**Network Related Utilities**

**ping**

* The ping command sends an echo request to a network host. It is useful for:
  + Determining the status of the network and various foreign hosts.
  + Tracking and isolating hardware and software problems.
  + Testing, measuring, and managing networks.
* The ping command sends one datagram per second and prints one line of output for every response received. Round-trip times and packet loss statistics are calculated and displayed.

Example:

% **ping kanaha or 164.122.27.33**

PING kanaha.mhpcc.edu: (164.122.27.33): 56 data bytes

64 bytes from 164.122.27.33: icmp\_seq=0 ttl=254 time=3 ms

64 bytes from 164.122.27.33: icmp\_seq=1 ttl=254 time=2 ms

64 bytes from 164.122.27.33: icmp\_seq=2 ttl=254 time=2 ms

64 bytes from 164.122.27.33: icmp\_seq=3 ttl=254 time=2 ms

^C

----kanaha.mhpcc.edu PING Statistics----

6 packets transmitted, 6 packets received, 0% packet loss

round-trip min/avg/max = 2/2/3 ms

**traceroute**

* The traceroute command prints the route that IP packets take to a network host. It is intended for use in network testing, measurement, and management.

Example:

% **traceroute archie.rutgers.edu**

traceroute to dorm.Rutgers.EDU (128.6.18.15), 30 hops max, 40 byte packets

1 B2\_IGSL\_01 (129.24.96.1) 2 ms 2 ms 2 ms

2 FZ00\_rtr\_01 (129.24.56.1) 3 ms 2 ms 7 ms

3 msh (129.24.8.193) 5 ms 7 ms 4 ms

4 198.83.5.5 (198.83.5.5) 7 ms 4 ms 7 ms

5 hssi3-0.cnss116.Albuquerque.t3.ans.net (192.103.74.41) 5 ms 4 ms 6 ms

6 mf-0.cnss112.Albuquerque.t3.ans.net (140.222.112.222) 4 ms 4 ms 4 ms

7 t3-0.cnss64.Houston.t3.ans.net (140.222.64.1) 30 ms 30 ms 30 ms

8 t3-0.cnss80.St-Louis.t3.ans.net (140.222.80.1) 47 ms 47 ms 46 ms

9 t3-1.cnss25.Chicago.t3.ans.net (140.222.25.2) 54 ms 52 ms 53 ms

10 t3-0.cnss40.Cleveland.t3.ans.net (140.222.40.1) 60 ms 59 ms 59 ms

11 t3-1.cnss48.Hartford.t3.ans.net (140.222.48.2) 73 ms 78 ms 74 ms

12 t3-2.cnss32.New-York.t3.ans.net (140.222.32.3) 78 ms 76 ms 76 ms

13 t3-0.enss137.t3.ans.net (140.222.137.1) 79 ms 80 ms 86 ms

14 fenchurch-gateway.jvnc.net (192.12.211.65) 83 ms 80 ms 84 ms

15 airport2-gateway.jvnc.net (130.94.9.250) 84 ms 86 ms 88 ms

16 airport1-gateway.jvnc.net (130.94.7.1) 85 ms 92 ms 84 ms

17 rutgers-gateway.jvnc.net (130.94.7.10) 89 ms 86 ms 90 ms

18 rucs-gw.rutgers.edu (128.6.21.7) 94 ms 104 ms 95 ms

19 dorm.rutgers.edu (128.6.18.15) 92 ms 93 ms 91 ms

* Warning: Because of the load traceroute imposes on the network, the traceroute command should not be used during normal operations or from automated scripts.
* The traceroute utility may not be available on all systems.

**ftp**

* ftp stands for File Transfer Protocol. File transfer provides a means for you to obtain computer files (text, image, sound, etc.) from other computers over the network.
* ftp can also be used to send (upload) files from your computer to another computer, providing you have write permission or a real account on the machine you are uploading.
* The ftp utility has its own set of UNIX like commands which allow you to perform tasks such as:
  + Connect and login to a remote host
  + Navigate directories
  + List directory contents
  + Put and get files
  + Transfer files as ascii, ebcdic or binary
* A sample ftp session appears below. The commands which are entered by the user are in bold type.

kanaha% **ftp makena.mhpcc.edu**

Connected to makena.mhpcc.edu.

220 makena.mhpcc.edu FTP server (Version 4.9 Thu Sep 2 20:35:07 CDT 1993)

Name (makena.mhpcc.edu:jsmith): **jsmith**

331 Password required for jsmith.

Password:

230 User jsmith logged in.

ftp> **dir**

200 PORT command successful.

150 Opening data connection for /bin/ls.

total 1464

drwxr-sr-x 3 jsmith staff 1024 Mar 11 20:04 Mail

drwxr-sr-x 2 jsmith staff 1536 Mar 3 18:07 Misc

drwxr-sr-x 5 jsmith staff 512 Dec 7 10:59 OldStuff

drwxr-sr-x 2 jsmith staff 1024 Mar 11 15:24 bin

drwxr-sr-x 5 jsmith staff 3072 Mar 13 16:10 mpl

-rw-r--r-- 1 jsmith staff 209671 Mar 15 10:57 myfile.out

drwxr-sr-x 3 jsmith staff 512 Jan 5 13:32 public

drwxr-sr-x 3 jsmith staff 512 Feb 10 10:17 pvm3

226 Transfer complete.

ftp> **cd mpl**

250 CWD command successful.

ftp> **dir**

200 PORT command successful.

150 Opening data connection for /bin/ls.

total 7320

-rw-r--r-- 1 jsmith staff 1630 Aug 8 1994 dboard.f

-rw-r----- 1 jsmith staff 4340 Jul 17 1994 vttest.c

-rwxr-xr-x 1 jsmith staff 525574 Feb 15 11:52 wave\_shift

-rw-r--r-- 1 jsmith staff 1648 Aug 5 1994 wide.list

-rwxr-xr-x 1 jsmith staff 4019 Feb 14 16:26 fix.c

226 Transfer complete.

ftp> **get wave\_shift**

200 PORT command successful.

150 Opening data connection for wave\_shift (525574 bytes).

226 Transfer complete.

528454 bytes received in 1.296 seconds (398.1 Kbytes/s)

ftp> **quit**

221 Goodbye.

* Many computers on the Internet permit *anonymous ftp* . You can login to these machines without a real account, to obtain files which have been made publicly available. Typically, the user name **anonymous** is used, coupled with your email address as the password.
* Anonymous ftp is usually restricted so that users can only see what the server permits them to see. Anonymous users do not have full privileges as would a user with a real computer account.

**telnet**

* Telnet is a utility that allows a computer user at one site to make a connection, login and then conduct work on a computer at another site. For example, you can use the telnet command to run a program in your directory on a supercomputer thousands of miles away.
* Telnet is used to access many of the Internet resources, such as databases, libraries and computers

Example telnet session:

% **telnet makena**

Trying...

Connected to makena.mhpcc.edu.

Escape character is '^]'.

AIX Version 3

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login: jsmith

jsmith's Password:

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\* WELCOME TO THE Maui High Performance Computing Center \*

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Last unsuccessful login: Fri Mar 3 12:01:09 HST 1995 on pts/0 from kanaha.mhpcc.edu

Last login: Wed Mar 8 18:33:27 HST 1995 on pts/10

*{ do some work }*

makena% **logout**

Connection closed.

**rlogin  
rsh  
rcp**

* rlogin (remote login), rsh (remote shell) and rcp (remote copy) are three utilities which allow you to perform tasks on other machines without requiring the usual login authentication.
* All three utilities depend upon a *.rhosts* located in your home directory. The .rhosts file contains the names of your "trusted" hosts and your userid on each of those hosts. An example appears below:

**apache.unm.edu jsmith**

**zeus.mit.edu jsmith**

**athena.com smith**

**fox.eeco.org smithj**

* rlogin: Allows you to login to a remote machine. It is nearly identical to telnet in function and appearance, however if your .rhosts file is setup accordingly, you will be able to login to your account on another machine wihout having to enter a userid and password.
* rsh: The remote shell command can be used to execute a command on remote host or log into remote host. With the proper .rhosts file, authentication is not required.

Examples:

**rsh host2 *- will connect to host2 for***

***login***

**rsh host2 df *- check the amount of free***

***disk space on remote host2***

**rsh host2 ps aux |grep jsmith *- check for processes owned***

***by jsmith on host2***

**rsh host2 rm /tmp/myfile.old *- remove a file in host2***

**rsh host2 cat test1 ">>" test2 *- append test1 file on remote***

***host to test2 file on remote***

***host***

**rsh host2 cat test1 >> test2 *- append test1 file on remote***

***host to test2 file on local***

***host***

* rcp: Remote copy enables you to copy files between different systems. With the proper .rhosts file, authentication is not required.

Example:

**rcp localfile host2:/home/eng/journal**