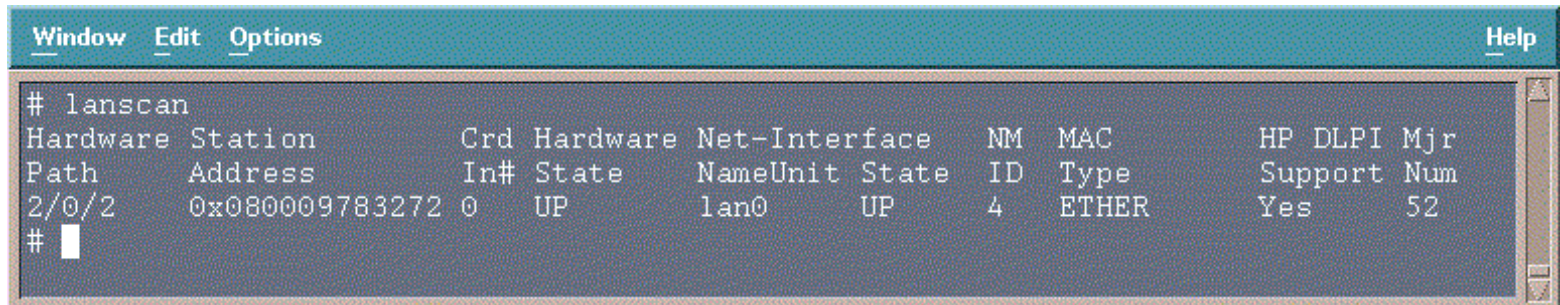


Network Configuration



Lanscan Command: Definition

- Displays LAN device configuration and status



```
# lanscan
Hardware Station      Crd Hardware Net-Interface  NM  MAC      HP DLPI Mjr
Path Address          In# State  NameUnit State  ID  Type   Support Num
2/0/2  0x080009783272  0   UP    lan0     UP    4   ETHER  Yes    52
#
```

Lanscan Command: Example

```
Window Edit Options Help
# lanscan
Hardware Station      Crd Hardware Net-Interface  NM  MAC      HP DLPI Mjr
Path      Address      In# State      NameUnit State  ID  Type      Support Num
2/0/2     0x080009783272  0   UP         lan0    UP   4   ETHER     Yes    52
#
```

Hardware Path

Card Instance Number

Hardware State

Link Level Address

Lanscan Command: Example

```
Window Edit Options Help
# lanscan
Hardware Station Crd Hardware Net-Interface NM MAC HP DLPI Mjr
Path Address In# State NameUnit State ID Type Support Num
2/0/2 0x080009783272 0 UP lan0 UP 4 ETHER Yes 52
#
```

**Net Interface
Name**

**Net Interface
State**

*Relates to the
ifconfig command*

**Network
Management ID**

*Used by lanadmin
diagnostic tool*

Lanscan Command: Example

```
Window Edit Options Help
# lanscan
Hardware Station Crd Hardware Net-Interface NM MAC HP DLPI Mjr
Path Address In# State NameUnit State ID Type Support Num
2/0/2 0x080009783272 0 UP lan0 UP 4 ETHER Yes 52
#
```

**Specifies medium
access control (MAC)
of LAN link**

Driver


**Indicates whether or not the LAN
device drive is compatible with HP's
Data Link Provider Interface**



Lanadmin Command: Definition

- ▶ LAN diagnostic tool
- ▶ Enables reset of LAN interface card
- ▶ Checks for faulty network connection
- ▶ Reports driver statistics for unusual or unexpected values
- ▶ Resets the driver statistics

Lanadmin Command Menu: Example



```
dtterm
Window Edit Options Help
# lanadmin

LOCAL AREA NETWORK ONLINE ADMINISTRATION, Version 1.0
Mon, Jun 21, 1999 23:25:31

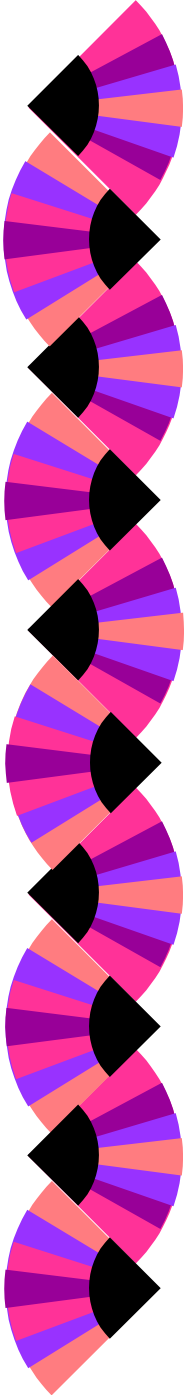
Copyright 1994 Hewlett Packard Company.
All rights are reserved.

Test Selection mode.

lan      = LAN Interface Administration
menu     = Display this menu
quit     = Terminate the Administration
terse    = Do not display command menu
verbose  = Display command menu

Enter command: █
```

Lanadmin Command Menu: terse & verbose



```
dtterm
Window Edit Options Help
quit      = Terminate the Administration
terse     = Do not display command menu
verbose   = Display command menu

Enter command: t
Do not display command menu.

Test Selection mode.

Enter command: v
Display command menu.

Test Selection mode.


lan       = LAN Interface Administration
menu      = Display this menu
quit      = Terminate the Administration
terse     = Do not display command menu
verbose   = Display command menu

Enter command: █
```

terse

verbose

Lanadmin Command Menu: menu



```
dtterm
Window Edit Options Help
Display command menu.
Test Selection mode.
lan      = LAN Interface Administration
menu     = Display this menu
quit     = Terminate the Administration
terse    = Do not display command menu
verbose  = Display command menu
Enter command: m
Test Selection mode.
lan      = LAN Interface Administration
menu     = Display this menu
quit     = Terminate the Administration
terse    = Do not display command menu
verbose  = Display command menu
Enter command: 
```

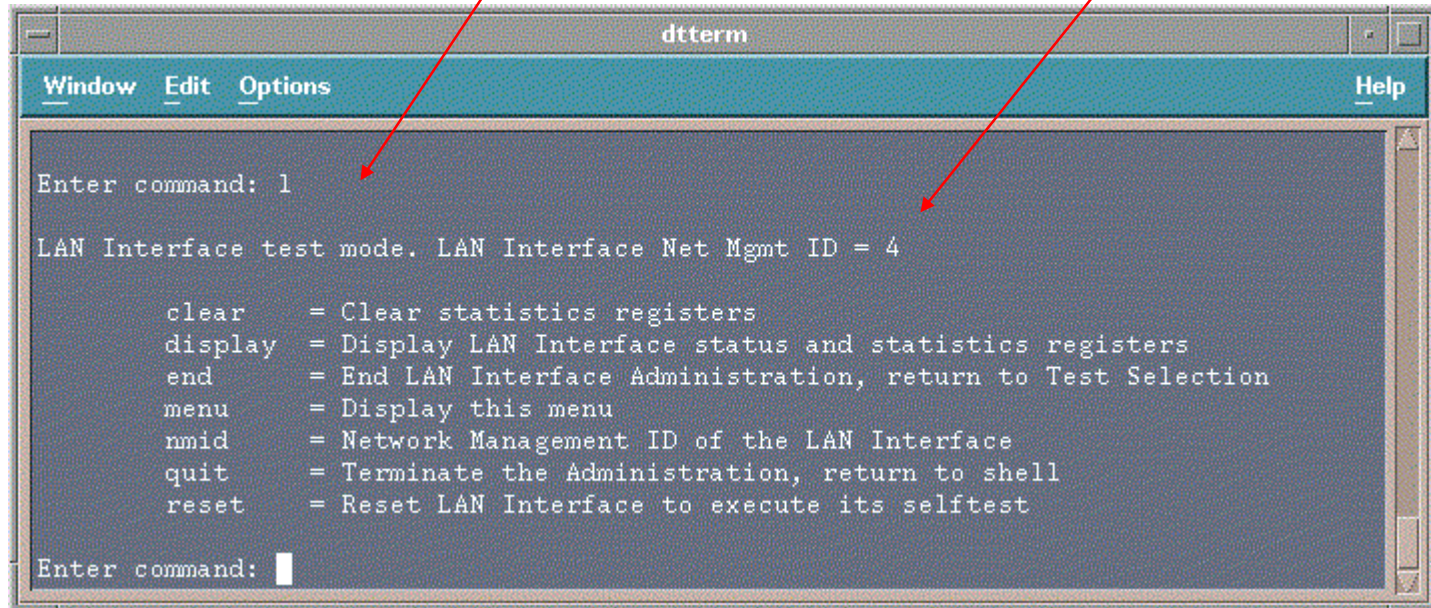
menu

Lan Interface Administration Menu:

lan

lan

Logical Number of
N/W I/F Card




```
dtterm
Window Edit Options Help
Enter command: lan
LAN Interface test mode. LAN Interface Net Mgmt ID = 4

clear      = Clear statistics registers
display    = Display LAN Interface status and statistics registers
end        = End LAN Interface Administration, return to Test Selection
menu       = Display this menu
nmid       = Network Management ID of the LAN Interface
quit       = Terminate the Administration, return to shell
reset      = Reset LAN Interface to execute its selftest

Enter command: █
```

Lan Interface Administration Menu: lan => display (1st screen)



```
dtterm
Window Edit Options Help
Enter command: d

LAN INTERFACE STATUS DISPLAY
Tue , Jun 22, 1999 16:55:45

Network Management ID      = 4
Description                 = lan0 Hewlett-Packard LAN Interface Hw Rev 0
Type (value)                = ethernet-csmacd(6)
MTU Size                    = 1500
Speed                       = 100000000
Station Address              = 0x800009783272
Administration Status (value) = up(1)
Operation Status (value)    = up(1)
Last Change                  = 4532
Inbound Octets               = 262476103
Inbound Unicast Packets     = 2728
Inbound Non-Unicast Packets = 2963856
Inbound Discards             = 0
Inbound Errors               = 7
Inbound Unknown Protocols   = 414775
Outbound Octets              = 2056479
Outbound Unicast Packets    = 3679
Outbound Non-Unicast Packets = 105
Outbound Discards            = 0
Outbound Errors              = 0
Outbound Queue Length       = 0
Specific                     = 655367

Press <Return> to continue
```

Logical Number of N/W I/F Card (points to Network Management ID = 4)

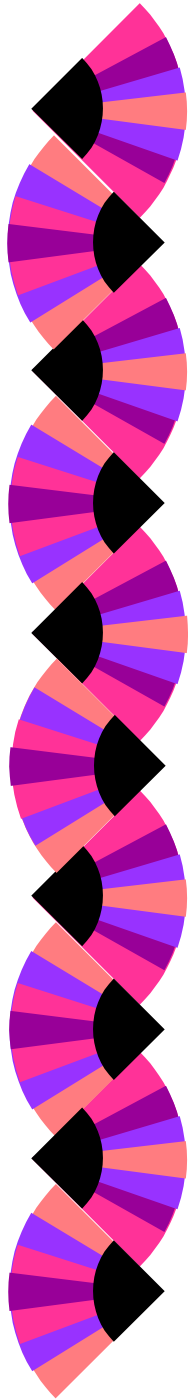
Encapsulation Method (points to Type (value) = ethernet-csmacd(6))

Maximum Transfer Rate (points to Speed = 100000000)

Hardware State (points to Administration Status (value) = up(1))

Net-Interface State (points to Operation Status (value) = up(1))

Lan Interface Administration Menu: lan => display (2nd screen)



```
dtterm
Window Edit Options Help

Ethernet-like Statistics Group
Index = 4
Alignment Errors = 0
FCS Errors = 0
Single Collision Frames = 20
Multiple Collision Frames = 34
Deferred Transmissions = 139
Late Collisions = 0
Excessive Collisions = 0
Internal MAC Transmit Errors = 0
Carrier Sense Errors = 0
Frames Too Long = 0
Internal MAC Receive Errors = 0


LAN Interface test mode. LAN Interface Net Mgmt ID = 4

clear = Clear statistics registers
display = Display LAN Interface status and statistics registers
end = End LAN Interface Administration, return to Test Selection
menu = Display this menu
nmid = Network Management ID of the LAN Interface
quit = Terminate the Administration, return to shell
reset = Reset LAN Interface to execute its selftest

Enter command: █
```

**Data link layer protocol information.
Save output when your network is
performing properly. Data is useful
for troubleshooting**

Lan Interface Administration Menu: lan => nmid, clear, and reset

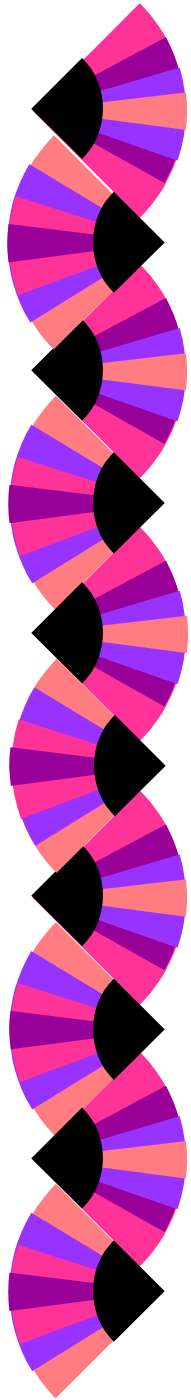


```
dtterm
Window Edit Options Help
LAN Interface test mode. LAN Interface Net Mgmt ID = 4

clear      = Clear statistics registers
display    = Display LAN Interface status and statistics registers
end        = End LAN Interface Administration, return to Test Selection
menu       = Display this menu
nmid       = Network Management ID of the LAN Interface
quit       = Terminate the Administration, return to shell
reset      = Reset LAN Interface to execute its selftest

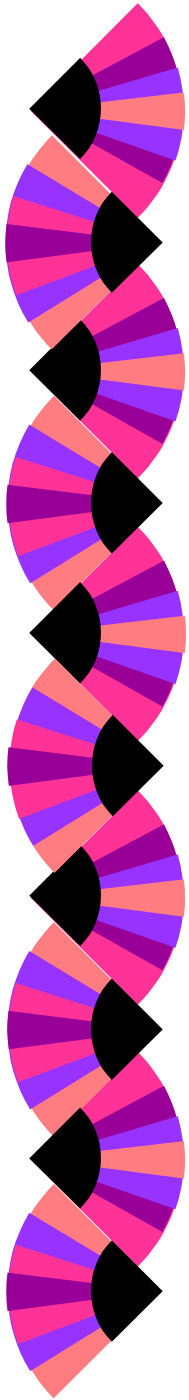
Enter command: █
```

- The nmid command is helpful when a system contains multiple LAN cards.
- The reset command may be used when the hardware status of the LAN card is down



Lanadmin Additional Notes: Interprocess Dialogue Control

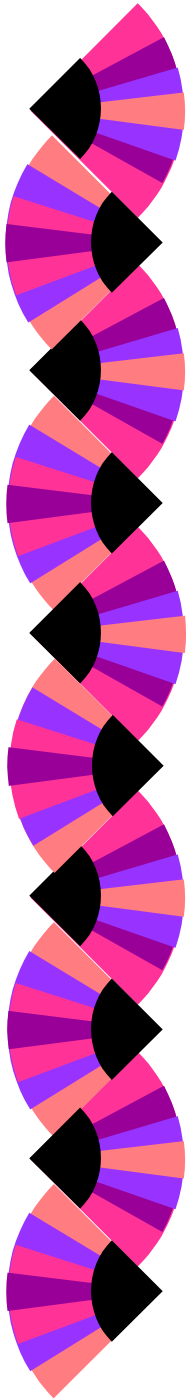
- ▶ Full-duplex
 - two-way simultaneous mode of communication
- ▶ Half-duplex
 - two-way alternative mode of communication
 - only one end of the connection can transmit at a time
- ▶ Simplex
 - one-way mode of communication



Lanadmin Additional Notes: How To Determine Duplex Type

- ▶ lanadmin -x <nmid>

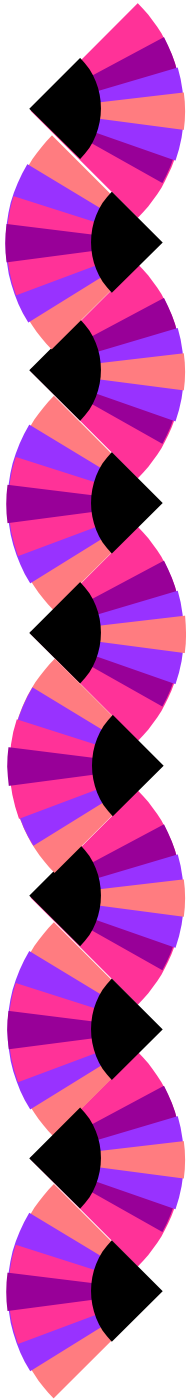
- ▶ lanadmin menu
 - lanadmin
 - <nmid>
 - display



Lanadmin Additional Notes: How To Determine Duplex Type

```
# lanadmin -x 4
```

```
Speed          = 100 Full-Duplex
```

Lanadmin Additional Notes: How To Determine Speed

- ▶ lanadmin -s <nmid>

- ▶ lanadmin menu
 - lanadmin
 - <nmid>
 - display



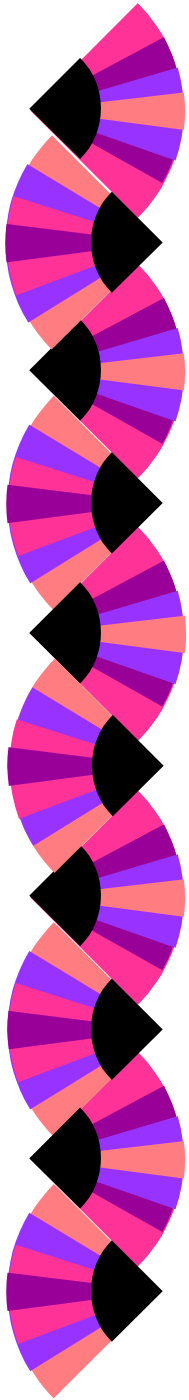
Lanadmin Additional Notes: How To Determine Speed

```
# lanadmin -s 4
```

```
Speed = 100
```

```
# lanadmin -s 5
```

```
Speed = 10000000
```



Lanadmin Additional Notes: How To Set Duplex Type

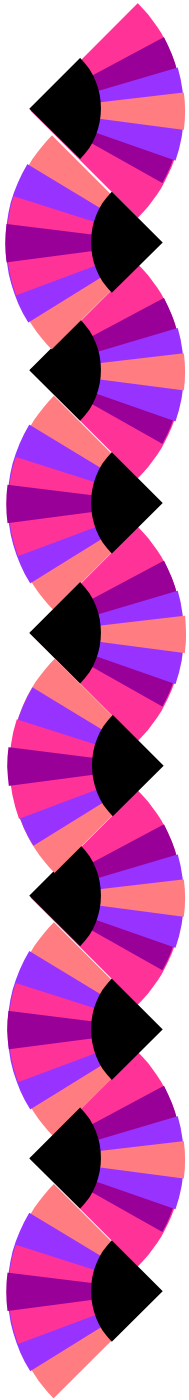
- ▶ `lanadmin -X duplex_value <nmid>`
- ▶ Valid entries for the `duplex_value`

10HD

10FD

100HD

100FD



Lanadmin Additional Notes: How To Set Speed

- ▶ `lanadmin -S duplex_value <nmid>`
- ▶ Valid entries for the `duplex_value`

10

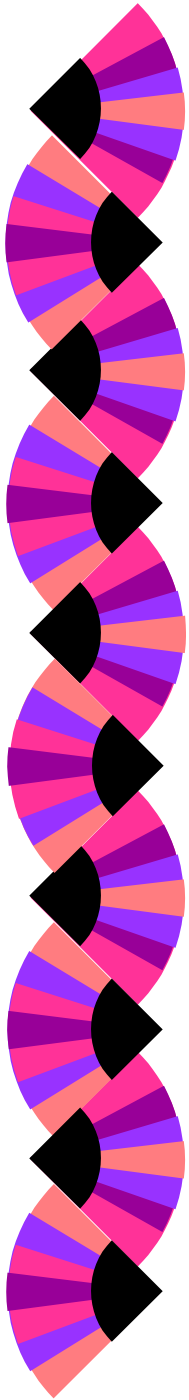
100



Lanadmin Additional Notes: Configuration File

- ▶ Every interface type has its own configuration file:
 - hpetherconf 10BaseT
 - hpgsc100conf 100BaseT
 - hpfddiconf fddi

- ▶ Location: `/etc/rc.config.d`



Lanadmin Additional Notes: Configuration File

...

HP_GSC100_INTERFACE_NAME[0]=lan0

HP_GSC100_STATION_ADDRESS{0}=0x0060B0C17BE9

HP_GSC100_DUPLEX[0]=FULL

HP_GSC100_SPEED[0]=100FD

...



Configuring Network Connectivity: ifconfig definition

- Assigns IP address to network interface card.
- Checks the configuration values of the network interface card





Configuring Network Connectivity: ifconfig syntax

ifconfig *interface* *IP_address* **netmask** *mask* **broadcast** *address*

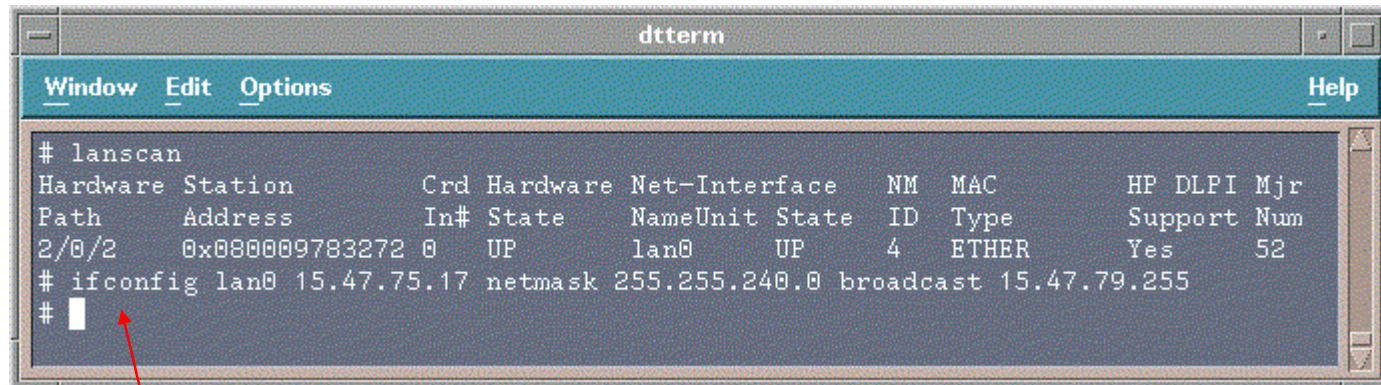


Optional Fields



Configuring Network Connectivity: ifconfig example

ifconfig *interface IP_address netmask mask broadcast address*



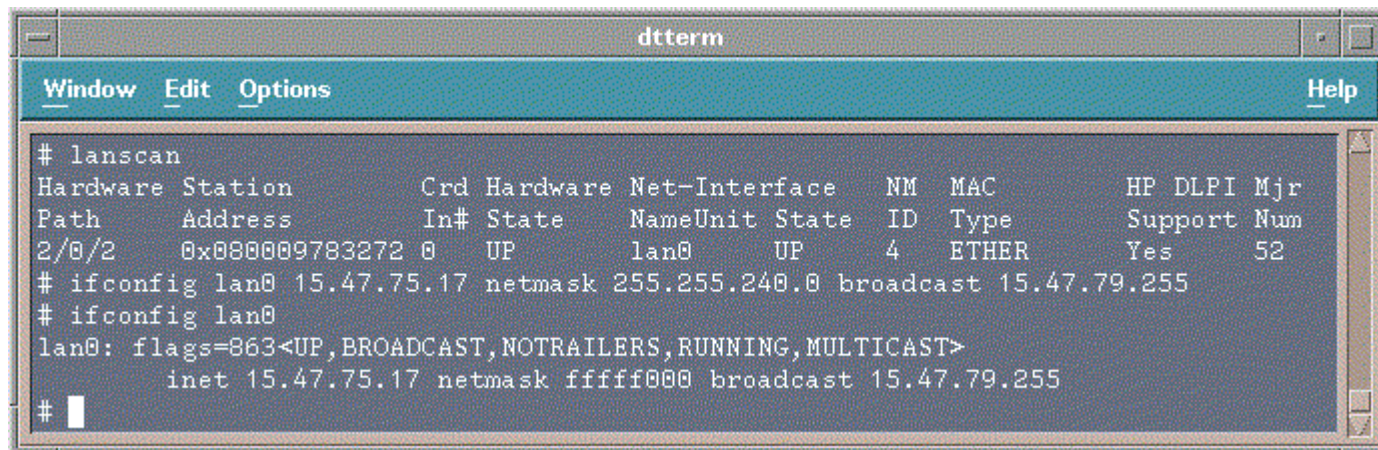
```
dtterm
Window Edit Options Help
# lanscan
Hardware Station      Crd Hardware Net-Interface  NM  MAC      HP DLPI Mjr
Path      Address      In# State      NameUnit State  ID  Type      Support Num
2/0/2     0x0800009783272 0  UP        lan0     UP    4  ETHER     Yes    52
# ifconfig lan0 15.47.75.17 netmask 255.255.240.0 broadcast 15.47.79.255
#
```

Did this command
actually work ???



Configuring Network Connectivity: ifconfig example

ifconfig *interface*



```
dtterm
Window Edit Options Help
# lanscan
Hardware Station      Crd Hardware Net-Interface  NM  MAC      HP DLPI Mjr
Path      Address      In# State      NameUnit State  ID  Type      Support Num
2/0/2     0x0800009783272 0   UP        lan0     UP    4   ETHER     Yes    52
# ifconfig lan0 15.47.75.17 netmask 255.255.240.0 broadcast 15.47.79.255
# ifconfig lan0
lan0: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST>
      inet 15.47.75.17 netmask ffff0000 broadcast 15.47.79.255
#
```

- **up** Indicates that the interface is enabled. If the interface is disabled, the up is substituted by the null character.
- **broadcast** Indicates that the interface is configured to accept broadcasts
- **notrailers** Encapsulation does not support trailer encapsulation which is becoming less popular. See man page on ifconfig for further discussion.

Configuring Network Connectivity: ifconfig example

ifconfig *down*



```
dtterm
Window Edit Options Help
# ifconfig lan0
lan0: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST>
      inet 15.47.75.17 netmask ffff0000 broadcast 15.47.79.255
# ifconfig lan0 down
# ifconfig lan0
lan0: flags=862<BROADCAST,NOTRAILERS,RUNNING,MULTICAST>
      inet 15.47.75.17 netmask ffff0000 broadcast 15.47.79.255
#
```

Configuring Network Connectivity: ifconfig example

ifconfig *up*



```
dtterm
Window Edit Options Help
# ifconfig lan0
lan0: flags=862<BROADCAST,NOTRAILERS,RUNNING,MULTICAST>
    inet 15.47.75.17 netmask fffff000 broadcast 15.47.79.255
# ifconfig lan0 up
# ifconfig lan0
lan0: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST>
    inet 15.47.75.17 netmask fffff000 broadcast 15.47.79.255
#
```



Configuring Network Connectivity: ifconfig example

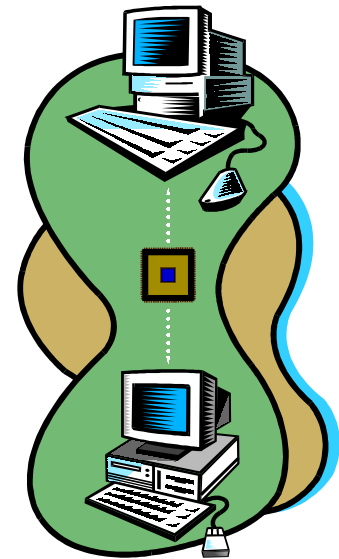


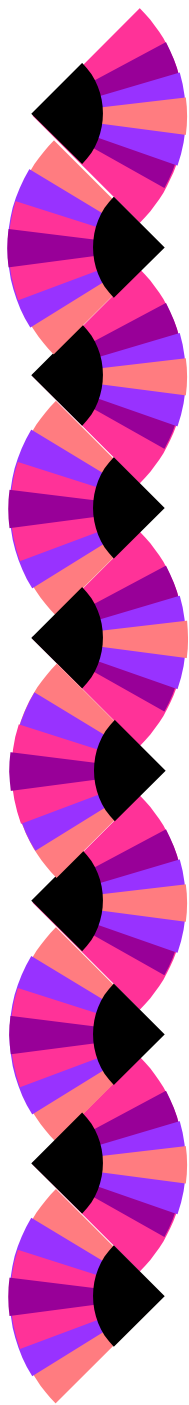
Warning ...

Configuring the LAN card via the ifconfig command is not permanent. A reboot will cause the LAN card to be set to its default configuration.

Configuring Network Connectivity: `/etc/rc.config.d/netconf` file

- Contains configuration values for the network subsystems:
 - Hostname
 - Interface Name
 - IP Address
 - Subnetmask
 - Broadcast Address






Configuring Network Connectivity: netconf file: hostname information

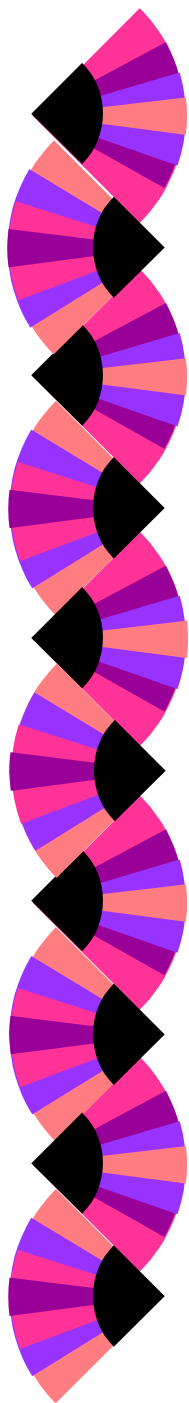
```
dtterm
Window Edit Options Help
# netconf: configuration values for core networking subsystems
#
# @(#) $Revision: 1.4.116.4 $ $Date: 96/01/22 14:56:43 $
#
# HOSTNAME:          Name of your system for uname -S and hostname
#
# OPERATING_SYSTEM:  Name of operating system returned by uname -s
#                   ----- DO NOT CHANGE THIS VALUE -----
#
# LOOPBACK_ADDRESS:  Loopback address
#                   ----- DO NOT CHANGE THIS VALUE -----
#
# IMPORTANT:  for 9.x-to-10.0 transition, do not put blank lines between
# the next set of statements

HOSTNAME="m2426stk"
OPERATING_SYSTEM=HP-UX
LOOPBACK_ADDRESS=127.0.0.1
```

Configuring Network Connectivity: netconf file: LAN card information



```
dtterm
Window Edit Options Help
# Internet configuration parameters.  See ifconfig(1m), lanconfig(1m)
#
# INTERFACE_NAME:      Network interface name (see lanscan(1m))
#
# IP_ADDRESS:         IP address in decimal-dot notation (e.g., 192.1.2.3)
#
# SUBNET_MASK:        Subnetwork mask in decimal-dot notation, if different
#                    from default
#
# BROADCAST_ADDRESS:  Broadcast address in decimal-dot notation, if
#                    different from default
#
# LANCONFIG_ARGS:     Link-layer encapsulation methods (e.g., ieee, ether).
#                    See lanconfig(1m) for details.
#
# DHCP_ENABLE         Determines whether or not DHCP will be enabled on the
#                    network interface (see auto_parms(1M), dhcpclient(1M))
#                    1 enables DHCP; 0 disables DHCP.
#
# For each additional network interfaces, add a set of variable assignments
# like the ones below, changing the index to "[1]", "[2]" et cetera.
```

```
dtterm
Window Edit Options Help
# Internet configuration parameters.  See ifconfig(1m), lanconfig(1m)
#
# INTERFACE_NAME:      Network interface name (see lanscan(1m))
#
# IP_ADDRESS:         IP address in decimal-dot notation (e.g., 192.1.2.3)
#
# SUBNET_MASK:        Subnetwork mask in decimal-dot notation, if different
#                    from default
#
# BROADCAST_ADDRESS:  Broadcast address in decimal-dot notation, if
#                    different from default
#
# LANCONFIG_ARGS:     Link-layer encapsulation methods (e.g., ieee, ether).
#                    See lanconfig(1m) for details.
#
# DHCP_ENABLE         Determines whether or not DHCP will be enabled on the
#                    network interface (see auto_parms(1M), dhcpclient(1M))
#                    1 enables DHCP; 0 disables DHCP.
#
# For each additional network interfaces, add a set of variable assignments
# like the ones below, changing the index to "[1]", "[2]" et cetera.
#
# IMPORTANT:  for 9.x-to-10.0 transition, do not put blank lines between
# the next set of statements

INTERFACE_NAME[0]=lan0
IP_ADDRESS[0]=15.47.75.17
SUBNET_MASK[0]=255.255.248.0
BROADCAST_ADDRESS[0]=""
LANCONFIG_ARGS[0]="ether"
DHCP_ENABLE[0]=0
```



Configuring Network Connectivity: set_parms command

```
dtterm
Window Edit Options Help
# set_parms
Usage: set_parms <argument>
  Where <argument> can be:
hostname
timezone
date_time
root_passwd
ip_address
addl_netwrk
font_c-s
  or initial (for entire initial boot-time dialog sequence)
#
```