

Chapter 4: Information Resources

This chapter introduces you to the information resources available to UNIX users. We include instructions for communicating with the Fermilab Computing Division Helpdesk. Standard UNIX on-line help is available via the man pages. We discuss the World Wide Web and newsgroups, which are very rich sources of information on a virtually unlimited set of topics. A few utilities that allow you to get information about vendor products and other users are also covered.

4.1 The Fermilab Helpdesk

The Fermilab Computing Division Helpdesk is available to answer questions related to the supported computer systems and software on site. We encourage you to send all your computer-related questions directly to the Helpdesk for tracking and logging purposes.

Keep in mind that the first priority of the Helpdesk is to maintain central systems and networks, and to ensure that Fermilab-supported software is available and usable. Therefore a request which impacts only one individual may not receive immediate attention.

The Helpdesk is in service Monday through Friday, 9:00 a.m. to 5:00 p.m. You are encouraged to use the Web interface or email for all communications.

Helpdesk Email Address

During business hours: *helpdesk@fnal.gov*

During off-hours: *operator@fnal.gov*

Helpdesk Web Page

You can request help and/or keep track of actions taken on your requests from this page. Go to <http://csdserver1.fnal.gov/HelpDesk/cd/>.

Helpdesk Phone Number

630-840-2345

During off-hours, you can leave a phone message, or “escape” to Data Center Services (Operations) for requests requiring immediate attention.

Helpdesk Location

Wilson Hall, 8th floor, northeast corner office.

4.2 UNIX On-Line Help

4.2.1 man Pages

On-line help for UNIX system commands and utilities is in the form of *man pages* (*man* stands for manual) which consist of an on-line version of the UNIX documentation set (often called the UNIX Programmer’s Reference Manual). You access the man pages with the **man** command.

Note that the man pages differ in many instances between UNIX platforms.

The man Command

When you need help on a known command, use the general **man** command format:

```
% man [<part>] <topic>
```

where **<topic>** is generally a UNIX command. **man** is really the on-line manual which is divided into several parts. **<part>** is a digit between 0 and 9. If you know in advance which part contains the information you want, you can speed the search by specifying it. More often than not you will just enter:

```
% man <topic>
```

The word *print* in **man** entries usually means *display on the screen*. Don’t be confused by this. Several options are available with the **man** utility, described under **man man**. The **man** command normally displays complete manual pages that you select by name. One-line summaries can be selected by either by keyword (**-k** option), or by the name of an associated file (**-f**). These options are described in section 4.2.2 *Finding the Right Command*.

A typical initial **man** screen can be seen by issuing the command:

```
% man ls
```

where **ls** is the UNIX command to list files in a directory.

```
ls(1) User Commands
ls(1)

NAME
    ls - list contents of directory

SYNOPSIS
    ls [ -abcCdFgILmnoPqrRstuxl ] [ names ]

AVAILABILITY
    SUNWcsu

DESCRIPTION
    For each directory argument, ls lists the contents
    of the
        directory; for each file argument, ls repeats its
    name and
        any other information requested. The output is
    sorted
        alphabetically by default. When no argument is
    given, the
        current directory is listed. When several
    arguments are
        given, the arguments are first sorted
    appropriately, but
    /tmp/mpa002Zf
```

Man pages are typically formatted with the UNIX text processing utility **nroff** (or **groff**). These utilities are covered in most UNIX texts. If you find that the **man** page is unformatted, run **setup groff**, and then rerun the **man** command.

Note that built-in shell commands are described under the topic corresponding to their shell.¹ (See section 6.1.1 *Programs, Commands and Processes* for information on built-in commands.) For example, to get information on the command **alias** for your current shell, you would enter **man <shell>** (e.g., **man bash**) and search there for information on **alias** using the **/<pattern>** function described below.

1. Some platforms provide **man** pages for built-in commands, however in general you may find it easier to look in a reference book!

There is an alternate, “quick and dirty” method to verify the format of a command and get a listing of its options. It doesn’t work with all commands, but is usually worth a try. Simply enter the command with an illegal option (try / or ? or .). For example,

```
% ls -/
```

will produce the output:

```
ls: illegal option -- /
usage: ls -RadCLHxmnlogrtucpFbqisf [files]
```



The man Command for AFS Commands

For AFS commands, it works a little differently. AFS commands are discussed in section 8.4 *AFS File System Commands*. The **man** page for an AFS command is found by entering:

```
% man fs_<command>
```



Note the underscore (**_**) between **fs** and the rest of the AFS command; the underscore is only used with the **man** command.

Manipulating man Pages

man displays the information using your *\$PAGER* environment variable, which under FUE is set to **less** (see section 6.4.4 *Filters*). Therefore, **man** pages are normally piped to **less**. The command **man less** will give you more information about manipulating **man** via the **less** filter. **less** gives you one page at a time and lets you enter commands at the prompt to control what it does after each page. For example, you page forward with the **SPACEBAR** and page backward using **b**.

Once in the **man** environment, you can search for patterns by entering the **/<pattern>** option at the command line. The first instance of the string **<pattern>** will appear in the top line of the screen. To find additional instances of the pattern in the text, simply enter a slash (**/**).

To exit from **man** enter **q** (for quit).

Printing man Pages

To print a **man** page, you can use the pipe feature (**|**) along with recommended print formatting and printing commands. These features are covered in Chapter 11: *Printing*. As a suggestion, pipe the output of the **man** command to **a2ps -m** (to convert **man** pages to PostScript format) and then pipe that output to the print command **flpr**:

```
% man <command> | a2ps -m | flpr [<options>]
```

This formats the output nicely in landscape, two pages to a sheet.

4.2.2 Finding the Right Command

If you don't know exactly what command you need, try the **-k** option with a keyword.

```
% man -k <keyword>
```

This displays the **man** page name, the section number in the UNIX documentation, and a short description for each **man** page whose name line contains **<keyword>**. For example to find a search utility, enter:

```
% man -k search
```

The system will output several records similar to the following:

```
conflict(8) - search for alias/password conflicts
/usr/local/lib/mh/conflict [-m
glookbib(1) - search bibliographic databases glookbib [-v
] [-istring] [-tn
ident(1) - identify files ident [-q] [ \&.\|.\|. ] ident
searches for all occu
lkbib(1) - search bibliographic databases lkbib [-v] [
-ifields] [-pfilename
lsearch(1) - See if a list contains a particular element
lsearch ?mode? list pat
lsearch(n) - See if a list contains a particular element
lsearch ?mode? list pat
zgrep(1) - search possibly compressed files for a regular
expression zgrep [ gre
..
..
```

Some UNIX systems have an additional utility, **apropos**, which can be used to locate commands by keyword lookup:

```
% apropos <keyword>
```

apropos <keyword> is equivalent to:

```
% man -k <keyword>
```

The **-f <filename>** option for **man** prints the manual entry summaries which might pertain to the given filename(s). Any leading pathname components are stripped from the filename before the filename is matched against the summaries. Here is an example using the **-f** option, followed by the output:

```
% man -f /etc/passwd
```

```
passwd (1) - change login password and password
attributes
passwd (4) - password file
```

The summaries are gotten from the **whatis** database. You can run **whatis command(s)** to look up a given command and obtain the header line from the manual section. You can then run **man** to get more information on the command. If the line starts `name(section)...` you can do **man section name** to get the documentation for it.

4.2.3 Vendor Product Documentation

Most vendor product documentation is now available on-line:

Flavor:	Command:
Linux	info (Or go to http://www.redhat.com/docs/)
IRIX	insight
Solaris (SunOS)	answerbook (only usable on Sun workstations at Fermilab)

4.3 The Internet

The Internet is a global network of networks that provides access to hundreds of thousands of computers around the world. As the reach of the network has grown, so has the number of services accessible. The main tools that allow the user to navigate through the Internet are:

Web browsers	to browse the World Wide Web (see section 4.3.1 <i>The World Wide Web</i>)
Email	to send electronic mail (see Chapter 12: <i>Email on UNIX</i>)
telnet, ssh	to log into remote hosts (see section 3.3 <i>Connecting from One Kerberized Machine to Another</i>)
ftp	to send/retrieve data files to/from remote hosts (again see section 3.3 <i>Connecting from One Kerberized Machine to Another</i>)
News	to scan internet news groups (see section 4.3.3 <i>Newsgroups</i>)

There are two ways to reference an Internet host: an alphabetic name and a series of numbers. The alphabetic sequence is called the *host name* (e.g., `fsui02.fnal.gov`) and the numeric one is called the *IP address* (e.g.,

131.225.18.178). At Fermilab all host names end with *fnal.gov*, where this suffix is called the *domain name*. Since hosts may change their IP addresses, it is a good practice to always use the host name.

An introduction to making the Internet work for you is *The Whole Internet: The Next Generation*, published by O'Reilly & Associates.

4.3.1 The World Wide Web

Our primary way of delivering information to you is via the Web. There are a number of reasons why the Web has become the defacto standard for information delivery at Fermilab, within the HEP community, and in the world:

- The Web is very strong at pulling together information from different places, and of different formats and types (native HTML¹, PostScript, newsgroups, and so on), and making it appear as a seamless whole.
- It is relatively easy to make information available on the Web. See **The World Wide Web at Fermilab**.
- Web browsers are available for every supported platform at Fermilab, making it an excellent fit to the distributed environment in which we now work.

Accessing the Web

Web browsers work best on workstations that support graphics, so assuming you have a graphics terminal, try either **Netscape** or **Mozilla**. To invoke them, enter:

```
% netscape [&]
```

or

```
% mozilla [&]
```

The ampersand (&) is discussed in section 6.4.2 *Standard Input and Output Redirection*. In order to use an X application (which these products are), you must have defined your *\$DISPLAY* variable correctly. See section 9.6 *Some Important Variables*.

If you don't have a graphics terminal, then you can use the line-mode program, **lynx**. To invoke it, enter:

```
% lynx
```

1. HTML stands for HyperText Markup Language, the standard language for documents accessed on the Web.

This section is not intended to provide detailed instruction on the use of any particular Web browser. Once you get any of them running (at least the graphical ones) there is more information than you will ever want available under **HELP**. Or go to <http://www.google.com> and search. In addition, at http://www.fnal.gov/docs/products/www/mailcap_mime.html will find information on the files that control what filetypes the browser recognizes. These files are called `.mailcap` and `mime.types`.

Web Basics

Web browsers find information based on URLs (Universal Resource Locators) which are like addresses and which take you to a Web site, the top page of which is often called a *home page*.

Each home page can have several layers or pages that it links to, thereby creating a whole Web site. But the home page is generally the first place you would look. It is like looking at the cover of a book and its table of contents at the same time.

The native WWW addresses are of the form:

```
http://address/
```

or

```
http://address/something.extension
```

The first part is the protocol, `http` in this case. (A protocol is a set of rules computers observe to exchange information. `http` stands for the HyperText Transfer Protocol; think of it as the identifier of a Web page.) Instead of `http` you might also see `https`, `ftp`, `file`, `gopher`, `mailto`, and `news`.

Next you'll see a colon and two forward slashes (except for `mailto`, which has a different format).

Next comes the computer's address in the format described in section 4.3. A computer address, or domain name, is used by computers in routing data across the many networks that make up the Net.

Finally, you often see a directory path at that computer plus a file at the end of the path. Web page files usually end in "`html`", for HyperText Markup Language, although you may also see extensions such as "`htm`", "`shtm`", "`shtml`", or "`asp`". HTML is the simple scripting language that tells browsers how to display the various elements of a Web page such as links, body text, header text, inline graphics, and external files.

Many HTML files contain links to other documents. Sometimes links are text; sometimes they are images. If a link consists of text, it is underlined and may be in color. You can tell your cursor is on a link when a URL appears at the bottom of the screen. If a link consists of an image, you'll see a URL when you move your mouse pointer across it.

Several Web search engines can help you find information you are seeking, and they vary in the number of URLs they contain in their database, how deep they go into Web sites indexing information, what they index, and how frequently they "crawl" or "walk" the Web in surveying sites. There's a valuable Swiss site at URL

<http://cuiwww.unige.ch/meta-index.html> that collects several WWW search tools. A favorite one is <http://www.google.com>.

Subject directories make it increasingly easy to find information about broad subjects. An excellent directory is one called Yahoo at URL

<http://www.yahoo.com/>, a well-constructed directory of hundreds of thousands of Web pages.

Writing your Own Web Pages

If you want to start writing Web pages in HTML format, see the Web link on the Computing Division home page. Look under *Web Publishers at Fermilab* and *Web Page Design*. The Computing Division provides templates that we ask you to use for official Fermilab web pages.



A note for Web page providers on AFS systems: Set the permissions for `system:anyuser` to `rl` on directories containing files that you want to make accessible via a Web browser. See section 8.6 *File and Directory Permissions* for information on AFS directory permissions.

4.3.2 UNIX Help on the Web

The man pages can sometimes be cryptic, unwieldy, or both. As an alternative, set a bookmark in your Web browser to *UNIXhelp for Users* at <http://www.geek-girl.com/Unixhelp/>. Here you'll find easy-to-follow instructions on the use of many UNIX features, organized into four categories: Tasks, Commands, Concepts, and Utilities.

Also look at *The UNIX Reference Desk* at <http://www.geek-girl.com/unix.html>. The resources in this document are divided into the following classes: General, Texinfo Pages, Applications, Programming, IBM AIX Systems, HP-UX Systems, Unix for PCs, Sun Systems, X Window System, Networking, Security, Humor.

4.3.3 Newsgroups

Usenet News (or NetNews) is a way of communicating “articles” among people world-wide. In general, information in newsgroups is volatile information, whereas information in Web pages is of longer term. We have a server here at Fermilab which receives articles from elsewhere and posts the articles originating here. Fermilab has its own newsgroups named `fnal.xxx`. CERN’s groups are prefixed with `cern` and SLAC’s with `slac`. General information and especially important information is posted in `fnal.announce`. NALCAL, seminar announcements, and the like are posted in `fnal.announce.seminars`. UNIX discussion articles are posted in `fnal.comp.unix`. There are many more newsgroups, both Fermilab groups and others, that you might find of interest.

In order to make a newsreader available on UNIX, enter (or put in your login script):

```
% setup news
```

A number of readers will be made available to you. Line-mode browser commands are **nn**, **rn**, and **trn**. X-based browser commands are **xrn** and **knews**. **News** may also be read from most WWW browsers and some mail readers. The readers keep track of the newsgroups that you are interested in (“subscribed to”) as well as which articles in each newsgroup you have read; all of the UNIX readers cooperatively maintain this information, so you can use different readers at different times without losing this information.

4.4 The Info Utility

Info is a facility available to the system support people to communicate with you about events regarding the Fermilab computing systems (shutdowns, for example), or other systems-related information that is newly available. To get a list of the **Info** messages, enter the command **Info**. To read an item, enter the command with the *nametag* of the item found on the left side of the **Info** list:

```
% Info <nametag>
```

Note the capital I! If the item is more than one page, press the space bar to continue. Press **q** to quit.

4.5 Other Users: WWW Directories, **finger** and **who**

WWW Directories

From the Fermilab at Work page, directories are available to point you to information about Fermilab personnel and the high energy physics community at large. These directories typically contain general information such as email addresses, phone numbers, and office locations. For locating Fermilab employees, see the *Fermilab Telephone Directory* at <http://www-tele.fnal.gov/telephone/>.

finger

finger is used to find out about other users. It searches for matching account names and first or last names, if known. Depending on the vendor implementation, it may display the name of the person associated with each account, the login name, the home directory and login shell, the contents of the file `.plan` in the person's home directory, and possibly other information such as waiting mail, and time of last login. If the person is logged in, it also may display information about his or her current sessions.

Note that each vendor has a different implementation of **finger**. In addition, for security reasons many sites disable the output of **finger** over the network. It is therefore unwise to rely on the format, content, or even the availability of **finger** as a tool for finding out about users or their accounts.

The format of the **finger** command is:

```
% finger [<options>] [<name>...]
```

where **<name>** can be a part of a personal name or a username. If you specify the option **-m**, then **<name>** is matched only to account name and not the rest of the personal name.

We encourage you to create a `.plan` file. It is just a text file in which you might include information such as your office location, phone numbers, mail station, home address, schedule, emergency numbers, and so on.

finger can often be used to look up users on a remote machine by specifying the name in the standard internet form `user@host`. This form works on VMS machines with **MultiNet** running, but in this case **<name>** must be the username; otherwise not much useful information is obtained.

who

The command **who** lists certain information about the users on your system.

```
% who
```

If used with the **-q** option, only the names of the logged in users and the number of users are displayed.

The **who am i** form identifies the invoking user. The command format is:

```
% who am i
```

There are a number of options which you can read about in the man pages.