client sends the user's requests to a server using a standardized format (called a protocol) and the server sends its response in a condensed format which the client displays to the user in a more readable way.

The tools described in this guide have been divided into six functional areas. Actually, several of the tools have several different functions, and have been classified according to their main purpose. The first section, **Exploring the network**, covers two services, Gopher and World-Wide Web, which use the client-server model to provide a means of moving through a wide range of network sources and resources in a uniform and intuitive way. A tool for searching in a wide range of different databases located throughout the network, WAIS, is documented in the section **Searching databases**. The problem of knowing where to find files and programs in the network is addressed in the third section, **Finding network resources**, which deals with archie. Three tools for finding people, computers and their network addresses, WHOIS, X.500 and Netfind, are discussed in section four, **Finding people and computers**. While just about all of these network tools can be used to get files of one sort or another, there are a few servers available for getting files easily and efficiently from various repositories in the network. Two of these servers, TRICKLE and BITFTP, are covered in section five on **Getting files**. The sixth section deals with what is perhaps the most popular of all the network resources, discussion groups on every imaginable topic. The two tools discussed in this section are LISTSERV and Netnews (Usenet). The final section gives brief descriptions and pointers for a number of tools which were not *mainstream* enough to get a full description. Some are still in the developmental stage (Prospero), some are relatively unknown outside a particular network (ASTRA and Netserv from EARN/ Bitnet and Mailbase from JANET) and some are meant for chatting rather than work (Relay and IRC).

The purpose of this guide is to supply the basic information that anyone on the network needs to try out and begin using these tools. A basic knowledge of networking terminology has been assumed, as well as familiarity with the basic tools of networking: *electronic mail* (often referred to as *e-mail* or simply *mail* throughout this guide) and, for those connected to the Internet, *FTP* (file transfer protocol) and *Telnet* (remote login). It is beyond the scope of this guide to describe these basic tools. The example in the BITFTP section of this guide shows how one can use BITFTP to get guides to these tools over the network.

Part 1

EXPLORING THE NETWORK

GOPHER

What is Gopher

The **Internet Gopher**, or simply **Gopher**, is a distributed document delivery service. It allows users to explore, search and retrieve information residing on different locations in a seamless fashion.

When browsing it, the information appears to the user as a series of nested menus. This kind of menu structure resembles the organization of a directory with many subdirectories and files. The subdirectories and the files may be located either on the local server site or on remote sites served by other Gopher servers. From the user point of view, all information items presented on the menus appear to come from the same place.

The information can be a text or binary file, directory information (loosely called *phone book*), image or sound. In addition, Gopher offers gateways to other informati 2000 on systems (World-Wide Web, WAIS, archie, WHOIS) and network services (Telnet, FTP). Gopher is often a more convenient way to navigate in a FTP directory and to download files.

A Gopher server holds the information and handles the users' queries. In addition, links to other Gopher servers create a network wide cooperation to form the global Gopher web (*Gopherspace*).

Who can use Gopher

Gopher uses the client-server model to provide access to the Gopher web. You must be on the international TCP/IP network (the *Internet*) in order to use a client on your computer to access Gopher.

How to get to Gopher

Users explore the Gopher menus using various local clients or accessing a remote client via an interactive Telnet session.

Local clients

Public domain clients for accessing a Gopher server are available for: Macintosh, MS-DOS, OS/2, VM/CMS, VMS, NeXT, Unix, X-Windows. The clients are available for anonymous FTP from many FTP sites (eg, **boombox.micro.umn.edu** in the directory **/pub/gopher**). See the list of freely available client software in Appendix A.

Remote clients

Some sites allow public access to a client. To access such a remote client, telnet to one of these sites:

info.anu.edu.au	Australia (login: info)
tolten.puc.cl	Columbia
ecnet.ec	Ecuador
gopher.chalmers.se	Sweden
consultant.micro.umn.edu	USA
gopher.uiuc.edu	USA
panda.uiowa.edu	USA (login: panda)

At the *login:* prompt type **gopher** (unless specified otherwise) and the top-level Gopher menu for that site will be displayed.

Users are requested to use the site closest to them.

Using Gopher

The implementations of the Gopher clients on various platforms are slightly different to take advantage of the platforms' capabilities (mouse, graphic functions, X-Windows server) and to offer the popular look and feel. Even with different implementations, the same set of functions and commands is available.

When issuing the **gopher** command, you will be connected automatically to the default Gopher server specified at the installation. The format of the command is:

```
gopher        <hostname>
```

where *hostname* is an optional alternative Gopher server you want to talk to.

When connected to a Gopher server, it is still possible to access another server by exploring the *Other Gopher servers in the rest of the world* branch. To locate them more easily, the Gopher servers are distributed in geographical regions:

- Africa
- Europe
- Middle East
- North America
- Pacific
- South America

and then by countries.

Access to a Gopher server is identical whether using a local or a remote client: a simple menu-driven interface which doesn't require any special training or knowledge from the user.

Here is a sample menu:

```
                 Internet Gopher Information Client v1.1

                      Information About Gopher

    1.  About Gopher.
    2.  Search Gopher News <?>
    3.  Gopher News Archive/
    4.  comp.infosystems.gopher (Usenet newsgroup)/
    5.  Gopher Software Distribution/
    6.  Gopher Protocol Information/
    7. of Minnesota Gopher software licensing policy.
    8.  Frequently Asked Questions about Gopher.
    9.  gopher93/
    10. Gopher| example server/
    11. How to get your information into Gopher.
--> 12. New Stuff in Gopher.
    13. Reporting Problems or Feedback.
    14. big Ann Arbor gopher conference picture.gif <Picture>


Press ? for Help, q to Quit, u to go up a menu          Page: 1/1
```

In the example above, any item can be selected by typing its line number or by moving the cursor (-->) next to it.

An item could be:

- a subdirectory
- a text file
- a binary file
- a sound file
- an image file
- a phone book (directory information)
- an index-search
- a Telnet session

Items are displayed with an identifying symbol next to them. In the example above, "<?>" means a full text index-search, "/" means a subdirectory, "<Picture>" means an image file and no symbol means a text file.

Some Gopher clients are not able to handle certain file types (eg, sound files). Some clients display only files of types they can handle or files they suppose you are interested in. Others display all types of files.

Most Gopher clients allow you to create, view and select *bookmarks*. A bookmark keeps track of the exact location of a Gopher item, regardless of where it resides. It is useful when you often need to reach a file or a service located far from the top-level directory. A collection of bookmarks is like a customized Gopher menu.

Some capabilities of a local Gopher client are bound to the capabilities of your own computer. In fact, for sound files, image files and Telnet sessions, the Gopher client looks for the appropriate software on your computer and passes control to it to perform the requested task. When the task is completed, control is returned to the Gopher client.

At any time, it is possible to terminate the session (**quit** command), to cancel the current processing or to get the on-line help (**help** command).

An item is processed according to its type:

a subdirectory	its contents are displayed. To go up one level, use the **up** command.
a text file	the file is displayed. Then you can browse it, search for a particular string, print it on a local printer or copy (save) it onto your local disk space in a user-specified file (the last 2 functions may not be available to you).
a binary file	the remote file is simply copied onto your local disk space in a user-specified file. Binary files are binhexed Macintosh files, archives (.zip, .tar,...), compressed files, programs, etc.
a sound file	the remote file is played through your local audio device if it exists, as well as the appropriate utility. Only one sound file can be active at a time; you will be warned if you try to play a sound before a previous one is done.
an image file	the remote file is displayed on your computer screen if an image viewer exists on your computer.
a phone book	you are prompted for a search string to look up people information through the selected phone book. Since different institutions have different directory services, the queries are not performed in the same fashion.
an index-search	you are prompted for a search string which may be one or more words, plus the special operators **and, or**, and **not**. The search is case-insensitive. Usually, an index is created to help users locate the information in a set of documents quickly. Eg: `terminal and setting or tset` will find all documents which contain both the words *terminal* and *setting*, or the word *tset*. **or** is non-exclusive so the documents may contain all of the words.

The result of the index-search looks like any Gopher menu, but each menu item is a file that contains the specified search string.

a Telnet session Telnet sessions are normally text-based information services, for example, access to library catalogs.

VERONICA

Veronica was designed as a solution to the problem of resource discovery in the rapidly-expanding Gopher web, providing a keyword search of more than 500 Gopher menus. Veronica helps you find Gopher-based information without doing a menu-by-menu, site-by-site search. It is to the Gopher information space, what archie is to the FTP archives

Veronica is accessible from most top-level Gopher menus or from the *Other Gopher servers...* branch. There is no need for opening another connection or another application.

When you choose a veronica search , you will be prompted to enter a keyword or keywords. 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. Items can be accessed as with any Gopher menu. Eg:

```
eudora
```

will give you a list of menu titles that contain *eudora*, such as:

```
Electronic Mail: Eudora on Macintosh, Micro-08
Modem Setting Eudora Slip.
A UNIX-based Eudora reader for those that ...
Eudora:  Popmail for the Macintosh.
Eudora.
```

etc.

The search string may contain keywords optionally separated by **and**, **or** and **not**. If there is no operator between 2 keywords, **and** is assumed. Eg:

```
eudora and macintosh
```

will give you a list of menu titles that contain both *eudora* and *macintosh*, such as:

```
Eudora:  Popmail for the Macintosh.
v4.1 EUDORA: E-MAIL FOR THE MACINTOSH.
Micro News:  Eudora - A Mailer for the Macintosh.
Eudora: Electronic Mail on Your Macintosh.
ACS News - Eudora Mail Reader for Macintosh.
```

etc.

"*" is the wildcard character. It can replace any other character or characters at the end of a keyword. Eg:

```
     desk*
```

will give you a list of menu titles, such as:

```
     The Help Desk.
     Keene State College Press Release COMPUTER ON EVERY DESK.
     DESKQview/X... An alternative to Windows???.
     Ethernet at Your Desktop/
```

etc.

Learning more about Gopher

The Internet Gopher is developed by the Computer and Information Services Department of the University of Minnesota. Bug reports, comments, suggestions, etc. should be mailed to the Gopher development team at: **gopher@boombox.micro.umn.edu.**

Mailing list: **gopher-news@boombox.micro.umn.edu**
To subscribe send a mail to: **gopher-news-request@boombox.micro.umn.edu**

Usenet newsgroup: **comp.infosystems.gopher**

A comprehensive description of veronica search methods is available from the veronica menus.

Veronica is being developed by Steve Foster and Fred Barrie at the University of Nevada. Bug reports, comments, suggestions, etc. should be addressed to: **gophadm@futique.scs.unr.edu**

WORLD-WIDE WEB

What is World-Wide Web

World-Wide Web (also called **WWW** or **W3**) is an information system based on hypertext, which offers a means of moving from document to document (usually called *to navigate*) within a network of information.

Hypertext documents are linked to each other through a selected set of words. For example, when a new word, or a new concept, is introduced in a text, hypertext makes it possible to point to another document which gives more details about it. The reader can open the second document by selecting the unknown word or concept and the relevant section is displayed. The second document may also contain links to further details. The reader need not know where the referenced document is, and there is no need to type a command to display it, or to browse it to find the right paragraph. Cross-references may be defined in the same document. A collection of documents is a *database*.

If you were reading this document on a hypertext system, instead of this all too short explanation about hypertext, you would have a selectable pointer to a complete hypertext information web with examples and more pointers to other definitions.

For instance, in the first document you might read:

```
The  WorldWideWeb (W3)  is a  wide-area "hypermedia"  information
retrieval initiative aiming  to give universal access  to a large
universe of documents.
```

Selecting *hypermedia* will display the following explanation for you:

```
                       WHAT IS HYPERTEXT
Hypertext is text which is not constraied to be linear.

Hypertext is text which contains "links" to other texts. The term
was coined by "Ted Nelson" around 1965 (see "History").

HyperMedia is a term used  for hypertext which is not constrained
to  be text:  it can  include  graphics, video  and "sound",  for
example. Apparently Ted Nelson was the first to use this term too.
```

Then you can learn more about *links* and *Nelson*. Indeed, the links in WWW are not confined to text only, so the term hypermedia is more accurate. For example, the link to *Nelson* might point to a file containing a picture of Ted Nelson. The picture would be displayed on your screen if you have a suitable configuration.

Also, special documents (*indexes*) in the WWW information space can be search for given keyword(s). The result is a document which contains links to the documents found.

World-Wide Web uses hypertext over the network: the linked documents may be located at various sites. WWW can handle different text formats and various information organizations. WWW also provides access to many of the other tools described in this guide.

Who can use World-Wide Web

WWW uses the client-server model to provide access to the information universe. You must be on the international TCP/IP network (the *Internet*) in order to use a client on your computer to access WWW. If you are on the Internet, but don't have a WWW client on your computer, you can still enter the World-Wide Web. Several sites offer public interactive access to WWW clients (see the **Remote clients** section under **How to get to World-Wide Web** below).

If you have e-mail access only, or if you are not on the Internet then you can not fully exploit the vast potential of WWW. However, a *mail-robot* is available at the address: **listserv@info.cern.ch** which gives e-mail access to WWW-accessible files. (see **E-mail access** section under **How to get to World-Wide Web** below).

How to get to World-Wide Web

Users access the World-Wide Web facilities via a client called a *browser*. This interface provides transparent access to the WWW servers. If a local WWW client is not available on your computer, you may use a client at a remote site. Thus, an easy way to start with WWW is to access a remote client.

Local clients

Usage of a local client is encouraged since it provides better performance and better response time than a remote client.

Public domain clients for accessing WWW servers are available for: Macintosh, MS-DOS, VMS, VM/CMS, MVS, NeXT, Unix, X-Windows. The clients are available for anonymous FTP from **info.cern.ch** in the directory **/pub/www**. All these platforms support a simple line mode browser. In addition, graphical clients are available for: Macintosh, Windows, X-Windows, NeXT and Unix. See the list of freely available client software in Appendix A.

Remote clients

To access a remote WWW client, telnet to the client site. If you are new to WWW, you should telnet to **info.cern.ch** No login is needed. You will immediately enter the WWW line mode browser. Some publicly accessible clients feature locally developed clients. Most remote clients are at sites with WWW servers with information on specific areas. After you telnet to the client site, at the *login:*prompt enter **www**, no password is needed. The following remote client sites are available:

Site	Country	Server Specialization
vms.huji.ac.il	Israel	Environment
info.cern.ch	Switzerland (CERN)	High-energy physics
fatty.law.cornell.edu	USA	Law
ukanaix.cc.ukans.edu	USA	History
www.njit.edu	USA	

CERN is the entry point to find information about WWW itself and to have an overview of the Web with a catalogue of the databases sorted by subject.

E-mail access

In order to get a file, send mail to **listserv@info.cern.ch** with a **SEND** command. The **SEND** command returns the document with the given WWW address, subject to certain restrictions. Hypertext documents are formatted to 72 character width, with links numbered. A separate list at the end of the file gives the document-addresses of the related documents.

If the document is hypertext, its links will be marked by numbers in brackets, and a list of document addresses by number will be appended to the message. In this way, you can navigate through the web, more or less. A good file to start with would be:
http://info.cern.ch./hypertext/DataSources/bySubject/Overview.html

Note that, despite the name *listserv* in the address of this *mail robot*, it is not a LISTSERV server.

A note of caution from the WWW developers and maintainers:

*As the robot gives potential mail access to a *vast* amount of information, we must emphasise that the service should not be abused. Examples of appropriate use would be:*

- *Accessing any information about W3 itself;*
- *Accessing any CERN and/or physics-related or network development related information;*

Examples of INappropriate use would be:

- *Attempting to retrieve binaries or tar files or anything more than directory listings or short ASCII files from FTP archive sites;*
- *Reading Usenet newsgroups which your site doesn't receive;*
- *Repeated automatic use.*

There is currently a 1000 line limit on any returned file. We don't want to overload other people's mail relays or our server. We reserve the right to withdraw the service at any time. We are currently monitoring all use of the server, so your reading will not initially enjoy privacy.

Enjoy!

The W3 team at CERN (www-bug@info.cern.ch)

Using World-Wide Web

When using a graphical interface, you access the WWW functions by pressing mouse buttons. In particular, references are highlighted or underlined words. To follow a link, click on the associated reference.

The line mode browser is a more simple user interface: references are numbers in square brackets next to words. Type the number and hit the RETURN key to follow a reference. For example, here is the beginning of the *Subject Catalogue* you get on the CERN server:

```
      The World-Wide Web Virtual Library: Subject Catalogue
                      WWW VIRTUAL LIBRARY

This is  the subject catalogue.  See also arrangement  by service
type[1]. Mail  www-request@info.cern.ch to  add pointers  to this
list.

Aeronautics     Mailing list archive index[2]. See also NASA LaRC[3]

Agriculture[4]  Separate list, see also Almanac mail servers[5].

Astronomy and Astrophysics
                Abstract Indexes[6] at NASA, Astrophysics work at
                FNAL[7],   Princeton's[8]   Sloane  Digital   Sky
                Survey,  the  STELAR   project,  Space  Telescope
                Electronic Information System[9], the Southampton
                University  Astronomy   Group[10],  the  National
                Solar Observatory[11],  Astrophysics work  at the
                AHPCRC[12]. See also: space[13].

Bio Sciences[14] Separate list.

Computing[15]   Separate list.

1-81, Back, <RETURN> for more, Quit, or Help:
```

The following commands are available within WWW. Some are disabled when not applicable (eg, **Find** is enabled only when the current document is an index). Angle brackets (<>) indicate an optional parameter.

Help	gives a list of available commands depending on the context, and the hypertext address of the current document.
Manual	displays the on-line manual.
Quit	exits WWW.

Up, Down	scrolls up or down one page in the current document.
Top, BOttom	goes to the top or the bottom of the current document.
Back	goes back to the document you were reading before.
HOme	goes back to the first document you were reading.
Next, Previous	goes to the next or previous document in the list of pointers from the document that led to the current one.
List	gives a numbered list of the links from the current document. To follow a link, type in the number.
Recall <number>	if number is omitted, gives a numbered list of the documents you have visited. To display one specific document, re-issue the command with *number*.
<Find> keyword	queries the current index with the supplied keyword(s). A list of matching entries is displayed with possibly links to further details. **Find** can be omitted if the first keyword does not conflict with another WWW command. Multiple keywords are separated by blanks.
Go docaddress	goes to the document represented by the given hypertext address, which is interpreted relatively to the current document.

Extra command available on Unix versions only:

Print	prints the current document, without the numbered document references. The default print command is **lpr**, but it may be defined in your local

To access WWW with the line mode browser, type: **www**. The default first document will appear on your screen. From this point, you should be able to navigate through the WWW universe by reading the text and following the instructions at the bottom of the screen. If you want to start with a first document other than the default, or if you want to change some other aspect of the usual interaction, there are a number of command line parameters and options available. The full format of the **www** command to invoke the line mode browser is:

```
www        <options>  <docaddress <keyword>>
```

where:

docaddress	is the hypertext address of the document at which you want to start browsing.
keyword	queries the index specified by *docaddress* with the supplied keyword(s). A list of matching entries is displayed. Multiple keywords are separated by blanks.

Options are:

-n	non-interactive mode. The document is formatted and displayed to the screen. Pages are delimited with form feed characters (FF).
-listrefs	adds a list of the addresses of all documents references to the end. Non-interactive mode only.
-pn	sets the page length to n lines. Without a number, makes the page length infinite. Default is 24.
-wn	sets the page width to n columns. The default is 78, 79 or 80 depending on the system.
-na	hides references in the text. Useful, when printing out the document.
-version	displays the version number of the software.

The commands listed above should be available in all clients. They may be abbreviated (CAPITAL letters indicate acceptable abbreviation). Case is not significant. Special characteristics of the line mode browser interface are:

number	type in a number given in [] and hit the RETURN key to follow the link associated to the reference.
RETURN	hit the RETURN key to display the next page of the current document (without a reference number).

Examples

WWW gives you access to an information universe. Let's say you want to know how many film versions of *The Three Musketeers* there have been. You browse the WWW Subject Catalogue and select Movies:

```
                                 Movie database browser (Cardiff)
A Hypertext movie database browser

Sep 2nd... Your help is needed..[1]

Aug 29th.. Images, sounds, mpegs & reviews[2]


Select the type of search you'd like to perform:-

   Movie people[3].....(multi Oscar winners)[4] or

   Movie titles[5] .....(multi Oscar winners)[6]

Searches the "rec.arts.movies" movie database system, maintained
```

```
by Col Needham et-al.

Here[7] is some information on list maintainers.

If you have a comment or suggestion, it can be recorded here[8]

HERE[9] is a pre-1986 movie information gopher server. (at
        Manchester UK)

1-13, Back, Up, <RETURN> for more, Quit, or Help: 5
```

You select Movie titles, and then type *three musketeers* as keywords:

```
                                              Movie title queries
                       MOVIE TITLE QUERY

Enter a movie title or substring.

Example,  to search  for movies  with the  word "alien"  in their
title, type "alien".

This will return details on several movies, including Aliens[1]

Note: if the title begins with A  or The, leave it out. If you're
deter 2000 mined to include it, then put ', A' or ', The' at the end of
the of the substring e.g.

   Enforcer, The

   Gauntlet, The

Searching is case insensitive.

 search menu[2] Fun and Games page[3] COMMA home page[4]

FIND <keywords>, 1-5, Back, Up, <RETURN> for more,
or Help: three musketeers
```

You find that there have been six film versions of the story:

```
                                                       Movie Info
Here are the results from the search for "three musketeers"

      Three Musketeers, The (1921)[1]

      Three Musketeers, The (1933)[2]

      Three Musketeers, The (1935)[3]

      Three Musketeers, The (1939)[4]

      Three Musketeers, The (1948)[5]

      Three Musketeers, The (1974)[6]

    search menu[7] Fun and Games page[8] COMMA home page[9]

                                                        Rob.H[10]

                                       Robert.Hartill@cm.cf.ac.uk

FIND <keywords>, 1-10, Back, Up, Quit, or Help: 1
```

You decide to look for more information on the *1921* version:

```
                                                       Movie Info
Here are the results from the search for "Three Musketeers, The (1921)"

                      THREE MUSKETEERS, THE (1921)

1921

  Cast           Belcher, Charles[1] ......Bernajoux
                 De Brulier, Nigel[2] ......Cardinal Richelieu
                 De La Motte, Marguerite[3] ......Constance Bonacieux
                 Fairbanks, Douglas[4] ......D'Artagnan
                 Irwin, Boyd[5] ......Comte de Rochefort
                 MacLaren, Mary[6] ......Queen Anne of Austria
                 Menjou, Adolphe[7] ......Louis XIII
                 Pallette, Eugene[8] ......Aramis
                 Poff, Lon[9] ......Father Joseph
                 Siegmann, George[10] ......Porthos
                 Stevens, Charles[11] ......Planchet
```

```
  Directed by    Niblo, Fred[12]

  Music by       Gottschalk, Louis F.[13]

1-21, Back, Up, <RETURN> for more, Quit, or Help: 7
```

You're hooked! You decide to look for more information on *Adolphe Menjou*, search more titles, find Oscar winners, etc.

Learning more about World-Wide Web

World-Wide Web is being developed at CERN (European Particle Physics Laboratory) by the World-Wide Web team leaded by Tim Berners-Lee. Bug reports, comments, suggestions, etc. should be mailed to: **www-bug@info.cern.ch**

On-line documentation is available from **info.cern.ch**, for anonymous FTP or using the remote WWW client.

Mailing lists: **www-talk@info.cern.ch**
To subscribe send a mail to **www-talk-request@info.cern.ch**

Usenet newsgroup: **comp.infosystems.www**

Part 2

SEARCHING DATABASES

WAIS

What is WAIS

WAIS, Wide Area Information Server, is a distributed information retrieval system. It helps users search databases over networks using an easy-to-use interface. The databases (called *sources*) are mostly collections of text 2000 -based documents, but they may also contain sound, pictures or video as well. Databases on topics ranging from *Agriculture* to *Social Science* can be searched with WAIS.

The databases may be organized in different ways, using various database systems, but the user isn't required to learn the query languages of the different databases. WAIS uses natural language queries to find relevant documents. The result of the query is a set of documents which contain the words of the query: no semantic information is extracted from the query.

Who can use WAIS

WAIS uses the client-server model to provide access to databases. You must be on the international TCP/IP network (the *Internet*) in order to use a client on your computer to access WAIS.

If you have e-mail access only, or if you are not on the Internet you can still exploit some of the potential of WAIS. An e-mail interface is available at the address: **waismail@quake.think.com** which gives e-mail access to WAIS databases (see **E-mail access** section under **Using WAIS** below).

How to get to WAIS

There are many WAIS servers throughout the network. A *directory-of-servers* database is available at several sites. You can address a query to it, eg, to find out what databases are available on a particular subject. This database is also available via anonymous FTP from **Think.com** in the directory **/wais** as file **wais-sources.tar.Z.**.

If you do not have access to a WAIS client, (at least) two demonstration sites are available to allow you to get acquainted with WAIS. You can telnet to:

quake.think.com	(login: wais)
sunsite.unc.edu	(login: swais)

The two demonstration sites above run *swais* (Screen WAIS), a simple WAIS client for Unix.

Using WAIS

There are many freely available client software programs for various operating systems (Unix, VMS, MVS, MS-DOS, OS/2 and Macintosh) and for specific environments (GNU Emacs, X-Windows, Openlook, Sunview, NeXT, and MS-Windows). See the list of freely available client software in Appendix A.

The client interface differs slightly on different platforms. However, the queries are performed in the same way, whatever the interface.

- Step 1: The user selects a set of databases to be searched from among the available databases.
- Step 2: The user formulates a query by giving keywords to be searched for.
- Step 3: When the query is run, WAIS asks for information from each selected database.
- Step 4: Headlines of documents satisfying the query are displayed. The selected documents contain the requested words and phrases. Selected documents are ranked according to the number of matches.
- Step 5: To retrieve a document, the user simply selects it from the resulting list.
- Step 6: If the response is incomplete, the user can state the question differently or feed back to the system any one or more of the selected documents he finds relevant.
- Step 7: When the search is run again, the results will be updated to include documents which are *similar* to the ones selected, meaning documents which share a large number of common words.

E-mail access:

You can query WAIS databases and retrieve documents by sending commands in the body part of an e-mail message to **waismail@quake.think.com**. The *Subject:* line is ignored. The important commands are (a vertical bar (|) indicates a choice of parameters):

help	to get the help file
maxres number	to set the maximum number of results to be returned.

search source-name | "source-name1 source-name2 ..." keywords
where:

source-name	is a source name as found in the directory-of-servers (with or without the .src ending). Use double-quotes (") to group several sources to be searched.
keywords	are the words you would normally type into a query.

You may specify several search requests in a mail message. If you don't know what sources you can search, just try anything. If the source name is not recognised, you'll get a list of sources.

retrieve docid	to retrieve a document from a database. *docid* is a DocID as returned by a search above. You may put more than one retrieval request in a mail message, but you must leave a blank line between requests. The *docid* must be written exactly as returned by a search request, including any spaces. You can retrieve non-text documents as well as text. If the document is of type *TEXT* or *WSRC* you will get the result directly. Other types will be UUENCODED.
DocID: docid	same as **retrieve**. This form is identical to the form which is returned by a search request. It makes it easy to use the *reply* mail function to retrieve results.

Examples

When you log in to the demonstration site at **quake.think.com**, you have immediate access to the directory-of-servers database via the swais client software. To find recipes using papaya, you would select the *recipes* database and give *papaya* as the keyword. Here are the results of the search:

```
  #  Score Source                  Title                        Lines
001: 1000 (recipes) arielle@ta Re: Dawn's Muffins, Pt III     339
002: 1000 (recipes) arielle@ta Re: Muffins 3                  632
003: 1000 (recipes) arielle@ta Re: Pineapple                  678
004:  750 (recipes) arielle@ta Re: Pork and Papaya Salad       33
005:  750 (recipes) arielle@ta Re: Bread                      681
006:  500 (recipes) roder@cco. Re: NONFAT BAKERY COLLECTION   423
007:  500 (recipes) shiva@hoss Re: Juice Recipes               65
008:  250 (recipes) arielle@ta Re: Prawn Salad                 49
009:  250 (recipes) arielle@ta Re: COLLECTION: Lots of Avoca  447
010:  250 (recipes) mecca@acsu Re: REQUEST: blender-made fru   29
011:  250 (recipes) Ann.Adamci Re: Re: REQUEST: blender-made   38
012:  250 (recipes) patth@Pani Re: Re: REQUEST: blender-made   49
013:  250 (recipes) arielle@ta Re: Avocados                   459
014:  250 (recipes) red_trek@d Re: VEGAN: red beans and rice   78
```

You can then select any of the above documents for viewing, for example, the *Pork and Papaya Salad* recipe:

```
Newsgroups: rec.food.recipes
From: arielle@taronga.com (Stephanie da Silva)
Subject: Pork and Papaya Salad
Message-ID: <5BBP2SB@taronga.com>
Date: Mon, 29 Mar 1993 06:51:47 GMT
```

```
Lines: 23

1/4 cup dried currants
1/2 cup balsamic vinegar
1/4 cup walnut oil
1/4 cup chicken broth
1 tablespoon honey
1/4 teaspoon ground cinnamon
1 pound cooked boneless pork loin roast
1 head Belgian endive
Bibb lettuce leaves
2 papayas, seeded, peeled and sliced lengthwise
2 avocados, seeded, peeled and sliced lengthwise
1/4 cup broken walnut pieces

In a small bowl pour enough boiling water over currants to cover.
Let stand 5 minutes; drain. For dressing, in a screw-top jar
combine vinegar, oil, chicken broth, honey, and cinnamon. Cover;
shake well. Trim fat from pork; slice thinly. Separate leaves of
Belgian endive. Line 6 salad plates with lettuce leaves. Arrange

currants and walnuts. Drizzle dressing over salads.

Stephanie da Silva                          arielle@taronga.com
```

If you give more than one keyword, then all documents containing any of the keywords will be listed.

Learning more about WAIS

A bibliography of documents, services and sources for WAIS is maintained by Barbara Lincoln Brooks of WAIS Inc. The bibliography is available from **ftp.wais.com** in the directory **/pub/wais-inc-doc** along with many other WAIS documents.

There are currently four main FTP sites for WAIS documentation and software:

- ftp.cnidr.org
- ftp.wais.com
- quake.think.com
- sunsite.unc.edu

For information on free WAIS software contact **freewais@cnidr.org**

Mailing list: **wais-discussion@wais.com**
To subscribe send a mail to **wais-discussion-request@wais.com**

Usenet newsgroup: **comp.infosystems.wais**

WAIS was developed at Thinking Machines Corporation.

Part 3

FINDING NETWORK RESOURCES

ARCHIE

What is ARCHIE

Archie is an information system. It offers an electronic directory service for locating information in the international TCP/IP network (the *Internet*).

The best known use of archie is for scanning a database of the contents of more than 1000 anonymous FTP sites around the world. Currently, this database contains more than 2,100,000 file names from anonymous FTP sites. This database is known as the *archie database*.

The files made available at anonymous FTP sites are software packages for various systems (Windows, MS-DOS, Macintosh, Unix, etc.), utilities, information or documentation files, mailing list or Usenet group discussion archives. At most FTP sites, the resources are organized hierarchically in directories and subdirectories. The database tracks both the directory path and the file names.

The archie database is automatically updated, thereby ensuring that the information is accurate. Using this database, users can easily find the the location of files they need without logging onto several machines.

Who can use ARCHIE

Users on any network can access the archie database by electronic mail. Other means of access are available to users on the Internet (see the section **Using ARCHIE** below for details).

You are requested to respect a few basic rules when you request information from an archie server:

- avoid connecting during working hours; most of the archie servers are not dedicated machines, they have local functions as well.
- make your queries as specific as possible; the response will be quicker and shorter.
- user interfaces installed on your computer contribute to reduce the load on the server sites, please use them.
- use the archie server closest to you and, in particularly, don't overload the transatlantic lines.

How to get to ARCHIE

The archie database is maintained in the following locations:

Host	Country	Host	Country
archie.au	Australia	archie.kr	Korea
archie.edvz.uni-linz.ac.at	Austria	archie.sogang.ac.kr	Korea
archie.univie.ac.at	Austria	archie.nz	New Zealand
archie.uqam.ca	Canada	archie.rediris.es	Spain
archie.funet.fi	Finland	archie.luth.se	Sweden
archie.th-darmstadt.de	Germany	archie.switch.ch	Switzerland
archie.doc.ic.ac.uk	Great-Britain	archie.ncu.edu.tw	Taiwan
archie.ac.il	archie.ans.net	USA	
archie.unipi.it	Italy	archie.internic.net	USA
archie.kuis.kyoto-u.ac.jp	Japan	archie.rutgers.edu	USA
archie.wide.ad.jp	Japan	archie.sura.net	USA
archie.unl.edu	USA		

There are three ways to access the archie database: via a local client, interactive Telnet session or electronic mail. Each type of access is described below in the **Using ARCHIE** section.

Using ARCHIE

The format of the parameters is given at the end of this section. Angle brackets (<>) indicate an optional parameter; a vertical bar (|) indicates a choice of parameters.

Note: A new version of the archie server (3.0) is now available. Some of the commands for interactive access and the e-mail interface are slightly different from previous versions of the server (2.11 and before). Command formats marked with a (+) are valid in version 3.0 only, those marked with a (*) are acceptable only in previous versions. To find out which version is installed at the server you wish to use, issue the **version** command.

Using a local client:

Usage of these clients is encouraged since they provide quick and easy non-interactive access to the archie servers, and thus, better performance of the servers and better response time for the user.

Public domain clients for accessing archie servers are available for: Macintosh, MS-DOS, OS/2, VMS, NeXT, Unix and X-Windows. The clients are available for anonymous FTP from the archie sites in the directories **/pub/archie/clients** or **/archie/clients**. All these platforms support a simple command line client. In addition, a graphical interface (called *xarchie*) is available for X-Windows.

Archie client command and parameters

When using a graphical interface, you access the archie functions by pressing mousse buttons. The results are displayed with selectable fields for further explorations.

The basic archie client is a command with parameters that you enter on your local machine. With most versions of the archie client, if you type **archie** with no parameters, you will get a list of the possible parameters and a short description of each. The format of the command is:

```
archie          <-options> string | pattern
```

where the options are:

o	specifies an output file name to store the results (not available with all clients).
l	lists the result one match per line. This form is suitable for parsing by programs.
t	sorts the result inverted by date
m#	specifies maximum number of matches to return (# within the range 0 to 1000). The default value is 95.
h archie-server	specifies an archie server to send the query to; if this parameter is not given, then the query will be sent to the default archie server, if one is defined.
L	lists known servers and current default server.

The following group of options determines the kind of search performed on the database. They are mutually exclusive.

s	a match occurs if the file/directory name contains *string*. The search is case insensitive.
c	as above, but the search is case sensitive.
e	*string* must EXACTLY match (including case) the file/directory name in the database. This is the DEFAULT search method.
r	searches the database using *pattern*. It contains special characters which must be interpreted before performing the search.

There may be some slight differences in the options available with different clients on different platforms.

The result is a list of FTP site addresses with files or directories matching the argument, the size of the file, its last modificat 2000 ion date and its directory. By default, the list is sorted by host address. See the **Examples** section below for an example of archie output.

Using Telnet:

To access an archie server interactively, telnet to one of the existing servers (see the list of servers in the section **How to get to ARCHIE** above). At the *login:* prompt enter **archie**, the login procedure ends leaving the user at a *archie>* prompt. The server is ready for user requests. The following commands are available:

exit, quit, bye exits archie.

help <command-name>
invokes the on-line help. If issued with command-name, the help request is restricted to the specified topic. Pressing the RETURN key exits from the on-line help.

list <pattern> provides a list of the sites in the database and the time at which they were last updated. The optional parameter limits the list to sites matching pattern. The result is a list of site names, sites IP address and date of the last update in the database. The command **list** with no *pattern* will list all sites in the database (more than 1000 sites!). Eg,

```
list \.de$
```

will list all German sites

site(*) site-name lists the directories and, recursively, the subdirectories, of *site-name* in the database. The result may be very long.

whatis string searches the database of software package descriptions for *string*. The search is case-insensitive.

prog string | pattern
find(+) string | pattern
searches the database for *string* or *pattern* which represents the name of the resource to be found in the database. Searches may be performed in a number of different ways specified in the variable *search* (**set** command) which also decides the interpretation of the parameter as *string* or *pattern*. The result is a list of FTP site addresses with matching entries, the size of the resource, its last modification date and the directory to find it. The number of hits is limited by the *maxhits* variable (**set** command). The result of **prog** can be sorted in different ways, depending on the value of the *sortby* variable (**set** command). By default, the variables *search*, *maxhits* and *sortby* are set to, respectively, exact match search on *string*, 1000 hits and unsorted resulting list. Typing the keyboard interrupt character during a search will abort it. The results up to that time are displayed. See the **Examples** section below for an example of the **prog** command and its results.

mail <email> <,email2...>
sends the result of the last command in a mail message to the specified e-mail address(es). If issued with no argument, the result is sent to the address specified in the variable *mailto* (**set** command).

show <variable> displays the value of the given variable name. If issued with no argument, it displays all variables. See the **set** command below for the possible variables.

set variable value sets one of the archie's variables. Values of these variables affect how archie interacts with the user.

Variables and values are:

compress(+) compress-method
specifies the compression method (*none* or *compress*) to be used before mailing a result with the mail command. The default is none.

encode(+) encode-method
specifies the encoding method (*none* or *uuencode*) to be used before mailing a result with the mail command. This variable is ignored if compress is not set. The default is none.

mailto email <,email2 ...>
specifies the e-mail address(es) to mail the result of the last command when **mail** is issued with no arguments.

maxhits number specifies the maximum number of matches **prog** will generate (within the range 0 to 1000). The default value is 1000.

search search-value
determines the kind of search performed on the database by the command: *prog string | pattern*. *search-values* are:

sub a partial and case insensitive search is performed with *string* on the database, eg:

```
"is" will match "islington" and "this"
and "poison"
```

subcase as above but the search is case sensitive, eg:

```
"TeX" will match "LaTeX" but not
"Latex"
```

exact the parameter of **prog** (*string*) must EXACTLY match (including case) the string in the database. The fastest search method of all, and the default.

regex *pattern* is interpreted before performing a search on the database.

sortby sort-value
describes how to sort the result of **prog**. *sort-values* are:

hostname on the FTP site address in lexical order.

time by the modification date, most recent first.

size	by the size of the found files or directories, largest first.
filename	on file or directory name in lexical order.
none	unsorted (default)

The reverse sorting orders from those described here are obtained by prepending *r* to the *sortby* value given. (eg, reverse hostname order *hostname* is *rhostname*).

term terminal-type <number-of-rows <number-of-columns>>
tells the archie server what type of terminal you are using, and optionally its size in rows and columns, eg:

```
set term xterm 24 100
```

Using electronic mail:

Users limited to electronic mail connectivity can access the archie servers by sending mail to the domain address of one of the servers listed in the section **How to get to ARCHIE** (eg, *archie@archie.ac.il*). The commands are sent in the body part of the mail.

The electronic mail interface to an archie server recognizes a subset of the commands described in **Using Telnet**. Most useful commands and particularities to the e-mail interface are described below. If an empty message, or a message containing no valid requests is received, it will be considered to be a **help** request.

Command lines begin in the first column. All lines that do not match a valid command are ignored. The *Subject:* line is processed as if it were part of the message body.

help sends you the help file. The **help** command is exclusive, ie, other commands in the same message are ignored.

path return-address
set mailto(+) return-address
specifies a return e-mail address different from that which is extracted from the message header. If you do not receive a reply from the archie server within several hours, you might need to add a path command to your message request.

list pattern <pattern2 ...>
provides a list of the sites in the database that match *pattern* and the time at which they were last updated. The result is a list with site names, sites IP address and date of the last update in the database.

site(*) site-name
lists the directories and, recursively, the subdirectories, of *site-name* in the database.

whatis string <string2 ...>
searches the database of software packages descriptions for each *string*. The search is case insensitive.

prog pattern <pattern2 ...>
find(+) pattern <pattern2>

searches the database for each interpretation of *pattern* which represents the name of a resource to be found in the database. If multiple *patterns* are placed on one line, in that case, the results will be mailed back in one message. If multiple **prog** lines appear, then multiple messages will be returned, one for each **prog** line. Results are sorted by FTP site address in lexical order. If *pattern* contains spaces, it must be quoted with single (') or double (") quotes. The search is case insensitive.

compress(*) causes the result of the current request to be *compressed* and *uuencoded*. When you receive the reply, you should run it through *uudecode*. This will produce a .Z file. You can then run *uncompress* on this file and get the result of your request

set compress(+) compress-method

specifies the compression method (*none* or *compress*) to be used before mailing the result of the current request. The default is none.

set encode(+) encode-method

specifies the encoding method (*none* or *uuencode*) to be used before mailing the result of the current request. This variable is ignored if compress is not set. The default is none.

Note: set compress compress and **set encode uuencode** would produce the same result as the former **compress** command.

quit nothing past this point is interpreted. Useful when a signature is automatically appended at the end of your mail messages.

Description of *pattern*

A *pattern* describes a character string including characters which take a special meaning. The special meaning is lost when "\" is put before the character. The special characters are:

. (period) this is the wildcard character that replaces any other character, eg, "...." will match any 4 character string.

^ (caret) if "^" appears at the beginning of the pattern, then the searched string must start with the substring following the "^". If it occurs anywhere else in the pattern it is regarded as non-special, eg:

```
"^efghi" will match "efghi" or "efghijlk" but not
"abcefghi"
```

**$** (dollar) if "$" appears at the end of the pattern, then the searched string must end with the substring preceding the "$". If occurring anywhere else in the pattern, it is regarded as non-special, eg:

```
"efghi$" will match "efghi" or "abcdefghi" but not
"efghijkl"
```

Examples

If you are using an archie client, and enter the command:

```
arch 2000 ie -s eudora
```

or if you send, by e-mail or during a Telnet session, the command:

```
prog eudora
```

or

```
find eudora
```

then archie will send you the following results:

```
Host ftp.ascii.co.jp    (133.152.1.1)
Last updated 03:38  8 Aug 1993

 Location: /pub/MAC
   DIRECTORY  drwxrwxr-x 2048 bytes 00:00  6 May 1992  eudora

Host ftp.ascii.co.jp    (133.152.1.1)
Last updated 03:38  8 Aug 1993

 Location: /pub/MAC/eudora
   FILE  -r--r--r-- 281139 bytes 00:00 21 Oct 1991  eudo-
ra1.2.2.sit.hqx

Host ftp.ci.ua.pt    (192.80.21.201)
Last updated 04:53  9 Aug 1993

 Location: /pub/NetNews/comp.binaries.mac
   FILE  -rw-r--r-- 438 bytes 12:04 10 Jul 1993  Eudora1.3.readme

Host ftp.ci.ua.pt    (192.80.21.201)
Last updated 04:53  9 Aug 1993

 Location: /pub/NetNews/comp.binaries.mac
   FILE  -rw-r--r-- 278912 bytes 12:04 10 Jul 1993  Eudo-
ra1.3.sit.bin
```

etc.

If you send the command **list \.de$** by e-mail or in a Telnet session, then you will get the following results:

```
alice.fmi.uni-passau.de          132.231.1.180  12:31  8 Aug 1993
askhp.ask.uni-karlsruhe.de       129.13.200.33  12:25  8 Aug 1993
athene.uni-paderborn.de           131.234.2.32  15:21  6 Aug 1993
bseis.eis.cs.tu-bs.de             134.169.33.1  00:18 31 Jul 1993
clio.rz.uni-duesseldorf.de        134.99.128.3  12:10  8 Aug 1993
cns.wtza-berlin.de                141.16.244.4  16:08 31 Jul 1993
```

etc.

If you send the command **whatis compression** by e-mail or in a Telnet session, then you will get the following results:

```
RFC 468      Braden, R.T. FTP data compression 1973 March 8; 5p.
arc          PC compression program
deltac       Image compression using delta modulation
spl          Splay tree compression routines
squeeze      A file compression program
uncrunch     Uncompression program
unsqueeze    Uncompression programs
```

Learning more about ARCHIE

However you communicate with the archie server, on-line help is available.

If you have any questions about archie, write to the Archie Group, Bunyip Information Systems Inc. at **info@bunyip.com**.

Bug reports, comments, suggestions, etc. should be mailed to **archie-group@bunyip.com**. In addition, the database administrator at a particular archie server can be contacted at **archie-admin@address.of.archie.server**, eg: **archie-admin@archie.ac.il**.

Mailing list: **archie-people@bunyip.com**
To subscribe send a mail to: **archie-people-request@bunyip.com**

Archie was developed by Alan Emtage, Peter Deutsch, and Bill Heelan from the McGill University Computing Center, Canada. Now archie is supported by Bunyip Information System Inc., Canada.

Part 4

FINDING PEOPLE AND COMPUTERS

WHOIS

What is WHOIS

WHOIS provides directory service to network users. This service is a way of finding e-mail addresses, postal addresses and telephone numbers. It may also deliver information about networks, networking organizations, domains and sites.

The main database of networking-related names (organizations, sites, networks, people, etc.) is maintained by the Internet Registr 2000 ation Service (*InterNIC*). Actually, the names of the administrative and technical contacts for registered domains are automatically entered into the database when domain or IP number applications are processed by the Internet coordination authority. Each entry of the database has a *handle* (a unique identifier), a name, a record type, and various other fields depending on the type of record. This database will be used as an example in the descriptions below.

Before April 1, 1993, the Network Information Center (NIC) of the Defense Data Network (DDN) was the Internet coordination authority and, therefore, maintained the database (known as the NIC database). The NIC database is now restricted to information about the *.mil* domain. Many documents still refer to these names.

Many academic sites maintain their own database to offer information about their staff members and students.

In its current implementation, WHOIS has some limitations which prevent it from becoming an efficient directory service for a large volume of information and numerous requests: the various WHOIS servers have no knowledge of each other, a database is maintained at each server site, and, finally, new functionalities have been implemented locally at various sites and not propagated. A new extended protocol, **WHOIS++**, is being specified to improve the current service. WHOIS++ will include local enhancements to the WHOIS service, an improved query syntax and its architecture will allow a real distributed directory service for the entire Internet.

This new protocol for directory services will be made available shortly.

Who can use WHOIS

WHOIS is available to users on the international TCP/IP network (the *Internet*).

A WHOIS server is accessible across the network from a user program running on local machines or via an interactive Telnet session to the site which hosts the server.

In addition, the InterNIC offers an electronic mail interface to the database it maintains, allowing users not on the Internet or users with electronic mail only to access this information. This type of access is described below in the **Using WHOIS** section.

In general, WHOIS servers should only be used for isolated queries about specific information. Typically, it is not acceptable to make an extended series of queries to obtain large sections of the directory. Such a strategy is unfair both because of excessive consumption of server resources, and because the directory information belongs to individuals. In particular, extracting lists of people for commercial purposes is strictly prohibited.

How to get to WHOIS

There are many WHOIS servers throughout the network and a comprehensive list would be too long to be included here. A WHOIS server offers information about the organization to which it belongs: it doesn't share a common directory with other WHOIS servers and doesn't know either where to find information about other institutions.

Using WHOIS

WHOIS has become the familiar name of the user program for accessing a WHOIS database, although NICNAME is the original name.

In the following, angle brackets (<>) indicate an optional parameter.

Using a local client:

Unix computers have a native **whois** command. On non-Unix machines, ask your system administrator whether your computer has it or not. This command searches the database on the specified site for entry which contains identifier. The format is:

```
whois        <-h site-name> identifier
```

where:

site-name	is the domain address of the site which hosts the database you want to query (eg, *whois.internic.net*). On some installations, the default value is still set to the old NIC database site (*nic.ddn.mil*).
identifier	is a name (person, host, domain or network), an IP number or a handle.

Special characters may be used in *identifier* to specify the search:

!	before *identifier* will cause a handle-only search.
... or .	after *identifier* will cause a partial search: everything starting with *identifier* will match.

@	in *identifier* will cause a search on the e-mail addresses.
*****	before *identifier* will return the entire membership list of the entry that matches *identifier* (eg, a site and its registered users).
%	before *identifier* will return only the membership list of the entry that matches *identifier* (eg, the registered users of a site).

The special characters may be used together.

The results are displayed in one of 2 ways:

- a full detailed display for a single match,
- a list of summary lines for multiple matches.

In both cases, the handle is shown in parentheses after the name.

Using Telnet:

To access the InterNIC database interactively, telnet to the InterNIC site (**whois.internic.net**). No login is required.

Other WHOIS databases may have a Telnet access and offer most of the functions below (eg, *whois.ripe.net* which hosts the WHOIS database of the European IP Networks).

In the following, CAPITAL letters indicate acceptable abbreviation; angle brackets (<>) indicate an optional parameter.

WHOIS	invokes the information retrieval program.
?	displays a short on-line help.
HElp	accesses the full on-line help.
Q, QUIT, RETURN key	exits WHOIS
<keyword> identifier	searches the database for an entry which contains *identifier*. The default action is to do a broad search, looking for matches in many fields: handle, name, nicknames, hostname, IP number, etc, and finding all record types. *keyword* may be used to narrow the search to a specific record type.

keyword may be one of:

PErson	limits the search to persons.
DOmain	limits the search to domains (eg, DO EARN.NET).
HOst	limits the search to hosts (eg, HO PRINCETON).
NEtwork	limits the search to networks (eg, NE EBONE).

Organization	limits the search to organizations (eg, O CREN).
NAme	same as leading '.' in *identifier*.
HAndle	same as '!' in *identifier*.
PArtial	same as trailing '.' in *identifier*.
Mailbox	same as '@' in *identifier*.
EXPand	same as '*' in *identifier*.
SUBdisplay	same as '%' in *identifier*.
Full or '='	shows detailed display for each match.
SUMmary or '$'	shows summary always, even if just one match.

Special characters may be used in *identifier* to specify the search:

.	before *identifier* will cause a name-only search.
!	before *identifier* will cause a handle-only search.
... or .	after *identifier* will cause a partial search: everything starting with *identifier* will match.
@	in *identifier* will cause a search on the e-mail addresses.
*****	before *identifier* will return the entire membership list of the entry that match *identifier* (eg, a site and its registered users).
%	before *identifier* will return only the membership list of the entry that matches *identifier* (eg, the registered users of a site).
~	before *identifier* will return the entry that matches *identifier* only, no membership list.

The special characters may be used together. Except if *Full* or *SUMmary* are specified, the results are displayed in one of 2 ways:

- a full detailed display for a single match,
- a list of summary lines for multiple matches.

In all cases, the handle is shown in parenthesis after the name.

Using electronic mail:

Users limited to electronic mail connectivity can send requests to the database maintained at the InterNIC by sending mail to **mailserv@internic.net**. The commands are sent in the *Subject:* field. The body part of the mail is ignored except if the *Subject:* line is empty. In that case, only the first line is interpreted.

This electronic mail interface recognizes all commands described in **Using Telnet**. Requests should be prefixed with the word WHOIS. Requests are processed automatically once a day.

Examples

If you are using a local client, and enter the command:

```
whois \!EARN...       (remark: "\" is an escape character)
```

or if you send by e-mail the command:

```
whois !EARN...
```

then you will get the following results:

```
EARN (EARN-HST)   SEINE.EARN.NET                    193.52.216.1
European Academic Research Network (EARN-DOM)           EARN.NET
```

To obtain detailed information on the second item, enter or send the command:

```
whois EARN-DOM
```

then you will get the following result:

```
European Academic Research Network (EARN-DOM)
   EARN Office
   CIRCE BP 167
   91403 ORSAY CEDEX, France

   Domain Name: EARN.NET

   Administrative Contact:
      Bovio, Daniele  (DB355)  hi@FRORS12.CIRCE.FR
      +33 1 6982 3973
   Technical Contact, Zone Contact:
      Grange, Nadine  (NG4)  grange@FRORS12.CIRCE.FR
      +33 1 69823973 (FAX) +33 1 69285273

   Record last updated on 19-Aug-93.

   Domain servers in listed order:

   SEINE.EARN.NET   193.52.216.1
   LUMIERE.CIRCE.FR      130.84.8.14
```

For a partial search, enter:

```
whois hi@f...
```

then you will get the following result:

```
Bovio, Daniele (DB355)  hi@FRORS12.CIRCE.FR
   EARN
   EARN Office
   CIRCE BP 167
   91403 ORSAY CEDEX, France

   +33 1 6982 3973

   Record last updated on 23-Oct-92.
```

Learning more about WHOIS

The WHOIS service is documented in an Internet Request For Comments (RFC 1400).

If you have any questions about WHOIS write to **action@internic.net**.

Bug reports, comments, suggestions, etc. should be mailed to **action@internic.net**.

X.500

What is X.500

X.500 is an OSI (Open System Information) based directory services protocol designed by the CCITT (International Telegraph and Telephone Consultative Committee).

X.500 provides distributed directory services to network users. The X.500 directory specifies a model for connecting directory services to form one distributed global directory. Each 2000 directory service holds a part of the global database and the directory information is made available via a server (called a *Directory System Agent - DSA*). The database is maintained locally. From the user point of view, the entire directory is accessible from the local server.

While most of the information available today via X.500 is about people and organizations, the design of the X.500 directory is also suitable for storing information about other entities (or *objects*), such as network resources, applications or hardware. Several projects are underway which utilise these directory capabilities (eg, the Internet RFCs (Request For Comments) are listed in the global directory).

Each item (*entry*) in the X.500 directory describes one *object* (eg, a person, a network resource, an organization) and has a *Distinguished Name - DN* (a unique identifier). It consists of a collection of *attributes* (eg, last name, organization name, e-mail,...- for a person). The information held in the X.500 directory (or *Directory Information Base - DIB*) is arranged hierarchically. This organization is called the *Directory Information Tree (DIT).* At the top-level is the root entry (*the World*), then the country level, then the organization level, and, eventually, the people, the resources, etc., at the bottom-level of the hierarchy.

Who can use X.500

Although X.500 is part of the OSI standard definition, OSI access is not necessary to use the directory services. Many X.500 services are available on the Internet. In addition, users on any network can access the X.500 directory by electronic mail. See the section **Using X.500** below for details.

How to get to X.500

There are three ways to access the X.500 services: via a local client, interactive session (Telnet or X.25 access) or electronic mail. Each type of access is described below in the **Using X.500** section.

In addition, other network tools (eg, WWW and Gopher) provide access to X.500 directory services through gateways.

Accessing a remote client is an easy way to start querying the X.500 directory. Some sites allow public access via Telnet or X.25 to a client. Public access user interfaces are available at:

Telnet (login)	Public X.25 (login)	Country
jethro.ucc.su.oz.au (fred)		Australia
elem4.vub.ac.be (dua)	222100611	Belgium
login.dkuug.dk (ds)		Denmark
nic.funet.fi (dua)		Finland
	20800603053201	France
	(login: dua, password: ucom.x)	France
	26245050230303	Germany
ashe.cs.tcd.ie (de)		Ireland
jolly.nis.garr.it (de or fred)	22225010083212	Italy
zoek.nic.surfnet.nl (zoek)		Netherlands
elc1.mat.torun.edu.pl (de or dish)		Poland
chico.rediris.es (directorio)	2142160234013	Spain
hypatia.umdc.umu.se (de)	240374810306	Sweden
nic.switch.ch (dua)	22847971014540	Switzerland
paradise.ulcc.ac.uk (dua)	23421920014853	Paradise

Paradise is a European project to encourage the use of X.500 in European countries.

To connect to one of these sites, select an access method (Telnet or X.25) and at the *login:* prompt type the specified login, if required.

Using X.500

X.500 supports data management functions (addition, modification and deletion of entries) and powerful lookup capabilities. The use of X.500 is primarily for its lookup capabilities, ie, querying a database for information on a person (postal address, telephone number, e-mail address, etc.). The basic fields for searching are the person's name, the name of the person's organization (and department within the organization) and the country.

Inrackets (<>) indicate an optional parameter; a vertical (|) indicates a choice of parameters.

Using a local client:

In the X.500 world, a local client is called a *Directory User Agent (DUA)* Public domain and commercial DUAs are available for numerous platforms ranging from mainframes to personal computers. For a comprehensive list of DUAs, their description and where to find them, consult the Internet document RFC 1292 - **A Catalog of Available X.500 Implementations**.

Available DUAs range from simple line commands to sophisticated graphical user interfaces which require a pointing device.

Using Telnet or X.25:

3 categories of user interfaces might be available at the remote site:

- line-oriented: de, dish, fred
- menu-driven: sd (formerly known as widget)
- X-Windows-based: Xdi, Xlookup (or xlu), pod

Capabilities of these DUAs range from basic search facilities to full X.500 functionality.

de (*directory enquiries*) is recommended for novice users since it is a very simple user-interface. It has been designed to run as a public access DUA and is accessible from any kind of terminal. It supports the basic X.500 functions: read, search, list. The *Simple query* mode is suitable for those who are new to querying the X.500 directory.

de	invokes the X.500 interrogation user-interface.
q	exits **de**.
?<topic>	displays the on-line help on the specified *topic* or general help.
ˆC	(Ctrl-C) is the interrupt character. It aborts a search in progress or resets the current query specification.
*****	(asterisk) will list all entries of the specified field. It is also the wildcard character and can replace any other character in a name. It can appears anywhere in the name, eg: *smit** or **smit** are valid string formats.
-	resets the default value to a blank string.

When **de** is invoked, the user is requested to fill in 4 fields to specify a request. In all fields, the value from the previous request is the default value. Press the RETURN key to accept it, or enter a new value. All searches are case insensitive.

The four fields to be filled in are:

Person's name
Wildcard characters may be used anywhere in the name. All matching names will be listed. Typing only "*" will match all people of the specified *department* or *organisation*. If this field is blank, the search will be on *department* or *organization* only.

Department name
the name (or an acronym) of the department in the organization where the person works. Wildcard characters may be used anywhere in the name. Typing only "*" will match all departments. If no person's name has been entered, details on the department are displayed, otherwise, the search is carried out with the selected name. If no department name is given, all departments will be searched. This field could be omitted in small organizations.

Organization name

the name (or an acronym) of the organization where the person works. Wildcard characters may be used anywhere in the name. Typing only "*" will match all organizations. If no person's name or department name has been entered, details on the organization are displayed, otherwise, the search is carried out with the selected name.

Country name

the name of the country where the person works. Typing "*" will list all countries. The country n 2000 ame could be the 2-letter country code (eg, DK stands for Denmark), the name or a part of it without wildcards (eg, nether instead of The Netherlands).

If a large number of matching entries are found, they are listed so that the user can select one entry to get further details.

Using electronic mail:

The Norwegian networking organization (UNINETT) offers an e-mail interface to X.500. To use it, send a mail message to: **Directory@UNINETT.NO** with the word **find** in the *Subject:* field. The body part contains the search request, one per message.

The format of the search request is:

```
find        <person-name>  <: org-name  <; country-name>> | <; country-name>
```

If *org-name* and *country-name* are omitted, the sender's organization name and country name are used as default values. The mail interface guesses these values from the *From:* field of your mail, so the results can be surprising if your address ends with *.bitnet*!

"*" (asterisk) is the wildcard character and can replace any other characters in any name. It can appear anywhere in the name.

The result of the query is sent back in a mail message. The search is case insensitive.

Note: To avoid overloading the directory service, users are not allowed to search for a person without selecting an organisation. To receive a help file, send the word **help** instead of a **find** command.

Examples

Using **de**, you can search for the *Anthropoloy* department of the *University College of London* in *United Kingdom*, with the following request:

```
Person's name, q to quit, * to browse, ? for help
:-
Department name, * to browse, ? for help
:- a*
Organisation name, * to browse, ? for help
:- ucl
Country name, * to browse, ? for help
:- uk
```

A few entries match the selected department, all are listed for further selection:

```
United Kingdom
  University College London

Got the following matches.  Please select one from the list
by typing the number corresponding to the entry you want.

United Kingdom
  University College London
      1 A.U.T. Office
      2 American Institute for Foreign Study
      3 Anatomy and Developmental Biology
      4 Anthropology
      5 Audio Visual Centre
Department name, * to browse, ? for help
:- 4
United Kingdom
  University College London
    Anthropology
        Telephone Number      +44 71-387-7050 x2455
        fax                   +44 71 380 7728
```

If you are looking for *Erik Lawaetz* from *UNI-C* in *Denmark*, you can enter the following request (default values come from a previous request):

```
Person's name, q to quit, * to browse, ? for help
:- law*
Department name, * to browse, <CR> to search all depts, ?
for help
:-
Organisation name, * to browse, ? for help
:- uni-c
Country name, * to browse, ? for help
:- dk
```

One entry matches the selected criteria, details are displayed:

```
     Denmark
       UNI-C
           Erik Lawaetz
             postalAddress         UNI-C
                                   DTH
                                   Bygning 305
                                   DK-2800 Lyngby
             Telephone Number      +45 45 93 83 55
                                   +45 42 88 39 99 x2018
             fax                   +45 45 93 02 20
             electronic mail       Erik.Lawaetz@uni 2000 -c.dk
```

If you send mail to Directory@UNINETT.NO with the request:

```
     find geir ped* : *oslo ; no
```

you'll get the following result:

```
This message is in response to your request to the directory to
find

                         geir ped* : *oslo ; no

This is  interpreted as a  request to find  a person with  a name
matching  "geir  ped*"  in  an organisation  with  name  matching
"*oslo" in a country with a name matching "no".

There   were   8  organisations   with   a   name  matching   the
organizational  name you  specified.  Within those  organisations
there were 7  persons that had a name matching  the personal name
you specified.  Directory information for the  located persons is
shown below.

Geir Pedersen : Universitetet i Oslo ; Norway

  Alternate        Geir Kenneth Pedersen
  Alternate        Geir K. Pedersen
  E-Mail (RFC)     Geir.Pedersen@usit.uio.no
  E-Mail (X.400)   /G=geir/S=pedersen/OU=usit/O=uio/PRMD=uninett/
                   ADMD= /C=no/
  Postal Address   Postboks 1059 - Blindern
                   0316 Oslo 3
                   NORWAY
  Phone            +47-22-852478
  Phone            +47-22-852470 (front-office)
  Fax-phone        +47-22-852730
  Description      Project leader for UNINETTs X.500 projects
  User ID          geirp
  Favorite Drink   Farris
  Street Address   Gaustadalleen 23
```

```
  Home Address     Gaustadveien 17A
                   0372 Oslo 3
                   NORWAY
  See also         Geir Pedersen : UNINETT ; Norway
  Entry updated    Tue Jun 15 11:51:31 1993
```

and 6 other entries.

Learning more about X.500

Several Internet RFC documents deal with X.500:

RFC 1292	A Catalog of Available X.500 Implementations.
RFC 1308	Executive Introduction to Directory Services Using the X.500 Protocol,
RFC 1309	Technical Overview of Directory Services Using the X.500 Protocol,

The official source of information on X.500 is the X.500 recommendation published by the CCITT (Blue Book, Volume VIII - Fascicle VIII.8, Data Communication Networks Directory, Recommendations X.500-X.521, CCITT, 1988, ISBN 92-61-03731-3). This document is also available electronically: send the command **GET ITU-5233** to **itudoc@itu.ch**. This is not intended for the casual user!

NETFIND

What is NETFIND

NETFIND is an Internet user directory tool. It provides a simple Internet *white pages* directory facility.

Given the name of a person on the Internet and a rough description of where the person works, Netfind attempts to locate telephone and electronic mailbox information about the person. It does so using a *seed* database of domains and hosts in the network.

Netfind finds information about people through the Internet protocols *SMTP* and *finger*. If the person being sought is at a site that is not directly connected to the Internet (e.g., the site is connected only through a mail forwarding gateway), Netfind informs the user that the person can not be found.

Due to the dynamic nature of Netfind's search procedures and variations in Internet availability,

The Netfind software can only run on Suns running SunOS 4.0 or more recent.

Who can use NETFIND

You must be on the international TCP/IP network (the Internet) in order to use Netfind. Moreover, Netfind can only find information on users who are on the Internet.

There is no e-mail access to Netfind.

How to get to NETFIND

You can access Netfind through software at your site (local access), or you can use Telnet to access it at one of the following hosts (remote access):

Host	Country	Host	Country
archie.au	Australia	bruno.cs.colorado.edu	USA
dino.conicit.ve	Venezuela	ds.internic.net	USA
lincoln.technet.sg	Singapore	macs.ee.mcgill.ca	Canada
malloco.ing.puc.cl	Chile	monolith.cc.ic.ac.uk	England
mudhoney.micro.umn.edu	USA	netfind.oc.com	USA
netfind.vslib.cz	Czech Rep.	nic.nm.kr	Korea
nic.uakom.sk	Slovakia	redmont.cis.uab.edu	USA

Using NETFIND

To use Netfind, you give it the name of a person and keywords indicating where that person works. After you specify a search, Netfind looks in its *seed* database to find domains matching the specified keywords. If there is more than one matching domain, Netfind displays the list of matching domains, and asks you to select up to three to search. If the keys you specified match more than 100 domains, Netfind will list some of the matching domains/organizations and ask you to form a more specific search. You can use any of the parts of an organization's name (or any of the components of its domain name) as keys in searches. Using more than one key implies the logical AND of the keys. Specifying too many keys may cause searches to fail.

When it completes the search (or when interrupted by ˆC), Netfind summarizes the search results. The summary includes problems searching remote domains, information about the most promising email address for the person being sought (if available), and information about when and where the person most recently/is currently logged in (if available). If more than one person is located by a search, the summary does not include information about email targets and most recent/current logins (since only the user can decide which person was the correct one.)

Local access:

The format of the Netfind command is:

```
netfind        <options>  name-keyword  place-keywords
```

where the options are:

-h	tells Netfind to skip the domain search phase, and immediately begin searching individual machines found in the seed database. This option exists for measurement purposes. It is not of much use to casual users.
-s	will disable usage of the SMTP protocol during searches. This option is mainly useful for measurement purposes. Without this protocol, searches will begin producing finger output slightly sooner, but will often search less useful machines, generate more Internet load, and fail to find information for users at sites that do not support finger (such as many companies).
-t	will report how many timeouts occurred. The *-T* option will set the timeout interval to the specified number of seconds. It may be necessary to use this option to increase the timeout value for intercontinental searches.
-D	sets the maximum number of domains that Netfind will search at once. The default is 3. While it may seem convenient to set a high value for this number, we suggest you do not do this. The search will actually proceed faster (and waste less Internet bandwidth) if a small number of well chosen domains are searched.
-H	sets the maximum number of machines that will be searched by Netfind. The default value is 50. Again, we suggest that you do not set this value higher.

-m displays measurement information. If no filename is specified, measurements are output to *stderr*. The packet count estimates are usually exaggerated, because they make pessimistic assumptions about the state of the Domain Naming System.

-d allows you to turn on various classes of debugging output (all of which are output to *stderr*), using a letter corresponding to each one. Debugging output is enabled using the *-d* option with a list of letters, eg, *-dslf*. The following classes/letters exist:

c:	display control messages (check if the program has reached a specified point)
f:	display finger related messages
h:	list machine names found in the seed database
l:	display lock related messages (when entering monitors)
m:	display messages about mail protocol (SMTP)
n:	display messages about network failures
r:	display hosts matched from the seed database that were rejected from searches because of search scope selection
s:	display system call related messages
t:	display thread related messages
A:	convert the above flags to mean their complement (example -dAt means produce all debug output except that for threads).

The letters that are most likely to be of interest to the casual user are *f, m,* and *n*. By default, these options are enabled. Specifying any of these three flags with *-d* on the command line will disable them (hence, the *-d* option toggles the default behavior of each of the flags).

The name keyword specifies the person being sought by first, last, or login name (only one name can be specified).

The place keywords describe where the person works, by either the name of the institution or the city/state/country. If you know the institution's domain name (e.g., *cs.colorado.edu*, where there are host names like *brazil.cs.colorado.edu*) you can specify it as keys without the dots (eg, *cs colorado edu*). The host parts of domain names (*brazil*) cannot be used as keywords. Keys are case insensitive and may be specified in any order, although using a very common key (like *university*) first will cause internal buffers to overflow and some domains to be missed.

Using more than one key implies the logical **and** of the keys. Specifying too many keys may cause searches to fail. If this happens, try specifying fewer keys.

Remote access:

Telnet to one of the remote Netfind sites (see **How to get to NETFIND**, above) and log in as **netfind**. No password is necessary. You will get the following menu:

```
Top level choices:
        1. Help
        2. Search
        3. Seed database lookup
        4. Options
        5. Quit (exit server)
```

If you select Search, you will be given an opportunity to enter a name keyword and place keywords.

Examples

To find the address of e-mail address of *Nadine Grange*, who works at the EARN office at *CIRCE* in *France*, you could try the keywords:

```
nadine circe france
```

Since there are more than three domains that fit the place keywords, you are asked to pick a few. The search proceeds, using the domains of your choice:

2000

```
Please select at most 3 of the following domains to search:
0. circe.fr (centre national de la recherche scientifique, orsay ce
1. ciripa.circe.fr (centre inter-regional de calcul electronique, c
2. dnet.circe.fr (centre national de la recherche scientifique, ors
3. ibmmail.circe.fr (centre national de la recherche scientifique,
4. obspm.circe.fr (centre national de la recherche scientifique, or
5. oecd.circe.fr (centre national de la recherche scientifique, ors
6. phy.circe.fr (centre national de la recherche scientifique, orsa
7. ups.circe.fr (centre national de la recherche scientifique, orsa
8. cth.ups.circe.fr (centre national de la recherche scientifique,
9. lure.ups.circe.fr (centre national de la recherche scientifique,
10. lps.cth.ups.circe.fr (centre national de la recherche scientifi

Enter selection (e.g., 2 0 1) --> 0
( 1) check_name: checking domain circe.fr.  Level = 0
------
Search of domains completed.  Proceeding to search of hosts.
------
( 3) check_name: checking host loire.circe.fr.  Level = 0
( 4) check_name: checking host solrt.circe.fr.  Level = 0
( 5) check_name: checking host groucho.circe.fr.  Level = 0
( 1) check_name: checking host rsovax.circe.fr.  Level = 0
( 2) check_name: checking host ventura.circe.fr.  Level = 0
( 1) do_connect: Finger service not available on host rsovax.circe.     c
```

```
( 1) check_name: checking host earn-ng.circe.fr.  Level = 0
( 4) check_name: checking host luregate.circe.fr.  Level = 0
SYSTEM: loire.circe.fr
  Login name: nadine                    In real life: Nadine Grange
  Directory: /home/nadine               Shell: /bin/csh
  On since Sep  7 08:48:05 on ttyp0     4 days 21 hours Idle Time
  New mail received Sun Sep 12 00:00:08 1993;
    unread since Fri Sep 10 11:53:17 1993
  No Plan.

  Login name: nadine                    In real life: Nadine Grange
  Directory: /home/nadine               Shell: /bin/csh
  On since Sep  7 09:17:09 on ttyp6     1 day 12 hours Idle Time


SUMMARY:
- "nadine" is currently logged in from
  loire.circe.fr, since Sep  7 09:17:09.
- The most promising email address for "nadine"
  based on the above search is
  nadine@loire.circe.fr.
```

Note that Netfind found only an Internet address on a Unix machine.

Learning more about NETFIND

The remote access version of Netfind has a large *Help* section. There is also a set of *frequently asked questions* available with the software release, in the *Doc* directory. These questions cover Functionality, Methodology, Network and Remote Site Load, Privacy, Future Directions, and Related Work.

A noteworthy article on Netfind is:

Experience with a Semantically Cognizant Internet White Pages Directory Tool, by M. F. Schwartz and P. G. Tsirigotis, Journal of Internetworking Research and Experience, March 1991, pp. 23-50.

This publication discusses the research principles, performance, and scope measurements of Netfind, and compares it with other white pages facilities.

There is a mailing list for Netfind users (for software updates and other discussions). To be added to the list, send an email message to **netfind-users-request@cs.colorado.edu** with the body (not subject line) **subscribe netfind-users**

Part 5

GETTING FILES

TRICKLE

What is TRICKLE

TRICKLE is a service which will send you files on request or by subscription. TRICKLE works with various anonymous FTP sites (computers in the Internet 2000 network that allow public access and retrieval of software and files). It provides a quick and easy alternative to FTP, whether or not you have access to the Internet.

There are several TRICKLE servers throughout the world that cooperate to distribute the files efficiently. To request files, the user issues commands to the nearest TRICKLE server, which delivers the software either from its local cache disk, from the cache of another TRICKLE server, or from an FTP site that holds the software.

Who can use TRICKLE

There are currently TRICKLE servers at the following addresses:

Location	EARN/BITNET	Internet
Austria	TRICKLE@AWIWUW11	TRICKLE@awiwuw11.wu-wien.ac.at
Belgium	TRICKLE@BANUFS11	TRICKLE@ccs.ufsia.ac.be
Colombia	TRICKLE@UNALCOL	TRICKLE@unalcol.unal.edu.co
France	TRICKLE@FRMOP11	TRICKLE@frmop11.cnusc.fr
Germany	TRICKLE@DEARN	TRICKLE@vm.gmd.de
Israel	TRICKLE@TAUNIVM	TRICKLE@vm.tau.ac.il
Italy	TRICKLE@IMIPOLI	TRICKLE@imipoli.cdc.polimi.it
Netherlands	TRICKLE@HEARN	TRICKLE@hearn.nic.surfnet.nl
Poland	TRICKLE@PLEARN	TRICKLE@plearn.edu.pl
Sweden	TRICKLE@SEARN	TRICKLE@searn.sunet.se
Turkey	TRICKLE@TREARN	TRICKLE@ege.edu.tr
Turkey	TRICKLE@TRMETU	TRICKLE@3090.cc.metu.edu.tr
UK	TRICKLE@UKACRL	TRICKLE@ib.rl.ac.uk

When you send a command to a TRICKLE server, it either executes the command or sends you a message with the address of the TRICKLE server for your area.

The files which are available from TRICKLE are organized in main directories which contain many subdirectories. The main directories which are currently available are:

Directory	**Source FTP Site**	**Contents**
MSDOS	simtel20.army.mil	Large MS-DOS software archive
MISC	simtel20.army.mil	Software for VM, VMS, Unix
SIGM	simtel20.army.mil	SIG/M CP/M archive
PC-BLUE	simtel20.army.mil	PC-BLUE MS-DOS archive
CPM	simtel20.army.mil	CP/M Software Archive
ARCHIVES	simtel20.army.mil	Various discussion group archives
UNIX-C	simtel20.army.mil	Unix and C code software archives
MACINTOS	simtel20.army.mil	Apple Macintosh software archives
OS2	ftp-os2.nmsu.edu	Large archive of OS/2 software
AMIGA	nic.funet.fi	Large Amiga collection
KERMIT	watsun.cc.columbia.edu	Kermit network software
TEX	rusinfo.rus-uni-stuttgart.de	TeX software and fonts
WUARCHIVE	wuarchive.wustl.edu	MS-DOS and others
EXPO-MIT	export.lcs.mit.edu	Unix and others
UUNET	ftp.uu.net	Unix and others
SUMEX-AIM	sumex-aim.stanford.edu	Macintosh and others
GARFIELD	garfield.catt.ncsu.edu	Multimedia (pictures and sounds)
X11	export.lcs.mit.edu	X-Windows software distribution
LINUX	nic.funet.fi	Linux system software distribution

Not all directories are available at all servers. If your closest server does not provide the directory of your choice, you can use any other TRICKLE for the missing directory. If your closest server is temporarily unavailable, you can use any other TRICKLE instead.

How to get to TRICKLE

You send commands to TRICKLE by electronic mail. The commands should be in the body of the mail message, one command per line. Any number of commands (up to your daily command limit) may be placed in one message. Users on the EARN/Bitnet network may also send commands to TRICKLE by interactive message.

Using TRICKLE

All

```
/PDDIR

/PDDIR      <dirname>

/PDDIR      <dirname.subdirname>pattern
```

where:

dirname	is the name of a main directory,
subdirname	is the name of a subdirectory,
pattern	is part of a filename.

Use **/PDDIR** without any parameters to get a listing of the main directories. With **PDDIR <dirname>** you will get a listing of the subdirectories under that directory. If you specify both directory and subdirectory, it will list the files that are available in that subdirectory. With *pattern*, you will get a listing of only those files that match or begin with that *pattern*. Wildcards "?" and "*" may be imbedded into *subdirname* and *pattern* ("?" matches any single character; "*" matches any number of characters).

Use the **/PDGET** command to get files.

```
/PDGET      <dirname.subdirname>filename ( delivery-option
```

where:

dirname	is the name of a main directory,
subdirname	is the name of a subdirectory,
filename	is the name of a file.

delivery-option

specifies the format to which the file(s) should be translated before being sent to you. The possible values are:

```
EBC80  UUE  XXE  HEX  BTOA
```

The option EBC80 should be used to get text files if you work on an IBM mainframe system. The other options are formats for translating binary files so that they can be sent via electronic mail. You will need a program to translate the file back to its original form. The default for EARN/Bitnet users is to send the file as-is. The default for others is UUE.

Wildcards "?" and "*" may be imbedded into *subdirname* and *filename* ("?" matches any single character; "*" matches any number of characters) to get several files.

The **/SUB** command is used to subscribe to directories or to individual files.

/SUB <dirname>

/SUB <dirname.subdirname>pattern

/SUB QUERY

where:

dirname	is the name of a main directory,
subdirname	is the name of a subdirectory,
pattern	is part of a filename.

If you subscribe to a directory, you will get a summary of added files about once a week, depending on how active the FTP site is. This listing shows the names, sizes and dates of each file added. If you subscribe to files, as soon as TRICKLE is informed that a new version of the file has been stored at its FTP site, a copy of the file will be sent to you.

Note that since filenames usually reflect the version number of the file, it is a good idea to omit the number when specifying a *pattern*. For example, it is better to send the command:

```
/SUB <MSDOS.VIRUS>SCANV
```

rather than

```
/SUB <MSDOS.VIRUS>SCANV106
```

since, as new versions of the file are stored, the name might change to SCANV107, SCANV108, etc.

Wildcards are not allowed with the **/SUB** command.

The **/SUB QUERY** command allows you to get a list of the files you are subscribed to.

The **/UNSUB** command may be used to cancel a subscription.

/UNSUB <dirname>

/UNSUB <dirname.subdirname>pattern

where:

dirname	is the name of a main directory,
subdirname	is the name of a subdirectory,
pattern	is part of a filename.

The command **/UNSUB *** may be used to terminate all your directory and file subscriptions.

Examples

For a listing of the files in the VIRUS subdirectory of SIMTEL20 (the MSDOS directory), send the command:

```
/PDDIR <MSDOS.VIRUS>
```

To get the file 00-INDEX.TXT from <MSDOS.VIRUS> in EBCDIC format, send the command:

```
/PDGET <MSDOS.VIRUS>00-INDEX.TXT ( EBC80
```

If you are not sure of the exact name of the file, you can use wildcards:

```
/PDGET <MSDOS.VIR*>*INDEX* ( EBC80
```

To subscribe to automatically get new versions of the SCANV software from <MSDOS.VIRUS>, send the command:

```
/SUB <MSDOS.VIRUS>SCANV
```

To unsubscribe from all files in the VIRUS subdirectory, send the command:

```
/UNSUB <MSDOS.VIRUS>*
```

Learning more about TRICKLE

The **/HELP** command may be sent to any TRICKLE server to obtain a very detailed help file from the server.

A brief guide to TRICKLE is available from the EARN documentation filelist. Send mail to **LISTSERV@EARNCC.BITNET**. In the body of the message, write:

GET TRICKLE MEMO

BITFTP

What is BITFTP

BITFTP, BITNET FTP Server, allows users of EARN, Bitnet and associated networks to access FTP sites on the Internet.

The BITFTP server provides a mail interface between a user on the EARN/Bitnet network to FTP sites on the Internet. BITFTP handles this task by passing the commands specified in the mail message from the user to another server that actually makes the connection to the FTP sites. When the server finishes the interaction with the FTP site, or fails due to an error, a transcript of the result is sent back to the user, as well as the requested file(s), if any.

The format of the files sent to the user can be defined within the mail message. BITFTP can deliver files in *netdata* and *uuencode* formats.

Who can use BITFTP

BITFTP is currently available only to users on EARN, Bitnet and other regional NJE networks. BITFTP does not support multiple file request via the **mget** command nor does it support sending files to FTP sites (the **put** command).

How to get to BITFTP

There are BITFTP servers currently running at:

BITFTP@DEARN.BITNET	Germany
BITFTP@PUCC.BITNET	USA

Users on the EARN/Bitnet international network only may use the US server. Only users from EARN member countries may use the server in Germany. Servers at other locations are planned.

BITFTP accepts requests via electronic mail, including IBM NOTE and PROFS-format messages, as well as by NJE file transfer.

Using BITFTP

BITFTP implements a large subset of the FTP commands of the IBM's TCP/IP for VM, using the same syntax. This software is documented in the IBM manual **TCP/IP for VM User's Guide**. In the following, angle brackets (<>) indicate an optional parameter.

Use the **ftp** command to specify which host to connect to. This command must be the first command in your mail file. You can also specify the file format that you wish BITFTP to use to deliver files to you.

ftp hostname <fileformat>

where:

hostname	is either the IP address or the domain name of the host to connect to,
fileformat	is the format in which BITFTP should deliver files to you. It can be either *netdata* or *uuencode*.

Use the **user** command to tell the host the username and the password to be used for the FTP connection. Note that on many FTP sites, both username and password are case-sensitive.

user username password

where:

username	is the user-id to use for the FTP connection,
password	is the password for the username you specified. It can be omitted if you specified *anonymous* for the userid.

Use the **cd** command to select a particular directory as current directory.

cd directory-name

where:

directory-name	is the name of the directory to be selected.

Use the **dir** command to display a list of the files in the current, or specified, directory. The file names, and depending on the site, the file size, file creation date and other information will be listed.

dir <pattern>

where:

pattern	is a pattern that defines which file names should be displayed. Many FTP sites are case-sensitive, thus care must be used with the pattern. The pattern may contain any number of characters, and the wildcard character "*" (asterisk) may be used to represent any characters.

The **ls** command is similar to the **dir** command, except that with most FTP sites, it only displays the filenames, without any other information. The pattern specification is identical to **dir**.

```
ls            <pattern>
```

Use the **get** command to obtain a file from the current host.

```
get           foreignname <localname>
```

where:

foreignname	is the filename of the file, as stored at the FTP site. With many sites, the case of the filename must be respected.
localname	is an optional local filename. If you specify a localname, it must be in the form: filename.filetype where neither part is longer than eight characters.

Use the **binary** command to set the FTP transfer mode. If this option is set then no EBCDIC-ASCII translation will take place. This should be used for non-text files.

```
binary
```

Use the **quit** command to close the connection to the host, and to terminate the BITFTP session.

```
quit
```

Examples

To get the file *how.to.ftp.guide* from the directory */pub/nic/network.service.guides* at the anonymous FTP site *nic.sura.net*, and to get a listing of the files in that directory, you could send the following commands by e-mail to BITFTP:

```
     ftp nic.sura.net
     user anonymous
     cd pub/nic/network.service.guides
     get how.to.ftp.guide
     dir
     quit
```

In response you will receive an e-mail containing the following lines (some 2000 lines have been removed for brevity):

```
> ftp nic.sura.net
> user anonymous
>> OPEN NIC.SURA.NET
>> USER anonymous

> cd pub/nic/network.service.guides
>> CD pub/nic/network.service.guides

> get how.to.ftp.guide
>>>> "how.to.ftp.guide" sent as "HOWTO FTPGUIDE".

> dir

total 60
-rw-rw-r--  1 mtaranto 120   344 Apr 14  1992 README
-rw-rw-r--  1 mtaranto 120 12759 Oct 30  1992 how.to.email.guide
-rw-rw-r--  1 mtaranto 120  6327 Mar 24 13:28 how.to.ftp.guide
-rw-rw-r--  1 root     120  2818 Mar  4  1992 how.to.telnet.guide
-rw-rw-r--  1 mtaranto 120  6136 Oct 30  1992 how.to.use.vi.guide
-rw-r--r--  1 1086     120     0 Aug 18 21:23 plane.
```

The above directory listing is typical of the format of Unix FTP sites. There is information on file permissions and ownership as well as the size of the file in bytes, the time and date of its last change, and the file name.

You could request the first two files by once again sending mail to BITFTP with the following commands:

```
     ftp nic.sura.net
     user anonymous
     cd pub/nic/network.service.guides
     get README
     get how.to.email.guide
     quit
```

Learning more about BITFTP

A four-page instruction to the BITFTP service can be obtained by sending a **help** command in the body of a mail message to either BITFTP server.

Additional information on BITFTP may be obtained from EARN (**NETHELP@EARNCC.BITNET**). More information about TCP/IP and FTP in general can be obtained from a wide variety of sources, such as the documents mentioned in the example above.

Part 6

NETWORKED INTEREST GROUPS

LISTSERV (Version 1.7f)

What is LISTSERV

LISTSERV is a distribution list management package. It runs on IBM VM/CMS systems in the international NJE network (EARN/Bitnet). It allows groups of computer users with a common interest to communicate among themselves, while making efficient use of computer and network resources. It makes it easy for even novice users to discover, join, and participate in these interest group mailing lists. LISTSERV also provides facilities for logging and archiving of mail traffic, file server functions, and database searches of archives and files.

There are LISTSERV lists on every subject under the sun, with names ranging from AARPUB-L (*AAR Electronic Publication list*) to Z3950IW (*Z39.50 Implementors Workshop*). LISTSERV lists are international and eclectic. You will find lists in every imaginable field, for every audience, in many different countries and in many different languages. See the description of the **List** command in the section **Using LISTSERV** section for instructions on getting an up-to-date list of lists.

Who can use LISTSERV

Anyone who can send electronic mail to an EARN/Bitnet address can participate in a mailing list and access other LISTSERV facilities, as long as the e-mail format is valid (according to the RFC822 standard), and has a usable return address. Every day, people use LISTSERV from HEPnet, Internet, Compuserve, MCIMail and many other networks throughout the world.

If you don't know how to send electronic mail to EARN/Bitnet, ask your local support people for help.

How to get to LISTSERV

To use LISTSERV facilities, send electronic mail with your LISTSERV commands to: LISTSERV@host-id where *host-id* is the host computer's NJE address (for example,

some local variation on the format needed to send mail to Bitnet or Internet addresses. Check with your local support personnel.

More than one command can be sent to LISTSERV in the same mail message. Each command must be on a separate line. LISTSERV will ignore the *Subject:* line of the mail header, so ensure that your commands are in the body of the e-mail.

For EARN/Bitnet users, interactive messages are the fastest and most convenient way to send commands to LISTSERV, but bear in mind that interactive messages only work when the links between your computer and LISTSERV are up; if the message fails, you can always send your command via mail.

To facilitate communications with the LISTSERV servers on the EARN/Bitnet network, a special LISTSERV computer node has been defined. This means that any EARN/Bitnet user can address their commands to the userid LISTSERV at the special node LISTSERV.

All non-EARN/Bitnet users may address their command mail to the userid LISTSERV at the special node LISTSERV.NET. Note that if this node is not yet defined on your network, you may also try LISTSERV%LISTSERV.BITNET@CUNYVM.CUNY.EDU. For example, if you wanted to join the 3D-L mailing list that discusses 3D computer graphics but are not sure of the address of the LISTSERV server hosting this list. You could send a subscription request to either of the following addresses:

```
LISTSERV@LISTSERV.NET
LISTSERV@LISTSERV      (on BITNET)
```

Your subscription request will be automatically forwarded on to the LISTSERV server hosting the 3D-L mailing list (in this case, at the computer node ARIZVM1).

You may also utilize the special LISTSERV address to send e-mail to any LISTSERV mailing list if you are unsure of its address. For example, if you wanted to send mail to the BITFTP-L mailing list to request a copy of the BITFTP product, you could do so by addressing your e-mail to BITFTP-L@LISTSERV.NET. It will automatically be forwarded to the list's real address (in this case, BITFTP-L@EARNCC.BITNET) when it reaches the LISTSERV node. Once you know the real address of a list, it should be used for all future mail sent to that list.

There are more than 250 sites in over 30 countries throughout the world running LISTSERV as part of the world-wide network. Here are a few of the LISTSERV sites:

Host Computer	**Site**	**Country**
BITNIC	BITNET Network Information Center	USA
DEARN	GMD, Bonn	Germany
EARNCC	EARN Office, Paris	France
HEARN	Katholieke Universiteit Nijmegen	Netherlands
PUCC	Princeton University, New Jersey	USA
SEARN	Kungliga Tekniska Hoegskolan, Stockholm	Sweden

Using LISTSERV

The commands given here are available for everyone and require no special LISTSERV command privileges. Only the most common commands are described. For a complete list of non-privileged LISTSERV commands, retrieve the **LISTSERV User Guide** in the **DOC FILELIST** from **LISTSERV@EARNCC.BITNET**.

Commands are presented in a particular format: CAPITAL letters indicate acceptable abbreviation, angle brackets (<>) indicate an optional parameter, and vertical bar (|) indicates a choice of parameters. All parameters are fully explained in each command description.

There is a standard set of command keywords available for use in some LISTSERV commands. They may be used with any commands where they appear as optional parameters in the command description. The important standard keywords are:

PW= password

This keyword is used to specify a password in a command. If you have register 2000 ed a personal password on a LISTSERV server, you will then have to validate certain commands by using the *PW=* command keyword in the command text. This feature is designed to prevent impostors from issuing commands while using your e-mail address. The use of passwords is strongly recommended for this reason. See the **PW** command for details on registering personal passwords. Once you have registered a personal password at a LISTSERV server, you will be obliged to include the *PW=* command keyword in all commands where it appears as an option.

F= format This keyword controls the file format (or internal file structure) in which files will be sent to you. If you are not a member of the EARN/Bitnet network, then LISTSERV will always use the default file format of *MAIL*. Otherwise, the default file format is dependent upon the information held in the *BITEARN NODES* file regarding your computer. The BITEARN NODES file is a special network definition file used in the EARN/Bitnet network. Any user may ask for a file format other than their default by specifying it in the *F=* command keyword in the commands where it appears as an option. Note that this will not permanently change your default file format, its effect is only for those commands where it is specified. Following is a list of file formats that are valid for all users:

```
XXE  UUe  MIME/text  MIME/Appl  MAIL
```

In addition, EARN/Bitnet users may specify:

```
Netdata  Card  Disk  Punch  LPunch  VMSdump
```

Contact your local support personnel for more information about the file formats supported on your computer.

Commands for LISTS:

The primary function of LISTSERV is to operate mailing lists (also referred to as distribution lists). Mailing lists are used to distribute the e-mail sent to them to a list a recipients. They provide the means for a group of users to establish an e-mail forum on any topic or area of common interest. This service provides an extremely convenient means for the exchange of ideas and information between list members since LISTSERV (and not the mail sender) manages the distribution of e-mail to all of its final recipients. Users need only to remember one list address to which they send their mail in order to communicate to a potentially large number of users. Due to the efficiency with which LISTSERV distributes e-mail to list members, discussions or debates with a world-wide audience may be conducted.

The following commands are designed for use with LISTSERV mailing lists. With them you may do things such as finding the names and addresses of lists, signing on to or off lists, reviewing lists or changing your personal options for any mailing list to which you are subscribed.

```
SUBscribe     list-name  <full-name>
```

Use the **SUBscribe** command to join a mailing list. You can also use this command to alter the name (but not e-mail address) by which you are known on a mailing list you have already joined. The *list-name* parameter is the name of the list to which you want to subscribe. For example, the EARN User Group list located at the node IRLEARN has a list name of EARN-UG. Do not confuse this with the list's address (EARN-UG@IRLEARN) which should not be used. The optional *full-name* parameter allows you to give a name by which you want to be known on a mailing list. If specified, it should be your full, real name (at least your first name and last name) and not your e-mail address. If you send this command to LISTSERV via command mail, the name for the *full-name* option will be taken from the name given in the *From:* mail header should it be omitted from the command text. If you send a **SUBscribe** command for a list to which you already belong, then LISTSERV will interpret the command as a request to change your *full-name* on the list.

A request to join a mailing list can be processed in three ways: subscription to a OPEN, CLOSED, or BY-OWNER. If it is OPEN, you will be automatically added to the list and sent notification. If it is CLOSED, you will not be added to the list, and LISTSERV will send you a message telling you that your request has been rejected. If it is BY-OWNER, your subscription request will be forwarded to the list owner(s), who will decide whether or not to add you to the list (LISTSERV will inform you to whom your request has been forwarded). To see what kind of subscription a list has, use the **REView** command.

```
UNSubscribe     list-name | *  <(NETWIDE>
```

Use the **UNSubscribe** command to leave a mailing list. The *list-name* parameter is the name of a mailing list from which you want to remove your subscription. You can signoff all the lists to which you are a member at any particular LISTSERV site by using the "*" (asterisk) character in the place of a list name. If you want your **UNSubscribe** command to be propagated to all LISTSERV servers on the network, include the *(NETWIDE* option. Use this option if you are changing your e-mail address or are leaving your computer for an extended period.

```
List            <options>  <F= format>
```

Use the **List** command to get a listing of available mailing lists at a LISTSERV server. The *options* parameter may be any of the following:

Short This option displays a summary of all the lists managed by a LISTSERV in a brief, one line description. This is the default.

Long The *Long* (or *Detailed*) option will send a file (called *node-name* LISTS) to you that contains a comprehensive description of the lists managed by a LISTSERV server.

Global <pattern>

This option gives a complete list of all known LISTSERV mailing lists at all servers at the time the command is issued. A file (called LISTSERV LISTS) will be sent to you containing the names, titles and e-mail addresses of these lists. This is a very large file, so make sure you have the necessary disk space to accommodate its size before you use the *Global* option. The optional *pattern* parameter can be used to match any string in the list name, list title or list address.

```
REView      list-name  <(>  <options>
```

Use the **REView** command to receive a listing of a mailing list. It will be sent to you as a file called *list-name* LIST (or *list-name node-name* for peered lists). A mailing list is comprised of two parts: a control section and a subscription section. The control section holds the definition parameters for a list which includes information such as who is authorized to review or join a list and whether or not it is archived. The subscription section holds the e-mail addresses and names of all list members. The **REView** command allows you to receive a listing of either or both of these sections (the default is both) for any list, provided you are authorized to do so. Note that at the discretion of the list owner(s), the **REView** command can be restricted in use to list members only. In this case, you will not be authorized to review a mailing list if you are not a member of that list yourself. Also, individual list members can restrict the appearance of their e-mail address and name in response to a **REView** command if they have set the *CONCEAL* mailing list option (see the **SET** command for more details). The *list-name* parameter is the name of the LISTSERV list you wish to review. The important *options* are:

Short This option restricts the inform 2000 ation you receive to the control section of a list (giving its definition parameters) and does not return the subscription section of a list (giving the list members).

Countries If you use this option, the list of members will be organized by the nationality given in their e-mail addresses.

LOCal If the list is peered (that is, it is linked to other mailing lists of the same name but on different LISTSERV servers), you will receive listings of all of these mailing lists in response to a **REView** command. The *LOCal* option can be used to suppress the propagation of the **REView** command to the LISTSERV servers hosting these peered mailing lists. In this case, you will receive a listing only from the server to which you send the **REView** command and not the others.

Query list-name | *

When you join any mailing list, you will be assigned a default set of list options that control such things as way you received mail when it is distributed and the type of notification LISTSERV will give you when it distributes mail you have sent to a list. These are the personal list options that may be altered on any mailing list to which you are subscribed to suite your circumstances. See the **SET** command for a complete descriptions of these options. The **Query** command can be used to review the personal list options you have in effect at any mailing list. The *list-name* parameter is the name of a list to which you are subscribed. If you use an "*" (asterisk) character instead of a list name, you will receive information about your personal options for all lists to which you belong at the LISTSERV to which you send the command.

SET list-name | * options

Use the **SET** command to change your personal options for a mailing list. These options will remain in effect until they are explicitly changed. The **Query** command can be used to display your current optional settings for any list to which you are subscribed. The *list-name* parameter is the name of the mailing list for which you are changing your options. You may change your options for a specific list or for all the lists you belong to at a particular LISTSERV by using the "*" (asterisk) character in place of a list name. After processing your **SET** command, LISTSERV will send you conformation of the successful alteration of your mailing list options via e-mail. The important *options* are:

Mail | DIGests | INDex | NOMail

These options of the **SET** command alter the way in which you receive mail from a mailing list. The *Mail* option means that you wish to have list mail distributed to you as mail. This is the default. The *DIGests* and *INDex* options are available only if a list has had these features enabled by its owner(s). Digests hold all the mail messages sent to a list over a certain period of time. Instead of receiving each mail individually as it is distributed to list members, you will receive all the mail in one batch for a given day, week or month. You may then browse through these mail messages at your leisure. Note that mail is not edited with the *DIGests* option, you will receive copies of all the mail messages in their entirety. The *INDex* option will provide you with only the date, time, subject, number of lines and the sender's name and address for all mail messages sent to a list. The text of the mail message will not be included. You may then select and retrieve any mail that interests you from the list archive. Both the *DIGests* and *INDex* options provide a means of *listening in* to discussions on mailing lists without having to deal with large quantities of incoming mail messages. The *NOMail* option means that mail sent to the list will not be distributed to you. This is useful when 2000 you are leaving your computer for an extended period of time and you do not want mail from the list to fill your mailbox. When you return, you can send the **SET** command with the *Mail* option to restore mail service.

SHORThdr | FULLhdr | IETFhdr | DUALhdr

All mail messages are comprised of header and body sections. The header section provides details such as the recipients, the original sender and the date and time a mail message was sent. The mail body section contains the text of a mail message. These options of the **SET** command indicate the type of mail headers you want to receive in the mail distributed from a mailing list. *SHORThdr* means that the mail header will include only the essential informational headers (for instance the *Date:*, *To:*, *From:*, *Subject:*, *Sender:* and *Reply-to:* headers). This is the default. You may change this to *FULLhdr*, which means that all (including non-essential) mail headers will be present in e-mail. The *IETFhdr* option means that LISTSERV will not change the headers of a mail message it distributes to you other than to add a *Received:* mail header (and also a *Message-id:* and *Sender:* headers if either of these were not already present). This option is designed specifically for compatibility with SMTP exploders (as used, for instance, on the Internet network). Lastly, *DUALhdr* is very similar to the *SHORThdr* option except that LISTSERV will also insert mail headers at the beginning of the mail body. Therefore, when the mail is received and read by a recipient using this option, it will start with this information (for instance, the first three lines of a mail message may contain the *To:*, *From:* and *Subject:* mail headers). This option is useful for users of some PC based mail packages that will not display this information from the real mail headers.

CONCEAL | NOCONCEAL

Indicates whether or not you want your name and mail address to appear in the display of list members which is given in response to a **REView** command. The default is *NOCONCEAL*. Note that a complete list of members is always given to list owners and LISTSERV administrators regardless of this option.

CONFIRM list-name

Use the **CONFIRM** command to renew your subscription to a list. Some mailing lists require subscription renewal at regular intervals (usually once a year). A mail message is automatically sent to list members indicating that they must send a **CONFIRM** command within a given number of days or they will be removed from the list. This command must be sent from the same e-mail address that received the confirmation notice. The *list-name* parameter is the name of the mailing list to which you are confirming your subscription. LISTSERV will send a message that your subscription has been confirmed.

Commands for FILES:

LISTSERV also functions as a file server. That is, files can be stored at a LISTSERV server and made available for retrieval by users upon their request. These files are stored in LISTSERV under a hierarchical system of *filelists*. As the name suggests, a filelist is a special file that holds a *list of files*. Each entry in a filelist describes a file that is available for retrieval and gives details such as the file's name and size and also a file's access code (also known as a *FAC*) which describes who is authorized to retrieve it. These files may themselves be filelists, in which case too will hold information about available files or further filelists. In this way, filelists are organized in a hierarchical or tree structure.

There are two basic types of filelists on LISTSERV servers. The first type holds files that have been specifically placed there by file owners or LISTSERV administrators. These files may be documents, maps or diagrams, or even programs. The second type of filelist is associated with a LISTSERV mailing list. These are referred to as *list* filelists and retain copies of all e-mail distributed on a particular mailing list. They consist of a series of files, each of which holds a copy of the mail messages distributed on a list over an interval of time (usually, one month). These files may then be retrieved to recover any list mail distributed during a specific period. Note that e-mail distributed on a mailing list may also be retrieved via the database functions of LISTSERV. Not all mailing lists have an associated *list* filelist; this is enabled at a list owner's discretion.

A further aspect of the file server functions of LISTSERV is the concept of packages. A package consists of one or more files that appear in a filelist. These may be, for example, a series of files that go to make up a software package. A package is declared in a LISTSERV filelist through a file that has the special name of *package-name* $PACKAGE. Within it will be a list of all the files that comprise the package. This list can be reviewed by sending a retrieval request for that file. However, all the files that comprise the package may also be retrieved through a request for the file: *package-name* PACKAGE. Note that in this case, the "$" (dollar) symbol is dropped from the name. The files that go to make up the package will then automatically be sent to the requestor. This enables users to retrieve an entire set of files that belong to a package with only one command, instead of having to retrieve each of these files individually through a series of commands.

The following LISTSERV commands enable general users to manipulate files that are stored at a server. This includes commands to search for, retrieve and subscribe to files. When sending file server commands to LISTSERV, you must address them to the server and not to any mailing lists. Note that where the *PW=* keyword appears in a command description, this need only be included in the command text if you have defined a personal password at the server to which you are sending file server commands. Otherwise, it need not be used. The optional *F=* command keyword may included as desired.

```
INDex        <filelist>  <F= format>
```

Use the **INDex** command to get a listing of the files in a particular filelist. The *filelist* parameter specifies the name of the filelist you wish to get. If no name is specified, an index of the root filelist (called LISTSERV FILELIST) will be sent to you.

```
GET          filename  filetype  <filelist>  <F= format>
```

The **GET** command is used to retrieve a specific file or package from a filelist, provided you are authorized to do so. The *filename* and *filetype* parameters identify the file or package you wish to retrieve. The optional *filelist* parameter identifies the filelist within which the file or package resides. If it is not supplied in the command, LISTSERV will determine the filelist through a search of its own internal filelist index.

AFD options

AFD is an acronym for *Automatic File Distribution*. This command enables you to *subscribe* to a file or package in a filelist. Every time this file or package is updated in its filelist, you will then automatically be sent of copy of it by the LISTSERV server. You may subscribe to any number of files for packages from any filelist with the **AFD** command. You may also review or delete your subscriptions at any LISTSERV server. The *options* must be one of the following:

ADD filename filetype <filelist> <text> <PW= password> <F= format>

The **ADD** option allows you to subscribe to a file or package. This means that a copy will henceforth be sent to you automatically by LISTSERV when it is updated on its filelist. The *filename* and *filetype* parameters identify a file or package to which you want to subscribe. The *filelist* option allows you to specify the name of the filelist in which it is located. If this is not specified in the command, LISTSERV will locate the filelist through a search of its own internal filelist index. Also, if you wish to have an informational text message inserted automatically at the top of the file or package when it is sent to you, you may use the *text* parameter. Note that if you omit the *filelist* option, the text you provide in the *text* parameter must be enclosed in double quotes ("). This parameter is most commonly used by network server applications that subscribe to files at a LISTSERV on behalf of users. If you are subscribing to files directly from LISTSERV yourself, you should not need to use this option.

DELete filename filetype <filelist> <PW= password>

Remove your subscription to a file or package for which you have an AFD. The *filename* and *filetype* parameters identify a file or package to which you wish to remove an AFD. These names may also include the "*" (asterisk) wildcard character so that multiple files or packages may be removed with one **DELete** command. The *filelist* option allows you to specify the name of the filelist in which it is located. If this is not specified in the command, LISTSERV will locate the filelist through a search of its own internal filelist index.

List <(FORMAT>

The List option shows the files or packages to which you are currently subscribed at a LISTSERV. If you include the *(FORMAT* option, then the file format to be used when a file or package is sent to you will also be displayed.

FUI options

FUI is an acronym for *File Update Information*. It enables you to *subscribe* to a file or package in a filelist. Every time this file for package is updated in its filelist, you will then automatically be informed of this by the LISTSERV server. This command is similar to the **AFD** command, except you will only be sent notification of an update rather than the updated file or package itself. You may subscribe to any number of files for packages from any filelist with the **FUI**

command. You may also review or delete your subscriptions at any LISTSERV server. The *options* parameter must be one of the following:

ADD filename filetype <filelist> <PW= password>
The *ADD* option allows you to subscribe to a file or package by adding an FUI to it. The *filename* and *filetype* parameters identify a file or package to which you want to add an FUI subscription. The *filelist* option allows you to specify the name of the filelist in which it is located. If this is not given in the command, LISTSERV will locate the filelist through a search of its own internal filelist index.

DELete filename filetype <filelist> <PW= password>
Remove your subscription from a file or package for which you have an FUI. The *filename* and *filetype* parameters identify a file or package to which you want to delete an FUI. The *filelist* option allows you to specify the name of the filelist in which it is located. If this is not specified in the command, LISTSERV will locate the filelist through a search of its own internal filelist index.

List The *List* option shows the files or packages for which you currently have an FUI subscription at a LISTSERV server.

Query File filename filetype <filelist> <(FLags>

This command can be used to get update information on various files. Update information about the file or package specified in the *filename* and *filetype* parameters will be given. Optionally, you may include a filelist name in the *filelist* parameter. If it is omitted, LISTSERV will locate the filelist through a search of its own internal filelist index. You may also specify the *(FLags* option to display additional technical data about the file (which can be useful when reporting problems to LISTSERV administrators).

PW options

The **PW** command enables you to add, change or delete a personal password on any LISTSERV server. A personal password is designed to give you added command security on a LISTSERV since it helps prevent impostors using your e-mail address. The use of personal passwords is strongly encouraged for this reason. Every server will accept a password registration request from you at any time. Passwords are comprised of one to eight alphanumeric characters. You may change or delete your password at any time. The *options* parameter must be one of the following:

ADD new-password
Add a new personal password on the LISTSERV processing your command. Once you have registered a password on a LISTSERV server, you will be obliged to use the *PW=* command keyword in the commands where it appears as an option.

CHange old-password new-password
Change your personal password on a LISTSERV server where you already have one.

DELete old-password
Remove your personal password from a LISTSERV where you already have one. Once you have removed a password from a LISTSERV server, you will no longer be obliged to use the *PW=* command keyword in the commands where it appears as an option.

LISTSERV DATABASE Functions:

LISTSERV provides the facility for users to retrieve old mail that has been distributed on mailing lists. Each mailing list has an associated database (called a *notebook* or *list archive* database) in which list mail is stored. Note that databases may not be maintained for every mailing list, this is done at the discretion of a list owner. The notebook databases are the most commonly used of the LISTSERV databases. However, every LISTSERV server also has a database of all the EARN/Bitnet computer nodes (called the BITEARN database). This is available to all LISTSERV users. The *backbone* LISTSERV servers also have a database of all the LISTSERV computer nodes (called the PEERS database). In addition to these databases, a LISTSERV server may have any number of different databases that have been created locally. To find out what databases are accessible at a particular LISTSERV site, send following command to that server:

```
DATABASE LIST
```

To perform a database search, you can send mail to LISTSERV containing a *batch database job* which contains your database query. In addition, EARN/Bitnet users on VM or VMS systems can access the database facilities interactively via the LDBASE program. For more details on the LISTSERV database facilities, send an **Info DATABASE** command to your nearest (or any) LISTSERV server (see the section **Commands for INFORMATION**
LISTSERV DATABASE Functions chapter in the **LISTSERV User Guide**.

Commands for INFORMATION:

The LISTSERV server can provide a diverse range of information to the general user. This includes help files, release levels of the server and important configuration files, statistics and information pertaining to the EARN/Bitnet network. When sending these commands to LISTSERV, they must be addressed to the server and not to any mailing lists it may manage. For those commands that result in files being sent to the requestor (for example the **Info** command), the format of the file can be specified by the optional command keyword *F=* in the command text (see the section **LISTSERV Command Keywords** for more information).

Help

Use this command to get a brief description of the most commonly used LISTSERV commands and also the name and e-mail address of the server's postmaster.

Info <topic> <F= format>

Use this command to get an informational (or help) file from a LISTSERV server. The *topic* option should specify the topic for which an informational file will be sent to you. You may get a list of valid topics by sending the **Info** command with no parameters to your nearest (or any) LISTSERV.

Examples

You wish to subscribe to the EARNEWS list which is located at the node FRMOP11. Your full name is Mark P. Waugh. Send the following command to LISTSERV@FRMOP11.BITNET:

```
SUBSCRIBE EARNEWS Mark P. Waugh
```

You wish to leave the INFO-MAC mailing list (to which you have already subscribed) at the node CEARN. The command:

```
UNSUBSCRIBE INFO-MAC
```

should be sent to the LISTSERV server at CEARN which manages the INFO-MAC list. To leave all the LISTSERV lists you belong to throughout the network, send the following command to your nearest (or any) LISTSERV:

```
UNSUBSCRIBE * (NETWIDE
```

You wish to receive a listing of all mailing lists that have the text *europe* in their name or title. Send the following command to your nearest (or any) LISTSERV server:

```
LIST GLOBAL EUROPE
```

You want to stop receiving mail from all the lists at SEARN to which you belong. Send the following command to the LISTSERV server at SEARN:

```
SET * NOMAIL
```

You have received a message from the LISTSERV server at IRLEARN asking you to confirm your subscription to the EARN-UG list. Send the following command to that server:

```
CONFIRM EARN-UG
```

You wish to receive a listing of the files in the *DOC FILELIST* The command:

```
INDEX DOC
```

should be sent to the LISTSERV server at EARNCC where this filelist is located. Note that the above command is the same as issuing a GET DOC FILELIST command.

You wish to retrieve the file *PCPROG ZIP* from a filelist and have it sent to you in *XXE* file format. Send the following command to the LISTSERV server that holds this file:

```
GET PCPROG ZIP F=XXE
```

You want to retrieve all the files that make up a package called *PROGRAM* (as listed in a file called PROGRAM $PACKAGE) from a filelist called *SAMPLE*. Send the command:

```
GET PROGRAM PACKAGE SAMPLE
```

You wish to subscribe to a file called *BUGDET MEMO* in a filelist called *EXPENSES* with an AFD:

```
AFD ADD BUDGET MEMO EXPENSES
```

To subscribe to a file called *VM EMAIL* in the *DOC FILELIST* with an FUI, you would send the following command to LISTSERV at node EARNCC:

```
FUI
```

Learning more about LISTSERV

A standard set of help files are available upon request from each LISTSERV server. To get a copy of these files, use the **INFO** command (see the section **Commands for INFORMATION**).

Detailed documentation on LISTSERV (and related services) is available from the **DOC FILELIST** at **LISTSERV@EARNCC.BITNET**. This includes the **LISTSERV User Guide** which is available in both postscript and plain text formats. To obtain a list of available documents use the **INDex** command (see the section **Commands for FILES**).

There are several mailing lists for discussion of technical LISTSERV issues. They are not intended for casual users, but they should be of interest to advanced users. They are:

LSTSRV-L	Technical forum on LISTSERV
LSTOWN-L	LISTSERV list owners' forum
LDBASE-L	Forum on LISTSERV database search capabilities

NETNEWS (USENET)

What is NETNEWS

Netnews, or Usenet as it is more commonly called, is a message sharing system that exchanges messages electronically around the world in a standard format. Messages exchanged on Usenet are arranged by topic into categories called newsgroups. Netnews is, thus, a huge collection of messages, being passed from machine to machine. The messages may contain both plain text and encoded binary information. The messages also contain header lines that define who the message came from, when the message was posted, where it was posted, where it has passed, and other administrative information.

The major, hierarchical categories of Usenet newsgroups which are distributed throughout the world are **alt, comp, misc, news, rec, sci, soc**, and **talk**. There are many other major categories which may be topical (eg, **bionet, biz, vmsnet**) and are usually distributed worldwide as well, or geographical and even organizational (eg, **ieee**) or commercial (eg, **clari**). The latter categories are usually distributed only with their area of interest. The messages of many Bitnet LISTSERV mailing lists are also distributed in Usenet under the major category **bit**.

The major categories are further broken down into more than 1200 newsgroups on different subjects which range from *education for the disabled* to *Star Trek* and from *environmental science* to *politics in the former Soviet Union*. The quality of the discussion in newsgroups is not guaranteed to be high. Some newsgroups have a moderator who scans the messages for the group before they are distributed and decides which ones are appropriate for distribution.

Usenet was originally developed for Unix systems in 1979. Within a year, fifty Unix sites were participating. Now, there are thousands of sites running a number of operating systems on a variety of hardware platforms communicating via Usenet around the globe.

Who can use NETNEWS

Usenet newsgroups can be read at thousands of sites around the world. In addition, there are several sites that provide public dial-up service so that people who are not at a Usenet site can have access to newsgroups as well. If you don't know if your site has Usenet access, check with your local computer support people.

Protocols and software for the distribution of news are in use in several networks, such as the Internet, UUCP, EARN/Bitnet and Fidonet.

If you have e-mail service only, then you can not access Usenet. However, many newsgroups are connected to mailing lists which you could join. For a list of these newsgroups and their associated mailing lists, send mail to **LISTSERV@AMERICAN.EDU** with the line: **GET NETGATE GATELIST** Moreover, many of the documents which appear periodically in newsgroups are availabl 2000 e by e-mail from **mail-server@rtfm.mit.edu**. For instructions, send a message with the subject **HELP**

How to get to NETNEWS

If your site provides Usenet access, then you just need to use one of the many software packages available for reading news (at least one is probably available on your computer). These packages either access a local news spool, or use the Network News Transfer Protocol (NNTP) to access the news spool on some other computer in the network.

Within EARN, a network of Netnews distribution has been developed, providing efficient distribution of Usenet traffic while minimising the load on the network for the participating countries.

If Usenet is not available to you and you would like to arrange access for your site, contact your system administrator. You should also read the article **How to become a USENET site** which is posted periodically to the news.answers newsgroup. It is also available by anonymous FTP from **rtfm.mit.edu** as **/pub/usenet/news.answers/site-setup** or by mail to: **mail-server@rtfm.mit.edu** with the line: **send usenet/news.answers/site-setup**.

Using NETNEWS

There are many software packages available for reading and distributing Netnews on a variety of operating systems (Unix, VMS, VM/CMS, MVS, Macintosh, MS-DOS and OS/2) and environments (Emacs, X-Windows, MS-Windows). See the list of freely available news reader software packages in Appendix A. Note that the number of software packages available to run news, especially on PCs, is increasing.

In addition to the software packages specifically designed to be news readers, many other communications programs, particular mail interfaces, provide the possibility for Usenet access in addition to their main function.

Most, if not all, of the news readers provide the same basic abilities:

- *Subscribing* to newsgroups: This means that your news reading software will make these groups immediately accessible, so that you can choose to read the postings of groups that interest you quickly and easily.
- *Unsubscribing* from newsgroups: Removing groups from your easy access list.
- *Reading* newsgroup postings: Your news reader presents postings to you and keeps track of which postings you have and have not read.
- *Threads of discussion*: You can follow groups of postings that deal with the same subject easily.
- *Posting* to news groups: You can participate in group discussions; your news reader knows where to send your posting.
- *Responding* to a posting: You can send a response to the newsgroup (often called *follow-up*) or to the author of a posting (often called *reply*).

Examples

When you enter the *tin* news reader, you get a listing of the newsgroups to which you are subscribed:

```
                         Group Selection (9)              h=help

   1 30637 bit.listserv.novell   local list
   2  1106 comp.mail.misc        General discussions about compu
   3  8031 comp.protocols.tcp-ip TCP and IP network protocols.
   4   840 comp.sys.mac
   5  8789 news.answers          Repository for periodic USENET
-> 6    29 news.lists            News-related statistics and lis
   7 15056 rec.woodworking       Hobbyists interested in woodwor
  7094 sci.psychology        Topics related to psychology.
   9 13093 soc.culture.celtic    Celtic, Irish, & Welsh culture


                         *** End of Groups ***
```

In *tin*, selecting a newsgroup is done with the arrow keys. When you select a group, you get a listing of the articles:

```
                    comp.mail.misc (41T 64A 0K 0H)         h=help

    1 +   RIPEM Frequently Noted Vulnerabilities  Marc VanHeyningen
    2 +   RIPEM Frequently Asked Questions        Marc VanHeyningen
    3 +   Mail Archive Server software list       Jonathan I. Kamen
    4 + 1 UNIX Email Software Survey FAQ          Chris Lewis
    5 + 2 PC Eudora and Trumpet Winsock problem   Jim Graham
    6 +   X11 mail reader                         Dominique Marant
    7 +   MIME supporting e-mail                  Tim Goodwin
    8 + 1 IBM User name and Address Server        Wes Spears
    9 + 5 Newbie needs MHS/SMTP question answered Chris Pearce
   10 +   FAQ - pine                              Bruce Lilly
   11 +   FAQ: International E-mail accessibility Olivier M.J. Crep
-> 12 +   PC E-Mail and Dial-in                   Edward Vielmetti
   13 +   Prodigy Mail Manager "01/07"            an33127@anon.pene
   14 +   Prodigy Mail Manager "02/07"            an33127@anon.pene
   15 +   Prodigy Mail Manager "03/07"            an33127@anon.pene
```

tins is a *threaded* news reader: replies to a posting are grouped together with the original posting, so that the reader can follow a thread of discussion. Above, you see the threads, the number of replies in each thread, the subject and the author. The plus sign (+) indicates that not all postings in the thread have been read. Other news readers show other details. When you select an item, it appears on your screen:

```
Wed, 01 Sep 1993 07:05:49     comp.mail.misc     Thread  13 of 41
Lines 27          Re: PC E-Mail and Dial-in          No responses
emv@garnet.msen.com  Edward Vielmetti at Msen, Inc. --  Ann Arbor

Sherry H. Lake (slake@mason1.gmu.edu) wrote:

:    I am looking for an email package that will allow a user to
: dial-in to his mail machine download any messages to his local
: PC, delete the messages from the server and then automatically
: sign him off. The user can then use his client software (local)
: to read, compose and reply. He then would have to dial-in again
: to so his outgoing mail will be uploaded to the server.
Various POP clients for PCs or Windows Sockets will do roughly
this. You should look at:

-  NUPOP (MS-DOS)
-  Eudora for Windows (Windows)
-  WinQVT/Net (Windows)
-  various commercial POP clients listed in the 'alt.winsock'
   directory of commercial Windows systems

You'll want to look particularly for dial up IP software (SLIP or
PPP) that makes the process of connecting minimally onerous, e.g.
by scripting the session so that the users don't have to type
anything, perhaps by automatically dialing for you when you go to
read or otherwise open a network connection, and offering a
reasonable way to disconnect.

Edward Vielmetti, vice president for research, Msen Inc.
emv@Msen.com Msen Inc., 628 Brooks, Ann Arbor MI 48103
+1 313 998 4562 (fax: 998 4563)
```

Learning more about NETNEWS

Newsprogramscommunicate with each other according to standard protocols, some of which are described by Internet Request For Comments (RFC). Copies of RFCs are often posted to the network and obtainable from archive sites. Current news-related RFCs include the following:

RFC 977 specifies NNTP, the Network News Transfer Protocol,

RFC 1036 specifies the format of Usenet articles.

Some newsgroups carry articles and discussions on the use of Usenet, notably: **news.announce.newusers**, **news.answers** and **news.newusers.questions**.

Many of the articles which appear periodically in these newsgroups or in others are also available from **rtfm.mit.edu** by anonymous FTP or by mail to: **mail-server@rtfm.mit.edu**

Part 7

OTHER TOOLS OF INTEREST

ASTRA

What is ASTRA

The **ASTRA** service allows users to retrieve documents from databases known by ASTRA throughout the network. Users can send their queries to the ASTRA server which in turn forwards the query to the related database servers. This provides an easy-to-use uniform access method to a large number of databases.

ASTRA provides the same user interface for all databases it can access, even if the database servers have different access languages, such as STAIRS, ISIS or SQL.

Each database defined in ASTRA has an abstract which holds information about the database: title, name of the maintainers, a brief description of the database, the main topics of the database and its language. Users are advised to look at the abstracts before sending requests, to avoid sending requests to the wrong databases.

Some databases actually combine several different databases that deal with the same topics. When a user sends a request for such a database, the request is forwarded to all related databases.

How to get to ASTRA

Anyone who can send electronic mail to EARN/Bitnet can access ASTRA. Interactive user interfaces (clients) to ASTRA are available for VM and VMS systems on the EARN/Bitnet network. For all other users, there is a batch language that permits batch queries using e-mail.

Currently there are five ASTRA servers installed at the following addresses:

ASTRADB@ICNUCEVM.BITNET
ASTRASQL@ICNUCEVM.BITNET
ASTRADB@IFIBDP.BITNET
ASTRADB@IFIIDG.BITNET
ASTRADB@IRMKANT.BITNET

Learning more about ASTRA

An extensive help file is available by sending the command **HELP** to **ASTRADB@ICNUCEVM.BITNET**.

The LISTSERV list ASTRA-UG is used for the distribution of a newsletter about new databases or new versions of the current databases. To subscribe, send the command:

```
SUB ASTRA-UG Your Name
```

to **LISTSERV@ICNUCEVM.BITNET**.

An ASTRA newsletter is also available by sending the command **NEWS** to **ASTRADB@ICNUCEVM.BITNET**.

The developers of the ASTRA service may be contacted at:
ASTRA@ICNUCEVM.CNUCE.CNR.IT

NETSERV

What 2000 is NETSERV

NETSERV is a server, which allows fast access to data files and programs of interest to the EARN/Bitnet community. NETSERV provides a repository consisting of information files and programs. It allows users to retrieve files, to store files and to subscribe to the files of their choice. The latter two functions however, require that the user have a password for NETSERV (this is called a *privileged user*).

In order to achieve a balanced load on the network and a faster response time to users, NETSERV uses a distributed server concept: this is achieved by the installation of a large number of servers on the network to ensure that the user can locate a nearby server. All servers communicate with each other to distribute updated information and make it available from each copy of the server.

NETSERV's file server functions include retrieving any file present in its *filelists*, storing new versions of a file, and subscribing to files stored on the server. Its file directories are arranged in an hierarchical method, with NETSERV FILELIST being on *top* or at the *root* of the filelists. This filelist can be obtained by sending a **GET NETSERV FILELIST** command to any NETSERV. Filelists contain short descriptions of the files, and two access codes for each file. These codes represent the *get* and *put* privileges required for that file. These codes are explained at the beginning of the NETSERV FILELIST file.

How to get to NETSERV

The server is available in almost every country. To find the closest server for your area send a **QUERY SERVICE** command to a server. The following are examples of NETSERV server addresses:

NETSERV@FRMOP11.BITNET
NETSERV@HEARN.BITNET
NETSERV@BITNIC.BITNET

In EARN, there is only one NETSERV permitted for one country. However, in some limited cases, such as when the country has a large number of nodes, additional servers may be installed. In any case, the user is not required to run NETSERV to be able to access and use the server.

NETSERV accepts e-mail access from users on any network. Commands to NETSERV should be placed in the body of the mail file, and not in the *Subject:* line.

For users in the EARN/Bitnet network, NETSERV is accessible via interactive message. Commands from privileged users requiring a password must be sent this way.

NETSERV does not have delivery limitations, except that a file ordered from NETSERV cannot be ordered again on the same day.

Learning more about NETSERV

The server provides a large helpfile which can be obtained by sending a **GET NETSERV HELPFILE** command to any NETSERV.

A list for NETSERV maintainers is available as **NETSRV-M@HEARN.BITNET**.

Additional information can be obtained from the NETSERV maintainer, Ulrich Giese at **U001212@HEARN.BITNET**.

MAILBASE

What is MAILBASE

Mailbase is an electronic information service with much of the same functionality as LISTSERV. It allows United Kingdom groups to manage their own discussion topics (Mailbase lists) and associated files. The Mailbase service is run as part of the JANET Networked Information Services Project (NISP) based at Newcastle University.

How to get to MAILBASE

Commands should be sent in an electronic mail message to **mailbase@uk.ac.mailbase**. More than one command may appear in a message to Mailbase. Commands may be in any order, in UPPER, lower, or MiXeD case.

Learning more about MAILBASE

For a summary of Mailbase commands, send the command **help** in an e-mail message to **mailbase@mailbase.ac.uk**. For a list of on-line documentation about Mailbase, send the command: **index mailbase**.

You can then use the **send** command to retrieve those documents that interest you. Eg, to retrieve a file of *frequently asked questions*, send the following command: **send mailbase user-faq**.

User support is also available by sending queries in an e-mail message to:
mailbase-helpline@uk.ac.mailbase.

Public files on Mailbase are also available by anonymous FTP to **mailbase.ac.uk**

PROSPERO

What is PROSPERO

Prospero is a distributed file system. It differs from traditional distributed file systems in several ways. In traditional file systems, the mapping of names to files is the same for all users. Prospero supports user centered naming: users construct customized views of the files that are accessible. A virtual system defines this view and controls the mapping from names to files. Objects may be organized in multiple ways and the same object may appear in different virtual systems, or even with multiple names in the same virtual system.

In Prospero, the global file system consists of a collection of virtual file systems. Virtual file systems usually start as a copy of a prototype. The root contains links to files or directories selected by the user.

The Prospero file system provides tools that make it easier to keep track of and organize information in large systems. When first created, your virtual file system is likely to contain links to directories that organize information in different ways. As the master copy of each of these directories is updated, you will see the changes. You may customize these directories. The changes you make to a customized directory are only seen from within your own virtual system, but changes made to the master copy will also be visible to you.

Users are encouraged to organize their own projects and papers in a manner that will allow them to be easily added to the master directory. For example, users should consider creating a virtual directory that contains pointers to copies of each of the papers that they want made available to the outside world. This virtual directory may appear anywhere in the user's virtual system. Once set up, a link may be added to the master author directory. In this manner, others will be able to find this directory. Once added to the master directory, any future changes will be immediately available to other users.

How to get to PROSPERO

In order to use Prospero, you must be on the international TCP/IP network (the Internet) and you must have Prospero running on your computer.

Before you can begin using the Prospero file system a virtual system must be created for you. However, Prospero, as shipped, is configured so that once you compile the clients you can type: *vfsetup guest* and start working right out of the box using a guest virtual system at the USC Information Sciences Institute.

The latest version of PROSPERO is available as file **prospero.tar.Z** for anonymous FTP from **prospero.isi.edu** in the directory **/pub/prospero.**

Learning more about PROSPERO

Prospero is being developed by Clifford Newman. Several documents and articles describing Prospero by Newman and others are available.

The following files are available via anonymous FTP from **prospero.isi.edu**. They are also available through Prospero.

- Anonymous FTP: /pub/papers/prospero/prospero-oir.ps.Z,
- Prospero: /papers/subjects/operating-systems/prospero/prospero-oir.ps.Z.

This is a useful first paper to read. It gives a good overview of Prospero and what it does. It also describes a bit about the Virtual System model, of which Prospero is a prototype implementation. It describes what Prospero does, not how it does it.

- Anonymous FTP: /pub/papers/prospero/prospero-bii.ps.Z,
- Prospero: /papers/subjects/operating-systems/prospero/prospero-bii.ps.Z.

This paper describes how Prospero can be used to integrate Internet information services, including Gopher, WAIS, archie, and World Wide Web.

IRC

What is IRC

IRC, Internet Relay Chat, is a real-time conversational system. It is similar to the *talk* command which is available on many machines in the Internet. IRC does everything talk does, but it allows more than 2 users to talk at once, with access throughout the global Internet, It also provides many other useful features.

IRC is networked over much of North America, Europe, and Asia. When you are talking in IRC, everything you type will instantly be transmitted around the world to other users who are connected at the time. They can then type something and respond to your messages.

Topics of discussion on IRC are varied. Technical and political discussions are popular, especially when world events are in progress. IRC is also a way to expand your horizons, as people from many countries and cultures are on, 24 hours a day. Most conversations are in English, but there are always channels in German, Japanese, and Finnish, and occasionally other languages.

How to get to IRC

Clients and servers for IRC are available via anonymous FTP from **cs.bu.edu.** A few sites offer public access to IRC via Telnet. Two such sites are **wbrt.wb.psu.edu** and **irc.demon.co.uk**. At both sites, you should log in as **irc**.

The many server hosts of Internet Relay Chat throughout the network are connected via a tree structure. The various servers relay control and message data among themselves to advertise the existence of other servers, users, and the channels and other resources being occupied by those users.

Fundamental to the operation of IRC is the concept of a channel. All users are *on a channel* while inside IRC. You enter the *null channel* first. You cannot send any messages until you enter a chatting channel, unless you have set up a private conversation in some way. The number of channels is essentially unlimited.

Learning more about IRC

To get help while in IRC, type **/help** and follow the instructions.

If you have problems, you can contact **Christopher Davis (ckd@eff.org)** or **Helen Rose (hrose@eff.org)** - known on IRC as *ckd* and *Trillian*, respectively. You can also ask for help on some of the operator channels on IRC, for example #twilight_zone and #eu-opers.

Various documents on IRC, and the archives of IRC-related mailing lists, are available via anonymous FTP from **ftp.kei.com**.

RELAY

What is RELAY

The **RELAY** server system is a set of servers in the global EARN/Bitnet network which broadcast interactive messages from one user to other users signed on to the same *channel* of the RELAY system. A user signed on to the closest available RELAY is also *virtually* signed on to all RELAYs which are linked to it. Most RELAYs are closed during peak hours. Only some RELAYs are up 24 hours a day.

Each RELAY server provides service to a specific collection of one or more nodes designated as a *service area*. The functions of RELAY are available to EARN/Bitnet users with access to interactive messages who have not been expressly excluded from the system by RELAY management.

RELAY is a program which allows several people to talk at the same time. In order to start, you must *sign on* to a RELAY to place your ID in the current user list. You communicate with RELAY through messages just as you would send messages to a user. RELAY commands start with a slash(/) character; anything not beginning with a slash is considered a message and is sent back out to all other current users.

How to get to RELAY

RELAY is available at the following EARN/Bitnet addresses, and others. The nickname of the RELAY machine is in parentheses.

RELAY@ASUACAD	(Sun_Devils)
RELAY@AUVM	(Wash_DC)
RELAY@BEARN	(Belgium)
RELAY@BNANDP11	(Namur)
RELAY@CEARN	(Geneva)
RLY@CORNELLC	(Ithaca_NY)
RELAY@CZHRZU1A	(Zurich)
RELAY@DEARN	(Germany)
RELAY@DKTC11	(Copenhagen)
RELAY@FINHUTC	(Finland)
RELAY@GITVM1	(Atlanta)
RELAY@GREARN	(Hellas)
RELAY@HEARN	(Holland)
RELAY@ITESMVF1	(Mexico)
RELAY@JPNSUT00	(Tokyo)
RELAY@NDSUVM1	(No_Dakota)
RELAY@NYUCCVM	(NYU)
RELAY@PURCCVM	(Purdue)
RELAY@SEARN	(Stockholm)
RELAY@TAMVM1	(Aggieland)
RELAY@TAUNIVM	(Israel)
RELAY@TECMTYVM	(Monterrey)
RELAY@TREARN	(EgeRelay)
MASRELAY@UBVM	(Buffalo)
RELAY@UFRJ	(RioJaneiro)
RELAY@UIUCVMD	(Urbana_IL)
RELAY@USCVM	(LosAngeles)
RELAY@UTCVM	(Tennessee)
RELAY@UWAVM	(Seattle)
RELAY@VILLVM	(Philadelph)
RELAY@VMTECQRO	(Queretaro)
RELAY@VTBIT	(Va_Tech)
RELAY@WATDCS	(Waterloo)
RELAY@YALEVM	(Yale)

RELAY is available to users on the EARN/Bitnet network via interactive message (eg, the **TELL** command of VM or the **SEND** command of VMS/JNET). All RELAY server machines are on IBM VM/CMS systems, but you do not have to be a VM user in order to use RELAY. If you are not in the EARN/Bitnet network, you can not use RELAY.

CHAT, a full-screen interface to send and receive TELL messages for VM systems, is particularly useful for users of RELAY. CHAT is available from any **NETSERV**.

Learning more about RELAY

Upon registration, the files RELAY INFO and RELAY USERGUIDE are sent to the user. These two files give a comprehensive description of RELAY.

A brief guide to RELAY is available from the EARN documentation filelist. Send mail to **LISTSERV@EARNCC.BITNET**. In the body of the message, write: **GET RELAY MEMO**.

Appendix A
Freely available networking software

Below you will find the location of client software for several of the tools described in this guide (Gopher, WWW, WAIS and Netnews). This is not a complete listing of available software for any of these tools.

Gopher clients

Environment	FTP site & directory	Comments
Unix	boombox.micro.umn.edu /pub/gopher/Unix	
VMS	boombox.micro.umn.edu /pub/gopher/VMS	
	job.acs.ohio-state.edu XGOPHER_CLIENT.SHARE	for Wollongong or UCX
VM/CMS	boombox.micro.umn.edu /pub/gopher/Rice_CMS	
	boombox.micro.umn.edu /pub/gopher/VieGOPHER	
MVS	boombox.micro.umn.edu /pub/gopher/mvs	
Macintosh	boombox.micro.umn.edu /pub/gopher/Macintosh-TurboGopher	
	ftp.cc.utah.edu /pub/gopher/Macintosh	requires MacTCP
	/util/gopher/gopherapp	requires MacTCP
OS/2	boombox.micro.umn.edu /pub/gopher/os2	
MS-DOS	boombox.micro.umn.edu /pub/gopher/PC_client	requires packet driver
	oac.hsc.uth.tmc.edu /public/dos/misc	dosgopher, for PC/TCP
	bcm.tmc.edu /nfs/gopher.exe	for PC-NFS

	lennon.itn.med.umich.edu /dos/gopher	for LAN Workplace for DOS
MS-Windows	sunsite.unc.edu /pub/micro/pc-stuff/ms-windows/winsock/apps	Gopherbook
X-Windows	boombox.micro.umn.edu /pub/gopher/Unix	xgopher (Athena widgets)
	boombox.micro.umn.edu /pub/gopher/Unix	moog (Motif)
	boombox.micro.umn.edu /pub/gopher/Unix/xvgopher	or Xview
Next	boombox.micro.umn.edu /pub/gopher/NeXT	

World-Wide Web clients

Environment	**FTP site & directory**	**Comments**
Unix	info.cern.ch /pub/www/src	WWW line-mode browser
	ftp2.cc.ukans.edu /pub/WWW/lynx	Lynx browser for vt100 terminals
	archive.cis.ohio-state.edu /pub/w3browser	tty-based browser written in perl
VMS	info.cern.ch /pub/www/bin/vms	port of NCSA Mosaic for X
Macintosh	info.cern.src /pub/www/bin/mac	requires MacTCP
MS-Windows	fatty.law.cornell.edu /pub/LII/Cello	Cello
Emacs	moose.cs.indiana.edu /pub/elisp/w3	
X-Windows	info.cern.ch /pub/www/src	tkWWW Browser/Editor
	info.cern.ch /pub/www/src	MidasWWW Browser for X/Motif
	info.cern.ch /pub/www/src	ViolaWWW Browser for X11

	ftp.ncsa.uiuc.edu /Web	NCSA Mosaic Browser for X11/Motif
Next	info.cern.ch /pub/www/bin/next	Browser and Editor

WAIS clients

Environment	**FTP site & directory**	**Comments**
Unix	ftp.wais.com /pub/freeware/unix-src	swais
VMS	ftp.wais.com /pub/freeware/vms	
MVS	ftp.wais.com /pub/freeware/ibm-mvs	
Macintosh	ftp.wais.com /pub/freeware/mac	
OS/2	ftp.wais.com /pub/freeware/os2	
MS-DOS	sunsite.unc.edu /pub/wais/DOS	
	hilbert.wharton.upenn.edu /pub/tcpip	PCWAIS
MS-Windows	ftp.wais.com /pub/freeware/windows	WNWAIS
	ftp.cnidr.org /pub/NIDR.tools/wais/pc/windows	
Emacs	ftp.wais.com /pub/freeware/unix-src	gwais
X-Windows	ftp.wais.com /pub/freeware/unix-src	xwais
Next	ftp.wais.com /pub/freeware/next	

Netnews - news reader software

Environment	**FTP site & directory**	**Comments**
Unix	lib.tmc.edu	rn also available via e-mail to: archive-server@bcn.tmc.edu
	ftp.coe.montana.edu	trn
	dkuug.dk	nn
	ftp.germany.eu.net	tin
VMS	kuhub.cc.ukans.edu	ANU-NEWS
	arizona.edu	VMS/VNEWS
VM/CMS	psuvm.psu.edu	NetNews also available from LISTSERV@PSUVM
	ftp.uni-stuttgart.de	NNR
MVS	ftp.uni-stuttgart.de	NNMVS
Mac	ftp.apple.com	News
MS-DOS	ftp.utas.edu.au	Trumpet
MS-Windows	ftp.utas.edu.au	WTrumpet
X-Windows	many FTP sites	xrn
	export.lcs.mit.edu	xvnews
Emacs	most GNU sites	GNUS for use with GNU Emacs editor
	most GNU sites	Gnews for use with GNU Emacs editor

cc1.ku