Getting Started [2]

The information in this section provides an introduction to the capabilities of some TCP/IP utilities and illustrates how you can use them to connect to a remote system, to transfer files, and to send mail messages across a network. You can find more complete descriptions of the utilities described in this section, as well as other methods of accomplishing these tasks, in later sections of this manual.

Finding names of remote hosts
2.1

When you use any of the TCP/IP utilities, you must supply the name of the remote host to which you want to refer. The system administrator for your local Cray Research host will have selected one of two methods for maintaining the list of remote hosts known to your local Cray Research host. These methods use either the `/etc/hosts` file or the domain name service (DNS) software package.

Consult with your system administrator to determine which hosts lists are maintained on your local Cray Research host.

The `/etc/hosts` *file*
2.1.1

The `/etc/hosts` file is a text file that contains the names and network addresses of all hosts on the network that are known to the local Cray Research system. You can use any standard UNICOS utility (for example, `vi` or `cat`) to examine the contents of the `/etc/hosts` file.

In the `/etc/hosts` file, comments begin with the # character; each line that is not a comment is an entry that defines a remote host's interface on a network with the following format (spaces or tabs separate the fields):

address name aliases ...

An address specifies the network to which a host has a physical interface and the host's logical location within that network.

For TCP/IP, the address part of the line is a 32-bit logical address usually expressed as four 8-bit integers separated by periods (also called *dots*, yielding the name *Internet dot notation* for this system of network addressing).

The *name* part of the line (that is, the first host name on the line) is the primary name by which the remote host's interface is known to the local host. For TCP/IP, this is the name that must appear, for example, in a `.rhosts` file for proper network authorization. See subsection 7.2.1, page 79, for the format of the `.rhosts` file.

Alternative names that appear after the first name in the entry are aliases that you can use to refer to the remote host when trying to establish a connection. (For TCP/IP, such aliases should not be used, however, in a `.rhosts` file to try to provide authorization for remote connections.)

The following example fragment from an `/etc/hosts` file shows a TCP/IP address:

```
#########################
#  TCP/IP hosts
#########################
# network number 123 -- HYPERchannel addresses
#
123.45.67.89  sn000 sn000-hy cray
123.45.67.90  gateway gateway-hy
#
# network number 234.56.78 -- Ethernet
addresses
#
234.56.78.90  gateway gateway-et
234.56.78.91  workstation workstation-et
```

In this example, you can specify a TCP/IP connection to the Cray Research host, which is indicated on the first entry in the file, by either the address (`123.45.67.89`), the official host name (`sn000`), or either of the two aliases (`sn000-hy` or `cray`).

Domain name service 2.1.2

The domain name service (DNS) is a software package that communicates with domain name services on other systems to coordinate a distributed database of network addresses and host names, as well as additional information.

A *domain name* is a sequence of names separated by periods (also called *dots*); when viewed from right to left, the domain name defines the logical location of a system in a tree-structured organization of available systems. Thus, given a domain name such as `host.company.bigdomain`, `host` is a specific host within the `company.bigdomain domain`, and `company` is a specific subdomain within the `bigdomain` domain. You can ignore the domain or subdomain part of a domain name (that is, you can ignore everything after the first period) when specifying names that refer to other hosts within the same domain or subdomain. For example, when you are connected to `host1.company.bigdomain`, you can simply refer to `host2.company.bigdomain` as `host2`.

Your system administrator will have located your local Cray Research host in a specific administrative domain or subdomain. To find the names of hosts known to your local Cray Research host, you should consult with your system administrator to determine the name of the domain or subdomain in which your local Cray Research host is located, and then use the `nslookup`(1B) utility to review the DNS for a list of known hosts. The `nslookup`(1B) utility prompts for various subcommands to look up information available from the DNS.

To retrieve a list of remote hosts known to your local Cray Research host, use the `ls` subcommand of `nslookup`, followed by the name of your local domain, as in the following example:

```
$ nslookup

Default Server:  gateway.our.domain
Address:  123.45.67.89
> ls our.domain
[gateway.our.domain]
Host or domain name       Internet address
sn000   123.45.67.89
gateway   234.56.78.90
workstation   234.56.78.91
gateway   123.45.67.90
> quit
$
```

Simply specifying your local domain (`our.domain` in the example) lists only those remote hosts that are actually in your local domain. If your network is connected to other networks outside your local domain, you also can use the DNS to find the names and Internet addresses of many more remote hosts; see the `nslookup`(1B) man page and consult with your system administrator for information about your site's network configuration. You also can use the `host`(1B) command for DNS lookup.

Choosing a suitable command
2.2

In this manual, the TCP/IP commands are grouped to function, as follows:

- Accessing hosts
- Transferring files
- Sending network mail
- Displaying user and host information

The following subsections provide an overview of these routines to help you determine which command to use to complete a task. After you decide which command is most appropriate, proceed to the section of this manual that explains in detail how to use the command.

Accessing hosts
2.2.1

If you have user privileges on a remote host, you can use the TCP/IP utilities to access that host from the terminal on your desk. You can then use all of the commands and files that are available to you on your remote host.

To establish a connection from a remote host to a Cray Research host, see the vendor-supplied documentation or consult with the system administrator of the remote host for connection information that is specific to that host. (If the remote host is running a version of the UNIX operating system with TCP/IP networking utilities derived from the 4.3BSD operating system, you should be able to use the `telnet` command in the manner described in this subsection. When in doubt, see the documentation or consult with your system administrator.)

To access hosts, follow this procedure:

- The `telnet`(1B) utility lets you connect to most operating systems that implement TCP/IP protocols. However, the `telnet` utility does not translate commands between different operating systems. This means, for example, that you can invoke only UNICOS commands on hosts running the UNICOS system.

  The `telnet` command has two modes of operation: command and input. When in *command mode*, you can open and close connections to remote hosts, check the status of a connection, and so on. After a connection is established, you are in *input mode*, which lets you use the resources of the remote host as though you were directly connected to it (this is called a *virtual connection*). The `telnet` utility can pass your terminal type to the remote host if the remote machine supports this functionality. If it does not, you should include terminal type information in your remote host login profile.

  The `telnet` command can operate in *character-at-a-time* mode and *line-by-line* mode. In character-at-a-time mode, each typed character is sent to the remote side for processing. In line-by-line mode, each typed character is processed locally, and only when a complete line has been typed is the data sent to the remote side.

  When running in line-by-line mode, `telnet` provides better response time than does a connection made with `rlogin`(1B), because `telnet` generates less network traffic. For more information about `telnet`, see subsection 3.1, page 17.

- The `rlogin` utility also establishes a virtual connection over TCP/IP to a remote host. Distinguishing features of `rlogin` include the following:

  – Provides automatic login (*autologin*) so that you are not prompted for a login name and password if certain conditions are met.

  – Always forwards your terminal type to the remote host. For more information on the use of `rlogin`, see subsection 3.2, page 28.

- The `rsh` utility (see `remsh`(1B)) executes one shell command on a remote host. For more information on the use of `rsh`, see subsection 3.3, page 31.

Transferring files 2.2.2

The following UNICOS utilities let you transfer files on remote hosts.

- The `rcp`(1) utility copies files between hosts. You can copy files between a Cray Research system and a remote host or between two remote hosts. `rcp` allows autologin (for a description, see subsection 7.1, page 77). For more information on `rcp`, see subsection 4.1, page 36.
- The `ftp`(1B) utility invokes the file transfer program; an `ftp` prompt then appears, indicating that the program is waiting for further instructions. At this point, you can use the autologin feature, open a connection to a remote host, transfer one or more files, append a local file to a remote file, change directories, delete remote files and/or directories, close a connection, or perform a number of other functions that `ftp` recognizes.

  To establish a file transfer connection from a remote host to a Cray Research host, see the vendor-supplied documentation or consult with the system administrator of the remote host for connection information that is specific to that host. (If the remote host is running a version of the UNIX operating system with TCP/IP networking utilities derived from the 4.3BSD operating system, you should be able to use the `ftp` utility in the manner described in this subsection. When in doubt, see the documentation or consult with your system administrator.) For more information on `ftp`, see subsection 4.2, page 40.

Sending network mail 2.2.3

When you are logged on to a Cray Research system, you can use the standard UNICOS utilities `mail`(1), `mailx`(1), or `talk`(1B), described in section 5, page 65.

Displaying user and host information 2.2.4

Several commands let you display information about users and hosts in the network.

- You can use the `finger`(1B) command to display information about users connected to a remote host or logged in to the Cray system through `telnet`(1B) or `rlogin`(1B). By default, `finger` lists the login name, full name, write status, terminal name, idle time, login time, office location, and phone number for each current user. You also can display information about a specific user, including the user's login name, full name, home directory, login shell, login time, idle time, and, if available, project and plan.
- You can display the local host's official host name by using the `hostname`(1) utility.
- The `ping`(8) command provides you with a simple way to find out whether a remote host is operating and reachable over the TCP/IP network.