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**HOTWIRE
DIGITAL SUBSCRIBER LINE
ACCESS MULTIPLEXER
(DSLAM)**

USER'S GUIDE

Document No. 8000-A2-GB20-00

PRELIMINARY DRAFT

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About This Guide

Document Purpose and Intended Audience

This guide describes how to operate and configure the software component of the HotWire Digital Subscriber Line Access Multiplexer (DSLAM) System. The guide is written for administrators, and operators who maintain the networks that support HotWire operation.

It is assumed that you have a basic understanding of internetworking protocols and their features. Specifically, you should have a basic familiarity with Simple Network Management Protocol (SNMP), Network Management Systems (NMSs), and the following internetworking concepts:

- TCP/IP applications
- IP and subnet addressing
- IP routing (also referred to as IP forwarding).

It is also assumed that you have already installed either the HotWire 8600 or 8800 DSLAM.

Document Summary

Section	Description
Chapter 1	<i>HotWire DSLAM System Description.</i> Provides an overview of the HotWire 8600 and 8800 systems.
Chapter 2	<i>HotWire Menus and Screens.</i> Describes the operation of HotWire menus, screens, system passwords, and global keys. Provides a functional description of menu options in the HotWire system.
Chapter 3	<i>Configuring the HotWire DSLAM.</i> Describes the required procedures for configuring the HotWire system.
Chapter 4	<i>MCC Card Configuration.</i> Describes the optional procedures for configuring the MCC card on the HotWire system.

Section	Description
Chapter 5	<i>DSL Card Configuration.</i> Describes the optional procedures for configuring the DSL cards on the HotWire system.
Chapter 6	<i>Monitoring the HotWire DSLAM.</i> Describes operator programs that monitor the HotWire system.
Chapter 7	<i>Diagnostics and Troubleshooting.</i> Describes common HotWire operational problems and solutions.
Appendix A	<i>Checklist for Configuring the HotWire DSLAM.</i> Describes mandatory steps required to configure the MCC cards, DSL cards, and RTUs for the HotWire DSLAM
Appendix B	<i>Checklist for Setting Up User Accounts on the MCC and DSL Cards.</i> Describes user accounts and how to set them up on the MCC and DSL cards.
Appendix C	<i>Navigation Keys.</i> Describes the keys that are used to navigate the HotWire system.
Appendix D	<i>Traps.</i> Describes the traps that are generated by the HotWire system.
Glossary	Defines acronyms and terms used in this document.
Index	Lists key terms, acronyms, concepts, and sections in alphabetical order.

Product-Related Documents

Document Number	Document Title
5020-A2-GN10	<i>HotWire POTS Splitter Central Office Installation Instructions</i>
5030-A2-GN10	<i>HotWire POTS Splitter Customer Premises Installation Instructions</i>
5446-A2-GN20	<i>HotWire Remote Termination Unit (RTU) Customer Premise's Installation Instructions</i>
8000-A2-GB21	<i>HotWire Digital Subscriber Line Access Multiplexer (DSLAM) Network Configuration Guide</i>
8000-A2-GN11	<i>HotWire Management Communications Controller (MCC) Card Installation Instructions</i>
8546-A2-GN10	<i>HotWire 8546 Digital Subscriber Line (DSL) Card Installation Instructions</i>

Document Number	Document Title
8800-A2-GN10	<i>Replacement Air Filter for the HotWire 8800 DSLAM Installation Instructions</i>
8800-A2-GN21	<i>HotWire 8800 Digital Subscriber Line Access Multiplexer (DSLAM) Installation Guide</i>

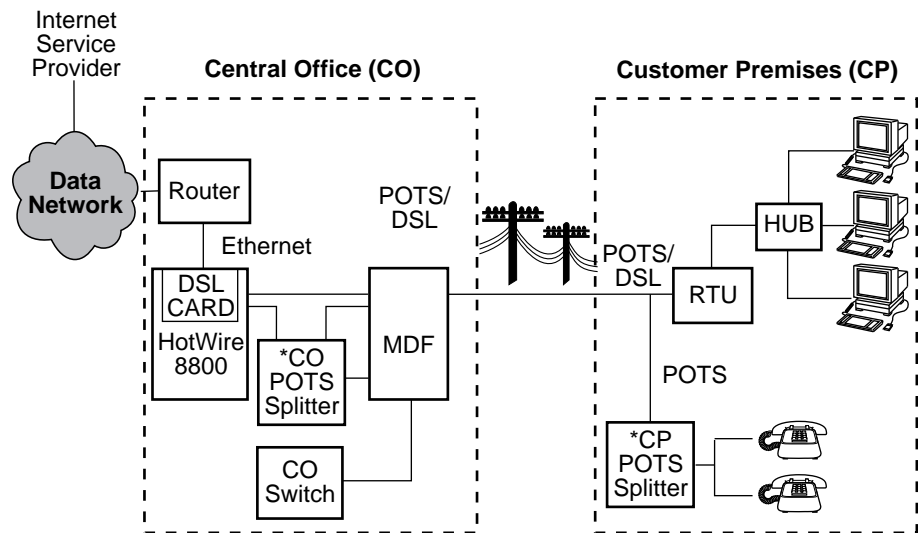
Contact your sales or service representative to order additional product documentation.

HotWire DSLAM System Description

1

What is the HotWire 8600/8800 DSLAM?

The HotWire 8600 or 8800 Digital Subscriber Line Access Multiplexer (DSLAM), which is installed in the Central Office (CO), provides high-speed Internet or Intranet access over traditional twisted-pair telephone wiring. In addition, through the use of Rate Adaptive Digital Subscriber Line (RADSL) technology, DSLAM provides simultaneous high-speed data access (digital) and Plain Old Telephone Service (POTS) service (analog) over the same twisted-pair telephone line. Support of this simultaneous access requires the installation of POTS splitters at both ends of the line (i.e., at the Central Office and at the customer premises).



Legend: DSL - Digital Subscriber Line
MDF - Main Distribution Frame
RTU - Remote Termination Unit
POTS - Plain Old Telephone Service

* Optional

Features

The HotWire DSLAM has the following features:

- Rate adaptive High speed data rates.
- Security access and permission features that prevent users from accessing another user's PC files or LAN traffic.
- Remote and local access from the Customer Premise (CP) to the CO.
- Status polling, alarm indicators and logging, diagnostics and performance capabilities.
- Primary network management support via SNMP agent for monitoring and traps.

HotWire DSLAM Components

The HotWire DSLAM consists of the following components:

- **HotWire 8600 or 8800 DSLAM chassis**

HotWire 8600 is a three-slot chassis designed to be mounted in a central office or desktop environment. HotWire 8800 is a 20-slot chassis designed to house up to 18 DSL cards and one Management Communications Controller (MCC) card. (The remaining slot is reserved for future use.)
- **One Management Communications Controller (MCC) card**

The chassis requires one MCC card, which is a processor card that administers and provides diagnostic connectivity to the DSL cards. It acts as a mid-level manager and works in conjunction with a Simple Network Management Protocol (SNMP) system, such as HP OpenView, via its LAN port. It gathers operational status for each of the DSL cards and responds to the SNMP requests. It also has a serial port for a local user interface to the DSLAM.
- **At least one Digital Subscriber Line (DSL) card**

The chassis requires at least one DSL card, which is a circuit card that contains four RADL modems, an Ethernet interface to the Internet Service Provider, and a processor/packet forwarder. The processor/packet forwarder controls the modems and forwards the packet traffic via the Ethernet and DSL interfaces. When the 8800 chassis is fully populated, it provides a total of 72 RADSL modem ports. When the 8600 chassis is fully populated, it provides a total of 68 RADSL modem ports.

NOTE:

You must order the MCC and DSL cards separately. They are not provided with the chassis.

Configuring and Monitoring the System

HotWire 8600 or 8800 has two levels of access:

- **Administrator**
The Administrator has complete read/write access to the system.
- **Operator**
The Operator has read-only access.

With Administrator permission, you can set specific parameters and variables to configure cards, ports, interfaces, profiles and users, next hop routes, and SNMP security.

With Operator permission, you can view card status, physical layer status, interfaces, and Internet Protocol (IP) routes, and run non-disruptive tests..

Troubleshooting and Diagnostics

HotWire 8600 or 8800 provides diagnostic submenu tools that:

- Run selftests to check status of CPUs, memories, and ports
- Perform ping and packet echo tests and display results
- Show major and minor alarms
- Display or clear error logs
- Enable or disable the A/B power supply alarm

HotWire Menus and Screens

2

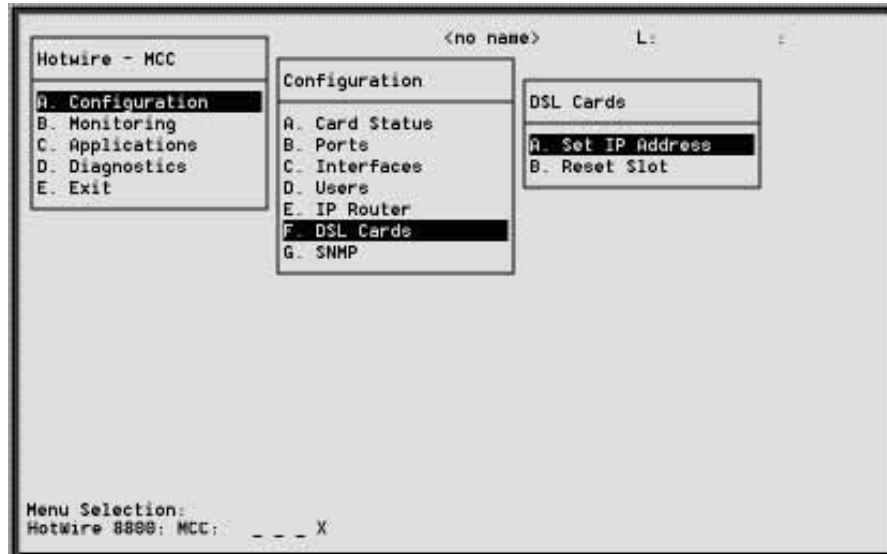
Overview

The HotWire DSLAM has a menu- and screen-driven user interface system that enables the user to configure and monitor the HotWire cards. This section covers:

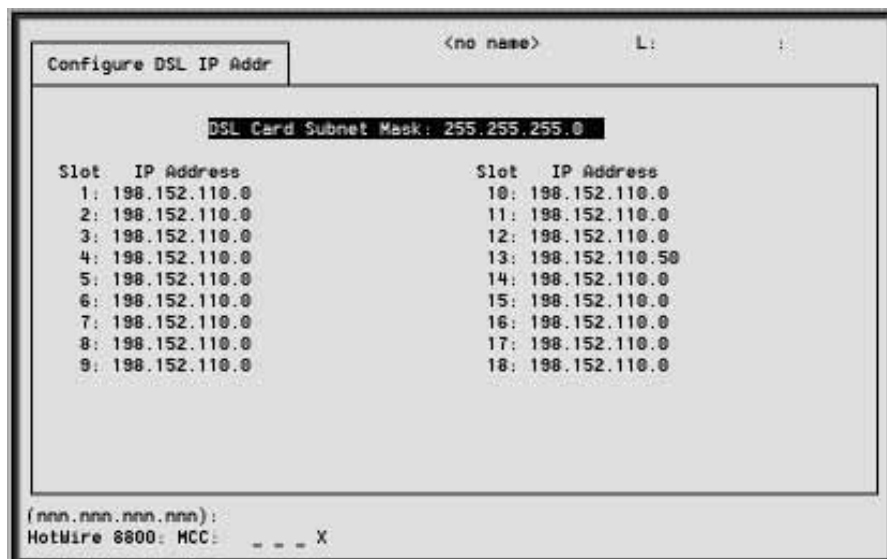
- Menu and screen format
- Key labels
- Logging in to the system
- Menu trees
 - Main
 - Configuration
 - Monitoring

Menu and Screen Format

The HotWire DSLAM uses an ASCII-based text format for its menus and screens. The typical format for a HotWire menu screen is:



This results with a display of the HotWire System screen showing the IP address assignments and a prompt for adding or changing them.



Using the example above, to navigate your way to the Configure DSL IP Addr screen, select Configuration (A.), DSL Cards (F.), and Set IP Address (A.). This will allow the configuration of DSL card IP addresses on the MCC.

Navigation Keys

The following table lists the most commonly used navigation keys with their definitions. These commands are used to move around the menus and screens. For a complete list of key labels, see Appendix C, *Navigation Keys*.

Keys	Definition
Ctrl a	Moves Home
Ctrl k	Moves up to the previous menu selection or entry field
Ctrl-l	Refreshes the screen
Ctrl-p	Moves back a field
Ctrl-t	Moves Home or to the top of the menu
Ctrl v	Displays a pop-up menu of active users
Ctrl-z	Moves back one menu level or exits from screen
Up arrow	Moves up to the previous menu selection or entry field
Down arrow	Moves down to the next menu choice or entry field
Left arrow	Moves left to the previous menu box or entry field
Right arrow	Moves right to the next menu box or entry field
Enter or Return	Accepts entry
Tab	Moves down or to the next selection
?	Displays Online help screens that correspond to the particular menu or system screen displayed.

Logging in to the System

You can log in to the HotWire DSLAM system using either a local VT100 terminal or a remote Telnet connection.

There are two levels of privileges on the HotWire DSLAM system. Your user accounts can be configured with a user name, password, and privilege of:

- Administrator, giving you access to all of the features of the system including configuration options, or
- Operator, giving you read-only access.

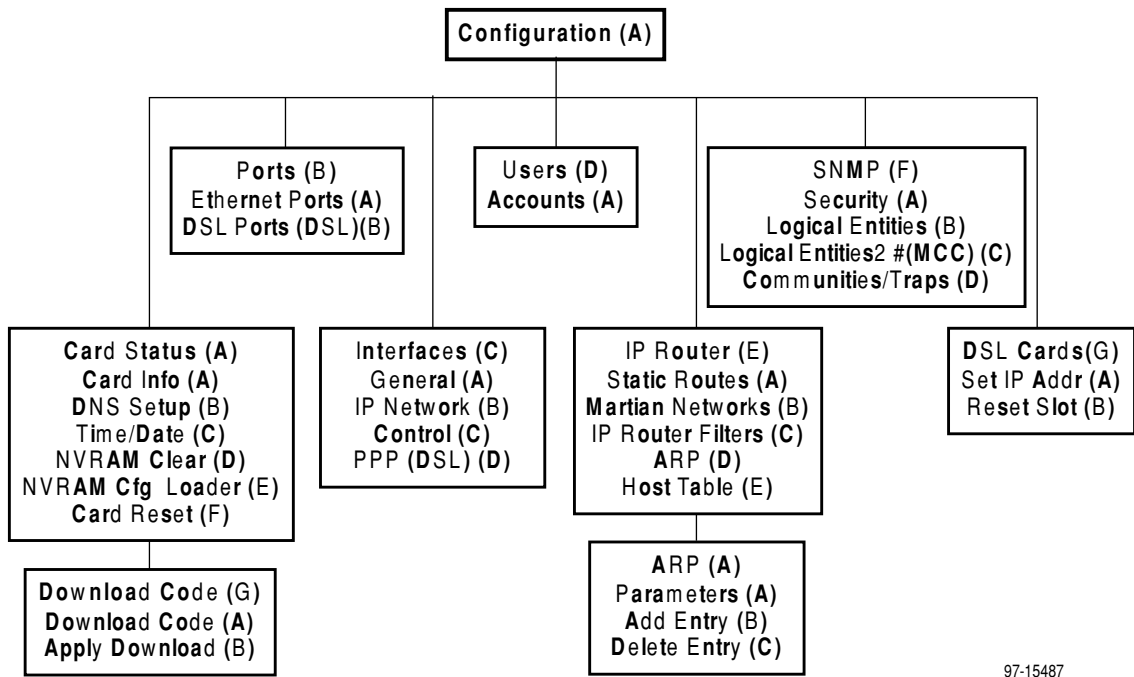
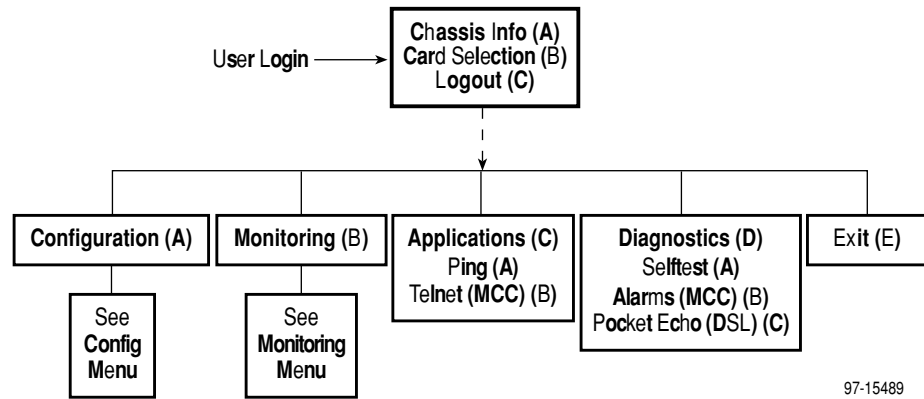
NOTE:

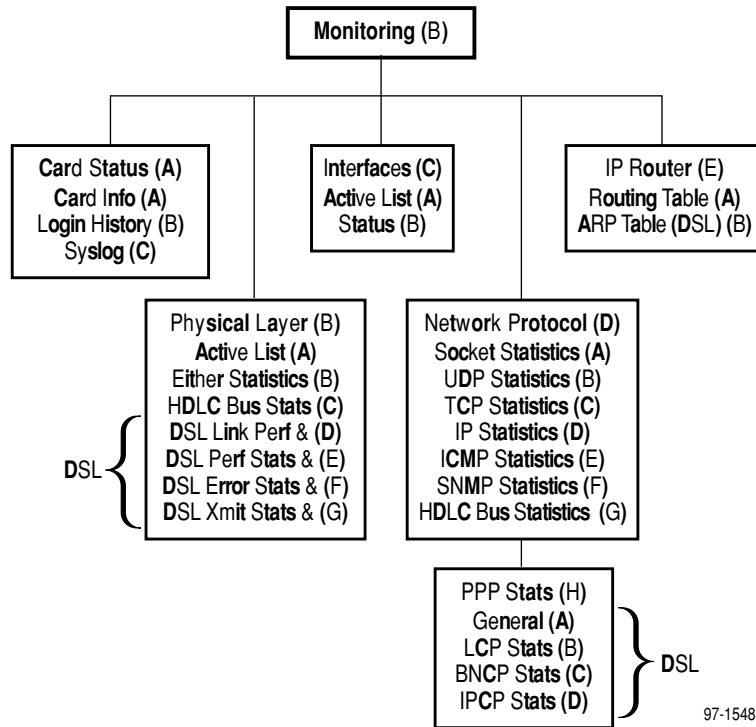
The login id and password are case sensitive; that is, the system recognizes both upper- and lower-case letters. For example, if you enter your user name and password information in upper case letters and your assigned user name and password are in upper- and lower-case letters, the system won't let you log in.

For more detailed information on logging into the system, see Appendix B, *Setting Up User Accounts on the MCC and DSL Cards*.

Menu Trees

The following three figures show the structure of menus and screens.



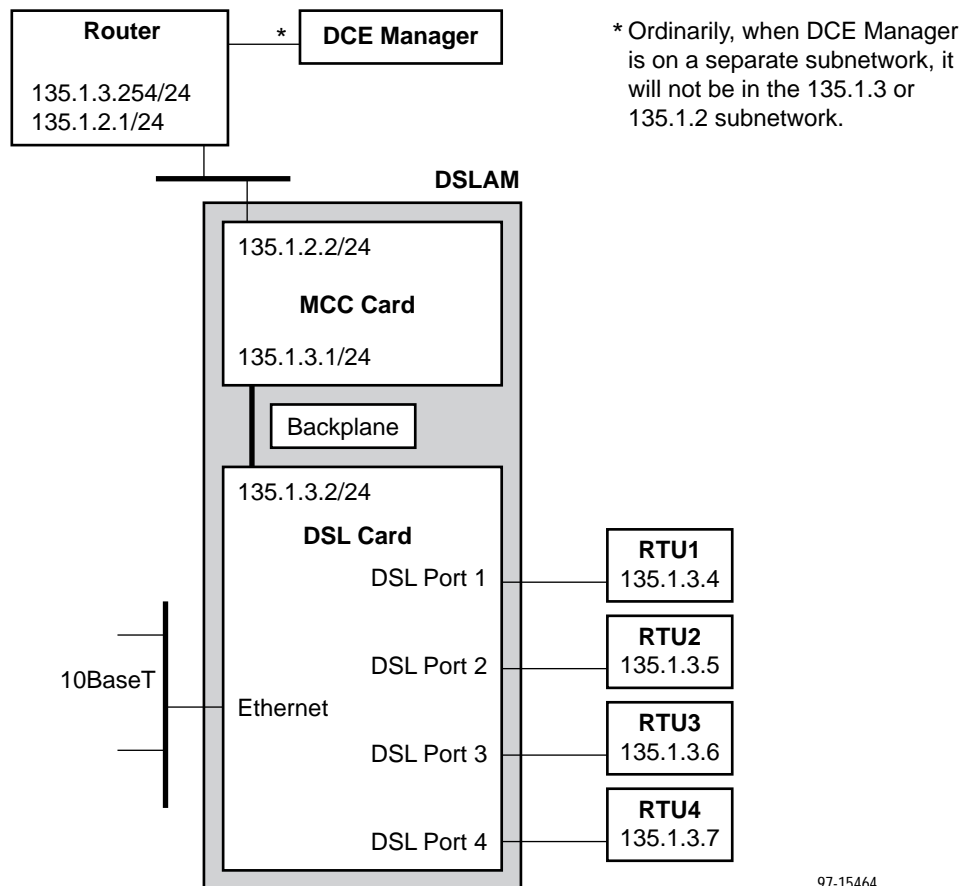


Configuring the HotWire DSLAM

3

Overview

The HotWire DSLAM enables you to configure and manage the HotWire MCC and DSL cards. This section describes the mandatory card configuration instructions. The following illustration shows the components that must be configured.

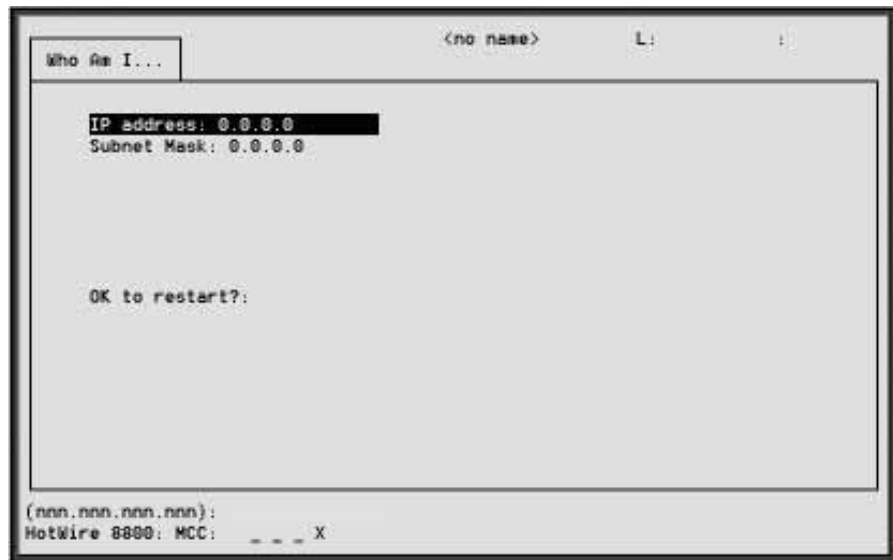


Configure the MCC and DSL Cards Using the Console Terminal

► Procedure

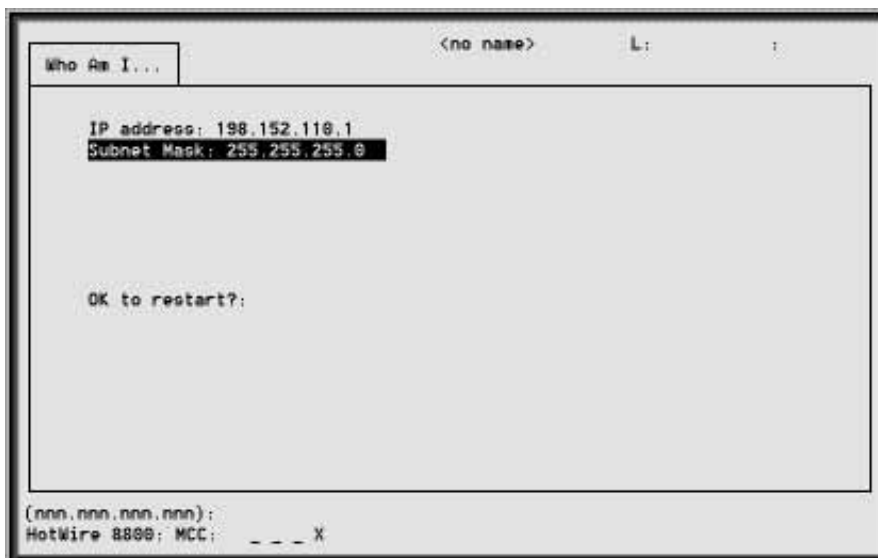
To set the IP address and subnet mask from the console terminal:

1. Power up the chassis after the self-test completes. The Who Am I screen appears.



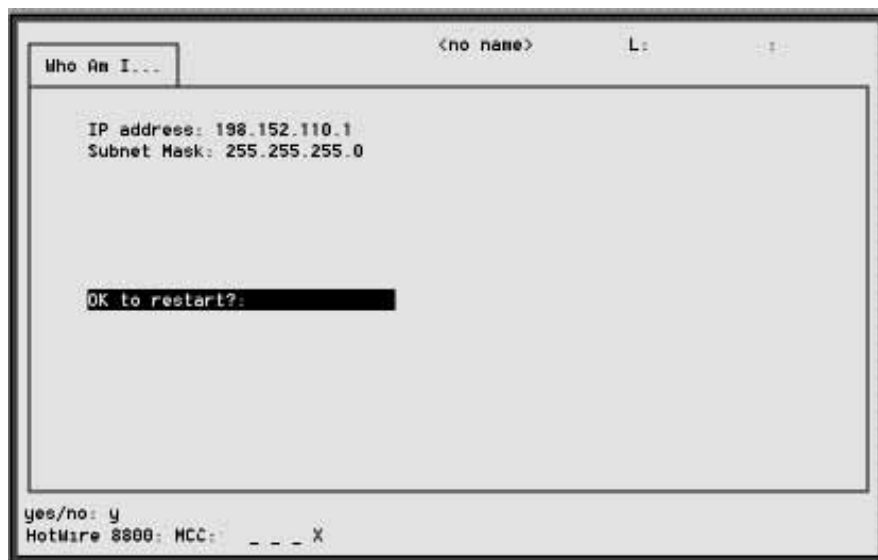
2. From the Who Am I screen, enter the IP address of the MCC card and press the Return key. For example, if the IP address of the MCC card is **198.152.110.1**, type this value at the (nnn.nnn.nnn.nnn): prompt at the bottom of the screen.

The system automatically calculates the subnet mask based on the IP address you enter.



3. Do one of the following at the (nnn.nnn.nnn.nnn) : prompt:
 - To accept the subnet mask, press Return.
 - To enter a different subnet mask, enter a new subnet mask and press Return.

The system highlights the `OK to restart?:` prompt.



4. Type **y** at the `yes/no:` prompt to restart the card or **n** to decline the restart. If you type **y**, the card restarts.
5. Press Return at the initial screen display to go to the HotWire Chassis Main Menu.

HotWire Chassis Main Menu

The HotWire Chassis Main Menu lets you select the appropriate submenu.

You can make one of the following selections:

- Chassis Info to read or configure location information about a HotWire chassis.
- Card Selection to establish a session with a specific card (DSL card in slot 1–18 or MCC card).
- Logout to close the current session on the HotWire chassis.

► Procedure

1. From the HotWire Chassis Main Menu screen, select the letter of the screens you wish to modify.
2. Fill in the appropriate fields using the prompts at the lower left corner of the screens.
3. Press Ctrl-z to move back a screen or to exit.
4. Select Y or N at the screen prompt to save changes.

If you are responsible for configuring the HotWire DSLAM, refer to Chapter 3, *Configuring the HotWire DSLAM*; Chapter 4, *MCC Card Configuration*; and Chapter 5, *DSL Card Configuration*.

If you responsible for monitoring the HotWire DSLAM, refer to Chapter 6, *Monitoring the HotWire DSLAM*.

Chassis Information Screen

Choose Chassis Info from the HotWire Chassis Main Menu to enter or display chassis configuration information.

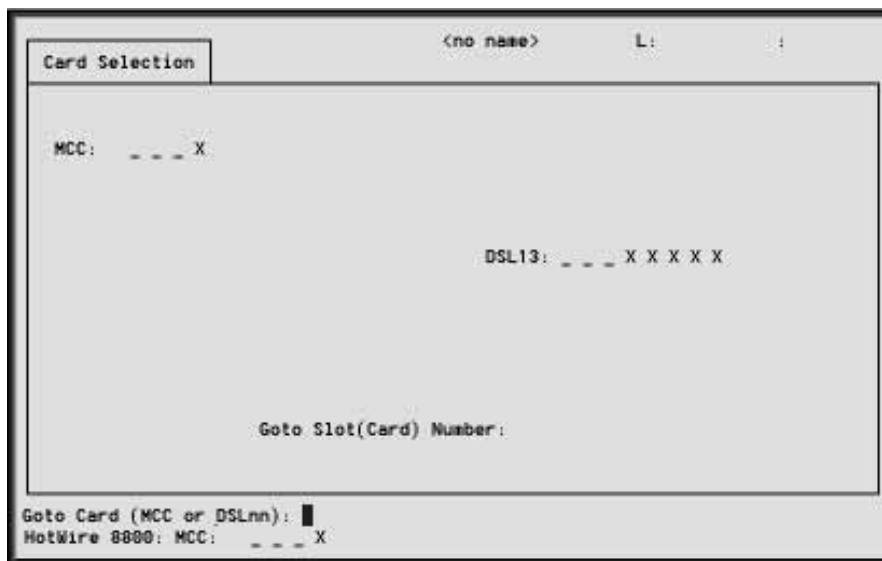
The following table describes the information you may enter on the Chassis Information screen.

Field	Input	Description
Chassis Name	16 alphanumeric characters	Name for the equipment
Chassis Contact	32 alphanumeric characters	Name and phone number of individual responsible for the equipment
Chassis Location	16 alphanumeric characters	Physical location of the equipment
Bay Number	16 alphanumeric characters	Floor and/or bay number of the equipment
Chassis Number	16 alphanumeric characters	Chassis serial number (located on the lower right side of chassis)

When you have made the appropriate changes to the screen, a message "Configuration has been modified. Save (yes/no)?" appears. Enter yes to save changes and press Return to go back to the HotWire Chassis Main Menu.

Card Selection Screen

Choose Card Selection from the HotWire Chassis Main Menu to display the cards present in the chassis by type and slot number. It also displays general and interface status for each card.



The following information is displayed for the MCC:

```

<card name> T M R e
    
```

97-15522

Position	Display	Description
	<card type and slot #>	MCC
1	T (Test mode)	Card currently in test mode
2	M (Major alarm)	Major alarm present on card
3	R (Minor alarm)	Minor alarm present on card
4	e (Ethernet)	Status of Ethernet link (U=UP, D=Down, or X=Disabled)

The following information is displayed for the DSL:

```
<card name> T M R e d1 d2 d3 d4
```

97-15493

Position	Display	Description
	<card type and slot #>	DSL1–DSL18
1	T (Test mode)	Card currently in test mode
2	M (Major alarm)	Major alarm present on card
3	R (Minor alarm)	Minor alarm present on card
4	e (Ethernet)	Status of Ethernet link (U=Up, D=Down or X=Disabled)
5	d1 (DSL1)	Status of DSL link 1 (U=Up, D=Down, X=Disabled, or H=Handshaking)
6	d2 (DSL 2)	Status of DSL link 2 (U=Up, D=Down, X=Disabled, or H=Handshaking)
7	d3 (DSL 3)	Status of DSL link 3 (U=Up, D=Down, X=Disabled, or H=Handshaking)
8	d4 (DSL 4)	Status of DSL link 4 (U=Up, D=Down, X=Disabled, or H=Handshaking)

These are both positional displays. If an option is not active, an underscore is shown in its place.

At the GoTo card (MCC or DSL) prompt:

- Enter MCC and press Return. The HotWire MCC menu is displayed.
- Enter DSL nn (where nn = DSL slot number) and press Return. The HotWire DSL menu is displayed.

Configuring MCC Cards, DSL Cards and RTUs

Use the procedures **in the following order** to configure the MCC and DSL cards for the basic setup for management and user data connectivity. For a quick checklist of these procedures, see Appendix A, *Checklist for Configuring the HotWire DSLAM*.

The following tables lists the mandatory steps you need to perform to configure the MCC cards, DSL cards, and RTUs.

MCC only	See
1. Configure time and date.	<i>Setting Time and Date Screen</i> , page 3-8.
2. Assign the IP addresses to the backplane on the MCC card.	<i>Assigning IP Addresses to the Backplane (on MCC Card)</i> , page 3-8.
3. Assign the IP addresses to the DSL cards (management domain).	<i>Assigning IP Addresses to the DSL Cards on the MCC Card (Management Domain)</i> , page 3-9.
4. Create default route.	<i>Create the Default Route</i> , page 3-10.
5. Reset the system.	<i>Resetting the System</i> , page 3-10.

DSL only	See
6. Select a DSL card to configure.	<i>Selecting a DSL Card to Configure</i> , page 3-11.
7. Configure 5446 RTU IP host address (on each DSL card).	<i>Configuring 5446 RTU IP Host Addresses on the DSL Card</i> , page 3-11.
8. Configure a static route to the NMS (on each DSL card).	<i>Configuring a Static Route to the Network Management System on each DSL Card</i> , page 3-12.
9. Assign IP addresses to the DSL cards (customer domain).	<i>Assigning IP Addresses to the DSL Card LAN (Customer Domain)</i> , page 3-12.
10. Create static routes to end users on DSL.	<i>Configuring Static Routes to End Users on each DSL Card</i> , page 3-13.
11. Create default Route or source route on DSL.	<i>Creating Default Routes or Source Routes on the DSL</i> , page 3-14.
12. Reset the DSL card.	<i>Resetting the DSL Card</i> , page 3-15.

Setting Time and Date Screen

When you select Time/Date from the Card Status menu, the Time/Date screen is displayed. From this screen, you can configure the local time and date on the card.

► Procedure

To set the time and date on the MCC card:

1. Select *Configuration* → *Card Status* → *Time/Date (A-A-C)*.
2. Enter values for the following fields and press Return after each entry:

Field	Input
Local Time/Date	<i>hh.mm (am or pm) mm/dd/yy</i> format
Client Network Time Protocol (NTP) Mode	Broadcast or Unicast. Select a general time protocol (broadcast) or select a specific time protocol with address (unicast).
NTP Server	<i>nnn.nnn.nnn.nnnn</i> format
Synchronized(hrs)	1–24. Select how often the system should go out looking for the time and date.

NOTE:

At system boot time, the time on the DSL card automatically syncs with the MCC card. Therefore, it is usually not necessary to use this screen on the DSL.

3. Press Ctrl-z and save changes to return to the Card Status menu.

Assigning IP Addresses to the Backplane (on MCC Card)

Use this procedure to create a separate and distinct network or subnetwork for the DSL cards and 5446 Remote Termination Units (RTUs).

► Procedure

To assign IP addresss to the backplane:

1. Select: *Configuration* → *Interfaces* → *IP Network (A-C-B)*.
2. Enter values for the following fields and press Return after each entry:

Field	Input
IP Interface	s1b (backplane)
Base IP Addr	<i>nnn.nnn.nnn.nnn</i> format
Base Subnet Mask	<i>nnn.nnn.nnn.nnn</i> format

Field	Input
Input Filter	optional – There are predefined templates that allow you to add, edit, or delete rules. See Chapter 4, <i>IP Router Filters</i> .
Output Filter	optional – There are predefined templates that allow you to add, edit, or delete rules. See Chapter 4, <i>IP Router Filters</i> .
Peer IP Address	<i>nnn.nnn.nnn.nnn</i> format *
Route to Peer	<i>Net</i>
* Enter the network/subnetwork portion of the Base IP address, with 0 for the host portion so that the Peer is the entire subnet.	

3. Press Ctrl-z and save changes to exit.

Assigning IP Addresses to the DSL Cards on MCC Card (Management Domain)

Use this procedure to define addresses within the management subnet. These are automatically assigned to the DSL cards when they are inserted in the chassis.

► Procedure

To assign IP addresses to the DSL cards:

1. Select *Configuration* → *DSL Cards* → *Set IP Addresses (A-F-A)*.
2. Enter values for the following fields and press Return after each entry.

Field	Input
DSL Card Subnet Mask (for backplane management subnet)	<i>nnn.nnn.nnn.nnn</i> format
IP Address (for each DSL card)	<i>nnn.nnn.nnn.nnn</i> format. (Subnet is predetermined – you can enter the host number.)

NOTE:

You must have assigned IP addresses to the backplane on the IP Network screen for s1b before performing this procedure.

3. Press Ctrl-z and save changes to exit.

Create the Default Route

► Procedure

To create the default route:

1. Select *Configuration* → *IP Router* → *Static Routes (A-E-A)*
2. Press Return on the 0 field to add a new record.
3. Enter values for the following fields and press Return after each entry.

Field	Input
Host	0.0.0.0 to indicate the default route
Subnet	nnn.nnn.nnn.nnn format
Next Hop	nnn.nnn.nnn.nnn format
Preference	1 – Measure of how preferable one route is to another, if you have two routes going to the same destination. (The lower the number, the more preferable.) This route is compared to others for the same address.
S/D (Source/Destination)	Default = Dst
PA (Proxy ARP)	Default = No

4. Confirm the save and press Ctrl-z.

Resetting the System

► Procedure

The MCC setup is concluded. For optimum system performance, you should reset all cards at this point. To reset the HotWire Chassis, either:

1. Select *Configuration* → *Card Status* → *Card Reset (A-A-F)*.
2. Enter yes to verify MCC reset.
3. Wait for the MCC card to reboot.
4. From the MCC, select *Configuration* → *DSL Cards* → *Reset Slot (A-G-B)*.
5. Enter Y at the prompt to confirm.

NOTE:

When you enter Y, all data connectivity is interrupted. Make **certain** however, that the Clear NVRAM field shows the default NO or all your configuration information up until this point will be lost.

6. Wait for the DSL cards to BOOTP. (LEDs go through the reset sequence once, and then a second time after approximately 15-20 seconds.)

or

Power cycle the system (turn the system on and off).

Selecting a DSL Card to Configure

► Procedure

To select a DSL card to configure:

1. From the HotWire Chassis Main Menu, select Card Selection.
2. Enter DSL nn , where nn is the number of the DSL card you want to configure, and press Return.
The HotWire DSL menu is displayed.
3. Select Configuration.
The Configuration Menu is displayed.

Configuring 5446 RTU IP Host Addresses on the DSL Card

Use this procedure to assign an IP address within the management subnet to each 5446 RTU.

► Procedure

To configure IP host addresses on the DSL card:

1. Select *Configuration* → *Interfaces* → *IP Network (A-C-B)*.
2. Enter values for the following fields and press Return after each entry:

Field	Input
IP Interface	s1c (DSL port 1)
Input Filter	optional – There are predefined templates that allow you to add, edit, or delete rules. See Chapter 4, <i>IP Router Filters</i> .
Output Filter	optional – There are predefined templates that allow you to add, edit, or delete rules. See Chapter 4, <i>IP Router Filters</i> .
Peer IP Address	$nnn.nnn.nnn.nnn$ format *
Route to Peer	<i>Host</i>
* Enter the IP address for the corresponding 5446.	

NOTE:

Do not enter a local IP address. The DSL interface is “unnumbered,” meaning it requires no IP address.

3. Press Ctrl-z and save changes to exit.
4. Repeat the above procedure for interfaces s1d, s1e, and s1f (DSL ports 2, 3, and 4, respectively).

Configuring a Static Route to the Network Management System (on each DSL Card)

Use this procedure to enable the management traffic from the DSL cards or 5446 RTUs to be routed back through the MCC.

► **Procedure**

To configure a static route to the Network Management System (NMS) on each DSL card:

1. Select *Configuration* → *IP Router* → *Static_Routes* (**A-E-A**).
2. Press Return on the 0 field to add a new record.
3. Enter values for the following fields and press Return after each entry:

Field	Input
Destination Host/Net	<i>nnn.nnn.nnn.nnn</i> format (address of the NMS)
Subnet	255.255.255.255 for host route or 255.255.255.0 for the subnet route
Next Hop	<i>nnn.nnn.nnn.nnn</i> format (IP address of the MCC <i>s1b</i>)
Preference	1 – Measure of how preferable one route is to another, if you have two routes going to the same destination. (The lower the number, the more preferable.) This route is compared to others for the same address.
IP Address of MCC	<i>nnn.nnn.nnn.nnn</i> format
Proxy ARP (PA)	No

4. Press Ctrl-z and save changes to exit.

Assigning IP Addresses to the DSL Card LAN (Customer Domain)

Use this procedure to give DSL cards a LAN Interface IP address in the domain of each Internet Service Provider (ISP) supported by those cards.

► **Procedure**

To assign IP addresses to the DSL Card LAN:

1. Select *Configuration* → *Interfaces* → *IP Network* (**A-C-B**).
2. Enter values for the following fields and press Return after each entry:

Field	Input
IP Interface	<i>e1a</i> (Ethernet port)
IP Addr (LAN port in ISP domain)	<i>nnn.nnn.nnn.nnn</i> format
Subnet Mask (LAN port in ISP domain)	<i>nnn.nnn.nnn.nnn</i> format
Input Filter	optional – There are predefined templates that allow you to add, edit, or delete rules. See Chapter 4, <i>IP Router Filters</i> .
Output Filter	optional – There are predefined templates that allow you to add, edit, or delete rules. See Chapter 4, <i>IP Router Filters</i> .

NOTE:

This entry must be different from the management domain.

3. Press Ctrl-z and save changes to exit.

Configuring Static Routes to End Users on each DSL Card

Use this procedure to enable the management traffic from the DSL cards.

► Procedure

To configure a static route to End Users:

1. Select *Configuration* → *IP Router* → *Static Routes (A-E-A)*.
2. Press Return on the 0 field to add a new record.
3. Enter values for the following fields and press Return after each entry:

Field	Input
Host	<i>0.0.0.0</i> to indicate the default route
Subnet	<i>nnn.nnn.nnn.nnn</i> format
Next Hop	<i>nnn.nnn.nnn.nnn</i> format
Preference	<i>1</i> – Measure of how preferable one route is to another, if you have two routes going to the same destination. (The lower the number, the more preferable.) This route is compared to others for the same address.
S/D (Source/Destination)	Default = Dst
PA (Proxy ARP))	Default = No

4. Press Ctrl-z and save changes to exit.

Creating Default Routes or Source Routes on the DSL

► Procedure

To create default routes or source routes on the DSL:

1. Select *Configuration* → *IP Router* → *Static Routes (A-E-A)*.
2. Press Return on the 0 field to add a new record.
3. Enter values for the following fields and press Return after each entry.

Field	Input
Host	0.0.0.0 to indicate the default route
Subnet	nnn.nnn.nnn.nnn format
Next Hop	nnn.nnn.nnn.nnn format
Preference	1 – Measure of how preferable one route is to another, if you have two routes going to the same destination. (The lower the number, the more preferable.) This route is compared to others for the same address.
S/D (Source/Destination)	Default = Dst
PA (Proxy ARP)	Default = No

4. Confirm the save and press Ctrl-z.

Resetting the DSL Card

► Procedure

To reset the DSL Card:

1. Enter Ctrl-t or Ctrl-a to go to the HotWire DSL menu.
2. Select *Card Selection*.
3. Enter *MCC*.
4. Select *Configuration* → *DSL Cards* → *Reset Slot (A-G-B)*.
5. Enter *dslnn*, where *nn* is the slot number for the DSL card you just configured.
6. Enter Y at the prompt to confirm.

NOTE:

When you enter Y, all data connectivity is interrupted but you must reset the DSL card when configuration is complete. Make **certain** however, that the Clear NVRAM field shows the default NO or all your configuration information will be lost.

7. If you have entered yes, verify that the LEDs on the DSL card go through the reset sequence once, and then a second time after approximately 10 seconds (BOOTP).

MCC Card Configuration

4

Overview

This chapter describes the non-mandatory configurations options on the MCC card.

MCC Configuration Card Status Screens

Use the Card Status screens to display the system information screens to configure basic MCC card-level information.

NOTE:

Only a user who logs on to the HotWire DSLAM with administrative permission can configure the MCC card.

► **Procedure**

To configure card info, DNS setup, time/date, clear NVRAM, upload or download configuration set, download new firmware, or reset card:

1. Follow this menu sequence:
Configuration → *Card Status (A-A)*
2. The Card Status menu appears. Enter the desired value on each selected screen and field and press Return.

Table 4-1. Card Status Options (1 of 3)

Card Info (System Information)	A-A-A
<p>Gives the user the ability to configure basic card-level information.</p> <p>System Name – 16 alphanumeric characters. Name assigned to the card.</p> <p>System Contact – 32 alphanumeric characters. Name or number of party responsible for card.</p> <p>System Location – 16 alphanumeric characters. Location assigned to the system.</p> <p>Router ID – <i>nnn.nnn.nnn.nnn</i> format. Diagnostic Domain IP address assigned to card.</p> <p>Router Subnet Mask – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Local Control Terminal Port Mode – Standard/Extended (Default = Standard). Standard is for USA keyboards; Extended is for European keyboards.</p> <p>Remote Control Terminal Port Mode – Standard/Extended (Default = Standard). Standard is for USA keyboards; Extended is for European keyboards.</p> <p>Telnet daemon tcp port – 0-65536 (Default = 23).</p> <p>Alarm on loss of Redundant Power – Y if carrier has redundant power and you want local and remote indications of the loss of one power source.</p> <p>NOTE: If you have made changes to the Router ID and Router Subnet Mask fields, you must also change the Base IP Address and Base Subnet Mask on the e1a (ethernet) interface (A-C-B) and do a card reset.</p>	
DNS Setup (Configure DNS)	A-A-B
<p>Gives the user the ability to configure the access to DNS servers from which requests are made.</p> <p>DNS Servers – Three entry fields in <i>nnn.nnn.nnn.nnn</i> format. Enter the Domain Name System Server address.</p> <p>Default Domain Name – 255 characters.</p> <p>Time to wait for response – 1–300 seconds (Default = 5). Enter the time to wait for a response.</p> <p>Number of times to retry server – 1–10 times (Default = 2). Enter the number of times to retry the server.</p>	
Time/Date	A-A-C
<p>Gives the user the ability to configure the local time and date on the DSL card.</p> <p>Local Time/Date – Enter the time in <i>hh.mm</i> format (am or pm). Enter the date in <i>mm/dd/yy</i> format.</p> <p>Client NTP Mode – Broadcast/Unicast (Default = Broadcast). Select the Client Network Time Protocol Mode.</p> <p>NTP Server – <i>nnn.nnn.nnn.nnn</i> format. Enter the NTP Server IP address.</p> <p>Synchronized(hrs) – 1–24 (Default = 1). Enter the hours between synchronization.</p> <p>NOTE: At system boot time, the time on the DSL cards automatically syncs with the MCC card. Therefore it is usually not necessary to use this screen on the DSL.</p>	

Table 4-1. Card Status Options (2 of 3)

NVRAM Clear Screen (Clear NVRAM)	A-A-D
<p>Gives the user the ability to clear out the Non-Volatile RAM (NVRAM) in order to reuse the card or to reconfigure the current card.</p> <p>NOTE: If you select yes on this screen, you will permanently remove most of the configuration information you have stored on this card and all IP addresses and routing tables will have to be re-entered. The system will perform a reset and return to the factory configuration.</p>	
NVRAM Config Loader	A-A-E
<p>Gives the user the ability to upload or download a copy of the card's binary configuration data to or from a Trivial File Transfer Protocol (tFTP) server.</p> <p>Configuration File Name – If tFTP server is hosted by a DOS machine, the file name length should be eight characters or less. If tFTP server is hosted by a UNIX machine, the file name length is a regular pathname expression.</p> <p>tFTP Server IP Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Transfer Direction – Upload/Download (Default = Upload). Select Upload to store a copy of the card's configuration on the server. Select Download to have the file server send a new copy of the card's configuration to the card.</p> <p>Start Transfer – Yes/No (Default = no).</p> <p>NOTE: After a download, the card must be reset for the new configuration to take effect.</p>	
Card Reset (Reset System)	A-A-F
<p>Gives the user the ability to reset the card. This resets all counters and if a new configuration or software version has been downloaded, the new code will then become active.</p> <p>NOTE: This action disrupts the data flow for at least 10 seconds.</p>	

Table 4-1. Card Status Options (3 of 3)

Download Code (Download Code and Apply Download)	A-A-G
<p>Gives the user the ability to download a new version of code and apply the downloaded code. This screen displays a submenu with two options.</p> <p>From the Download Code submenu, select:</p> <p>Download Code</p> <p>This screen is similar to the NVRAM Config Loader screen.</p> <p>Configuration File Name – If tFTP server is hosted by a DOS machine, the file name length should be eight characters or less. If tFTP server is hosted by a UNIX machine, the file name length is a regular pathname expression.</p> <p>tFTP Server IP Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Transfer Direction – Upload/Download (Default = Upload). Select Upload to store a copy of the card's configuration on the server. Select Download to have the file server send a new copy of the card's configuration to the card.</p> <p>Start Transfer – Yes/No (Default = no).</p> <p>Once the download is complete, press Ctrl-z to exit back to the Download Code submenu and select Apply Download.</p> <p>From the Apply Download Code submenu, select:</p> <p>Apply Download</p> <p>This selection applies the downloaded code and drops all connections by performing a device reset. This screen is used to overlay the previously downloaded image for the card. If you select yes at the Reset System prompt, the system goes through a system restart and interrupts service on the card.</p>	

MCC Configuration Ports Screens

Use the Ports screens to display the Ethernet Ports screen.

► Procedure

To configure the Ethernet port:

1. Follow this menu sequence:
Configuration → *Ports (A-B)*
2. The Ports menu appears. Enter the desired value on each selected screen and field and press Return.

Table 4-2. Ports Options

Ethernet Ports	A-B-A
<p>Gives the user the ability to configure the Ethernet (LAN) port on the card.</p> <p>Action – Edit/Reset. Select Edit to configure the Ethernet port or Reset if you have made changes.</p> <p>Port Name – Seven alphanumeric characters.</p> <p>Signal Quality Error (SQE) test – Enable/Disable (Default = Disable).</p> <p>NOTE: If you have made changes to this screen, you must do a card reset or restart the Ethernet Interface.</p>	

MCC Configuration Interfaces Screens

Use the Interfaces screens to configure basic interface information.

► Procedure

To configure general interfaces, IP networks, and control interfaces:

1. Follow this menu sequence:

Configuration → *Interfaces (A-C)*

2. The Interfaces menu appears. Enter the desired value on each selected screen and field and press Return.

Table 4-3. Interfaces Options

General (Interfaces)	A-C-A
<p>Gives the user the ability to configure basic information about a given interface.</p> <p>Interface Name – 15 characters. s1b = backplane that connects all the cards, e1a = ethernet port.</p> <p>MTU (max) – 64-64000 (Default = 1500). Maximum Transmission Unit</p> <p style="padding-left: 40px;">NOTE: These are the only values you may enter. Do not change the MTU of s1b from the default of 1500. Make certain that you change numbers that are appropriate to your network and do a card reset or reset the interface.</p>	
IP Network	A-C-B
<p>Gives the user the ability to configure up to 16 IP addresses for the LAN port.</p> <p>IP Interface – 15 characters. s1b = backplane that connects all cards; e1a = ethernet port.</p> <p>Base IP Addr – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Base Subnet Mask – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>IP Addr – <i>nnn.nnn.nnn.nnn</i> format. You may enter up to 16 addresses.</p> <p>Subnet Mask – <i>nnn.nnn.nnn.nnn</i> format. You may enter up to 16 addresses.</p> <p>Input Filter – Optional.</p> <p>Output Filter – Optional.</p> <p>Peer IP Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Route to Peer – Net.</p> <p style="padding-left: 40px;">NOTE: If you have made any changes to this screen, you must do a card reset or restart the Ethernet interface.</p>	
Control (Control Interface)	A-C-C
<p>Gives the user the ability to restart, stop, and monitor (up, down, or testing) the current state of an interface.</p> <p>This screen is populated depending on your entry in the Command and Interface Name fields. For example, if you select Monitor mode and enter s1b for the Interface name, the following information is displayed: Type, State, Link Protocol, IP State, Uptime, Inactive, Connect Time, Port, Local IP Addr, and Peer IP Addr.</p>	

MCC Configuration Users Screens

Use the Users screens to configure login accounts.

► Procedure

1. Follow this menu sequence:
Configuration → Users (A-D)
2. The Users menu appears. Enter the desired values on this screen and fields and press Return.

Table 4-4. Users Options

Users (Configure Account)	A-D-A
Gives the user the ability to add, edit, or delete a user from a system account and to edit user passwords and privileges. Up to 10 active users can be supported.	
Operator/Administrator Login ID – Enter your Login ID.	
Password – Enter the password associated with the login ID.	
Repeat Password – Re-enter the password.	
Privilege – Operator/Administrator. Enter Operator for read only access; enter Administrator for complete system access.	
NOTE: Use Ctrl-v to see a list of all user accounts.	

MCC Configuration IP Router Screens

Use the IP Router screens to configure static routes to protocols and filters.

► Procedure

To configure static routes, martian networks, and IP router filters:

1. Follow this menu sequence:
Configuration → IP Router (A-E)
2. The IP Router menu appears. Enter the desired values on this screen and fields and press Return.

Table 4-5. IP Router Options (1 of 2)

Static Routes	A-E-A
<p>Gives the user the ability to add or delete static routes in the system.</p> <p>Item – Press Return on 0 field to add entry.</p> <p>Destination Host/Net – <i>nnn.nnn.nnn.nnn</i> format or space to delete entry.</p> <p>Next Hop – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Preference – Measure of how preferable one route is to another, if you have two routes going to the same destination. (The lower the number, the more preferable.) This route is compared to others for the same address.</p>	
Martian Networks	A-E-B
<p>Gives the user the ability to configure addresses that the system recognizes as invalid.</p> <p>Item – Press Return on 0 field to add entry.</p> <p>Martian Net ID – <i>nnn.nnn.nnn.nnn</i> format or space to delete entry. Enter IP address of unwanted source.</p> <p>Martian Net Mask – <i>nnn.nnn.nnn.nnn</i> format. Enter IP mask of unwanted source.</p> <p>NOTE: The system is shipped with default martian networks. It is recommended that you do not remove entries. If you have made changes to this screen, you must do a card reset.</p>	
IP Router Filters (IP Filter Configuration)	A-E-C
<p>Gives the user the ability to build name sets of filter rules. You can add, edit, or delete router filter rules within a named set.</p> <p>Rules apply to the source and destination ports going to the PC. You may have up to 16 rules per filter, but the greater number of rules, the lesser the performance of the router filter.</p> <p>Action – Add/Delete/Edit.</p> <p>Filter Name – Up to 16 characters. (Optional.)</p> <p>Rule # – Optional.</p> <p>Source Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Source Address Mask – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Source Port No – 0–65536 (Default = 0).</p> <p>Comparison Type – Ignore – Ignore ports, EQ – Equal to, NRQ – Not Equal To, GT – Greater than, LT – Less than, In_Range – Maximum source port, Out_Range – Minimum source port.</p> <p>Destination Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Destination Address Mask – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Destination Port Number – 0–65536 (Default = 0).</p> <p>Filter Action – Discard (Packet)/Forward (Packet).</p> <p>NOTE: You have to reset the IP Router (A-E-F) for any changes to take effect.</p>	

Table 4-5. IP Router Options (2 of 2)

ARP (Parameters, Add Entry, and Delete Entry)	A-E-D A,B, or C
<p><i>Select:</i></p> <p>ARP Parameters (A) Gives the user the ability to configure general Address Resolution Protocol (ARP) cache parameters.</p> <p style="padding-left: 40px;">Complete Entry Timeout (minutes) – 1–200,000 (Default = 20). Incomplete Entry Timeout (minutes) – 1–200,000 (Default = 20).</p> <p style="padding-left: 40px;">NOTE: If you have made changes to this screen, you must do a card reset.</p> <p>Add ARP Entry (B) Gives the user the ability to add entries into the ARP cache.</p> <p style="padding-left: 40px;">IP Address/Host Name – <i>nnn.nnn.nnn.nnn</i> format. MAC Address – <i>xx-xx-xx-xx-xx-xx</i> format. Trailers – Yes/No (Default = No). Proxy – Yes/No (Default = No). Add Entry – Enter yes to add an entry or exit.</p> <p>Delete ARP Entry (C) Gives the user the ability to delete entries line by line in the ARP cache. Select the line you want to delete, select yes/no, and press Return.</p> <p style="padding-left: 40px;">NOTE: For the Add and Delete ARP Entry screens, any information entered is not stored in the NV memory and will be lost when you reset the card.</p>	
Host Table (IP Host Table)	A-E-E
<p>Gives the user the ability to define mappings between IP addresses and end user host names (names of host devices located at the customer's site).</p> <p>Enter the IP Address and Host Name in <i>nnn.nnn.nnn.nnn</i> format and press Return after each entry.</p>	

MCC Configuration SNMP Screens

Use the SNMP screens to configure SNMP security, logical entities, community names, and trap addresses.

► Procedure

To configure SNMP security, SNMP Logical entities, and SNMP Communities/Traps:

1. Follow this menu sequence:
Configuration → SNMP (A-F)
2. The IP Router menu appears. Enter the desired values on this screen and fields and press Return.

Table 4-6. SNMP Options (1 of 2)

Security (SNMP Security)	A-F-A
<p>Gives the user the ability to configure allowable NMS IP addresses and to configure SNMP agent.</p> <p>IP Address Security – Enable/Disable (Default = Disable).</p> <ul style="list-style-type: none"> ■ Enabling allows DSLAM to accept SNMP messages from SNMP managers whose IP source addresses have been entered in IP Address field. ■ Enabling allows SNMP agent an additional level of security besides community names. ■ Disabling stops IP address checking. <p>IP Address – <i>nnn.nnn.nnn.nnn</i> format. Enter up to five IP source addresses of NMS managers.</p> <p>Access – ReadOnly(ro)/ReadWrite(rw)/NoAccess(na). Permissions to be granted to NMS manager.</p>	
Logical Entities (SNMP Logical Entities)	A-F-B
<p>Gives the user the ability to configure get/set permissions, thresholds, or Ethernet ports.</p> <p>This screen displays information on the logical table of the Entity MIB. Only the logical description field can be edited; others are read only.</p> <ul style="list-style-type: none"> ■ I (Index) column shows the index number of DSL ports two to five. ■ T (Type) column shows “Remote”. ■ Read Only Comm and Read Write Comm show the community strings of the RTU attached to this port. It is used when the DSLAM downloads configuration data to the RTU. 	

Table 4-6. SNMP Options (2 of 2)

Communities/Traps (SNMP Communities/Traps)	A-F-C
<p>Gives the user the ability to enable the Authentication Failure Trap Mechanism, stores SNMP Community string names for the DSL card, and stores NMS host IP addresses to which the DSLAM sends trap messages.</p> <p>It also lets the user configure four communities with three trap destinations that can be configured for each of those communities.</p> <p>Authentication Failure Trap – Enable to send a trap when a SNMP request community string does not match or when the password for a Telnet session is incorrect.</p> <p>Community Name – 32 characters, up to four unique entries per screen.</p> <p>Access – ReadOnly(ro)/ReadWrite(rw)/NoAccess(na), up to four entries per screen.</p> <p>IP Address – <i>nnn.nnn.nnn.nnn</i> format. Enter NMS system host address.</p> <p>Input Number (port) – <i>nnn</i> format, Enter NMS system port number.</p> <p>IP Address Security – Enable to send traps to the host IP address.</p>	

MCC DSL Cards Screen

Use the DSL Cards screen to set IP addresses and reset the DSL cards.

► Procedure

To Configure DSL IP addresses and Reset DSL Slot:

1. Follow this menu sequence:
Configuration → DSL Cards (A-G)
2. The DSL Cards menu appears. Enter the desired values on this screen and fields and press Return.

Table 4-7. DSL Options

Set IP Address (Configure DSL IP Addr)	A-G-A
<p>Gives the user the ability to configure up to 10 IP addresses for each slot in the DSLAM that has a DSL card. These are addresses for the s1b backplane interface on each DSL card and will be automatically assigned to the DSL card when it is inserted in a slot. All IP addresses must be on the same Management Domain Subnet as the MCC's IP address (entered on the MCC's IP Network screen A-C-B).</p> <p>DSL Card Subnet Mask – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>IP Address – <i>nnn.nnn.nnn.nnn</i> format. (Subnet is predetermined – you can enter the host number.)</p> <p>NOTE: If you have made changes to this screen, you must do a card reset or restart the s1b interface.</p>	
Reset Slot (Reset DSL Slot)	A-G-B
<p>Gives the user the ability to perform a reset of a DSL card in any DSLAM slot. This reset should be performed if there is a card in a slot but it does not appear on the DSLAM card selection screen. (After entering the card number and confirming the reset, the MCC sends a reset signal via the backplane to the selected card.)</p> <p>NOTE: If a DSL card has been reset but still does not appear on the screen, its configuration may have been corrupted and the card should be reset again by answering <i>yes</i> at the Clear NVRAM prompt. If the card then appears on the screen it will have to be reconfigured. If the card does not appear on the screen, it should probably be replaced.</p>	

DSL Card Configuration

5

DSL Configuration Card Status Screens

Use the Card Status screens to display the system information screens to configure basic DSL card-level information.

► **Procedure**

To configure card info, DNS setup, time/date, clear NVRAM, upload or download configuration set, download new firmware, or reset card:

1. Follow this menu sequence:
Configuration → *Card Status (A-A)*
2. The Card Status menu appears. Enter the desired value on each selected screen and field and press Return.

Table 5-1. Card Status Options (1 of 3)

Card Info (System Information)	A-A-A
Gives the user the ability to configure basic card-level information.	
System Name – 16 alphanumeric characters. Name assigned to the card.	
System Contact – 32 alphanumeric characters. Name or number of party responsible for card.	
System Location – 16 alphanumeric characters. Location assigned to the system.	
Router ID – <i>nnn.nnn.nnn.nnn</i> format. (This field is read only.) Diagnostic Domain IP address assigned to card.	
Router Subnet Mask – <i>nnn.nnn.nnn.nnn</i> format. (This field is read only.)	
Local Control Terminal Port Mode – Standard/Extended (Default = Standard). Standard is for USA keyboards; Extended is for European keyboards.	
Remote Control Terminal Port Mode – Standard/Extended (Default = Standard). Standard is for USA keyboards; Extended is for European keyboards.	
Telenet daemon top port – 0-65536 (Default = 0).	

Table 5-1. Card Status Options (2 of 3)

DNS Setup (Configure DNS) A-A-B
<p>Gives the user the ability to configure the access to DNS servers from which requests are made.</p> <p>DNS Servers – Three entry fields in <i>nnn.nnn.nnn.nnn</i> format. Enter the Domain Name System Server address.</p> <p>Default Domain Name – 255 characters.</p> <p>Time to wait for response – 1–300 seconds (Default = 5). Enter the time to wait for a response.</p> <p>Number of times to retry server – 1–10 times (Default = 2). Enter the number of times to retry the server.</p>
Time/Date A-A-C
<p>Gives the user the ability to configure the local time and date on the DSL card.</p> <p>Local Time/Date – Enter the time in <i>hh.mm</i> format (am or pm). Enter the date in <i>mm/dd/yy</i> format.</p> <p>Client NTP Mode – Broadcast/Unicast (Default = Broadcast). Select the Client Network Time Protocol (NTP) Mode.</p> <p>NTP Server – <i>nnn.nnn.nnn.nnn</i> format. Enter the NTP Server IP address.</p> <p>Synchronized(hrs) – 1–24 (Default = 1). Enter the hours between synchronization.</p> <p>NOTE: At system boot time, the time on the DSL cards automatically syncs with the MCC card. Therefore it is usually not necessary to use this screen on the DSL.</p>
NVRAM Clear Screen (Clear NVRAM) A-A-D
<p>Gives the user the ability to clear out the Non-Volatile RAM (NVRAM) in order to reuse the card or to reconfigure the current card.</p> <p>NOTE: If you select yes on this screen, you will permanently remove most of the configuration information you have stored on this card and all IP addresses and routing tables will have to be re-entered. The system will perform a reset and return to the factory configuration.</p>
NVRAM Config Loader A-A-E
<p>Gives the user the ability to upload or download a copy of the card's binary configuration data to or from a Trivial File Transfer Protocol (tFTP) server.</p> <p>Configuration File Name – If tFTP server is hosted by a DOS machine, the file name length should be eight characters or less. If tFTP server is hosted by a UNIX machine, the file name length is a regular pathname expression.</p> <p>tFTP Server IP Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Transfer Direction – Upload/Download (Default = Upload). Select Upload to store a copy of the card's configuration on the server. Select Download to have the file server send a new copy of the card's configuration to the card.</p> <p>Start Transfer – Yes/No (Default = no).</p> <p>NOTE: After a download, the card must be reset for the new configuration to take effect.</p>

Table 5-1. Card Status Options (3 of 3)

Card Reset (Reset System)	A-A-F
<p>Gives the user the ability to reset the card. This resets all counters and if a new configuration or software version has been downloaded, the new code will then become active.</p> <p>NOTE: This action disrupts the data flow for at least 10 seconds.</p>	
Download Code (Download Code and Apply Download)	A-A-G
<p>Gives the user the ability to download a new version of code and apply the downloaded code. This screen displays a submenu with two options.</p> <p>From the Download Code submenu, select:</p> <p>Download Code</p> <p>This screen is similar to the NVRAM Config Loader screen.</p> <p>Configuration File Name – If tFTP server is hosted by a DOS machine, the file name length should be eight characters or less. If tFTP server is hosted by a UNIX machine, the file name length is a regular pathname expression.</p> <p>tFTP Server IP Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Transfer Direction – Upload/Download (Default = Upload). Select Upload to store a copy of the card's configuration on the server. Select Download to have the file server send a new copy of the card's configuration to the card.</p> <p>Start Transfer – Yes/No (Default = no).</p> <p>Once the download is complete, press Ctrl-z to exit back to the Download Code submenu and select Apply Download.</p> <p>From the Apply Download Code submenu, select:</p> <p>Apply Download</p> <p>This selection applies the downloaded code and drops all connections by performing a device reset. This screen is used to overlay the previously downloaded image for the card. If you select yes at the Reset System prompt, the system goes through a system restart and interrupts service on the card.</p>	

DSL Configuration Ports Screens

Use the Ports screens to display the Ethernet Ports and DSL Ports screens.

► Procedure

To configure Ethernet ports and DSL interfaces:

1. Follow this menu sequence:
Configuration → *Ports (A-B)*.
2. The Ports menu appears. Enter the desired value on each selected screen and field and press Return.

Table 5-2. Ports Options

Ethernet Ports	A-B-A
<p>Gives the user the ability to configure the Ethernet (LAN) port on the card.</p> <p>Action – Edit/Reset. Select Edit to configure the Ethernet port or Reset if you have made changes.</p> <p>Port Name – Seven alphanumeric characters.</p> <p>Signal Quality Error (SQE) test – Enable/Disable (Default = Disable).</p> <p>NOTE: If you have made changes to this screen, you must do a card reset or restart the Ethernet Interface.</p>	
DSL Ports (DSL Parameters)	A-B-B
<p>Action – Edit/Reset. Edit to configure the DSL ports.</p> <p>Port Number – Five characters.</p> <p>Port Desc – 40 characters. (User Name, telephone number, etc.)</p> <p>Startup Margin – Value between –3 and 9. In Adaptive Mode, if the margin falls below SM, the DSL link will be restarted at a slower speed. If the margin increases above SM by six db, the speed will increase.</p> <p>Behavior – Fixed/Adaptive (Default = Fixed). In fixed mode, the DSL will operate at only one set of up/down speeds. In rate adaptive mode, the rates will vary between the min and max speed as the transmission characteristics of the loop change.</p> <p>Fixed: Up Speed – 1088/952/816/680/544/408/272 (Default = 1088). Enter the fixed up speed.</p> <p>Fixed: Down Speed – 2560/2240/1920/1600/1280/960/640 (Default = 2560). Enter the fixed down speed.</p> <p>Adaptive: Max Up Speed – 1088/952/816/680/544/408/272 (Default = 1088). Enter the maximum up speed.</p> <p>Adaptive: Min Up Speed – 1088/952/816/680/544/408/272 (Default = 272). Enter the minimum up speed.</p> <p>Adaptive: Max Dn Speed – 2560/2240/1920/1600/1280/960/640 (Default = 2560). Enter the maximum down speed.</p> <p>Adaptive: Min Dn Speed – 2560/2240/1920/1600/1280/960/640 (Default = 640). Enter the minimum down speed.</p> <p>Margin Threshold: – Sends a trap message if margin falls below a selected value. Enter a value for the margin threshold trap (–5 to +10 db) (Default = +3). Enter D to disable trap.</p> <p>Link Down Ct: – Sends a trap message if the number of DSL link down events in 15 minutes exceeds the selected value. Enter a value for the Link Down Count Trap (one to 1000). Enter D to disable trap.</p> <p>Error Rate (min) – Sends a trap message if the Block Error Rate averaged over a 10 minutes period exceeds the selected value. Enter a value for the threshold (10 to 100,000 good blocks per block in error) (Default = 1,000 approximates bit error, rate of 10-6. Enter D to disable trap.</p> <p>Error Rate (hr) – Sends a trap message if the Block Error Rate averaged over a one hour period exceeds the selected value. Enter a value for the threshold (10 to 100,000 good blocks per block in error) Default = 10,000 approximates bit error, rate of 10-7. Enter D to disable trap.</p> <p>NOTE: If you have made changes to this screen, select Reset in the Action field to make the change active.</p>	

DSL Configuration Interfaces Screens

Use the Interfaces screens to configure basic interface information.

► Procedure

To configure interface names and MTU settings, IP addresses on the ethernet port, PPP settings on the DSL ports, or restart, stop, or monitor an interface:

1. Follow this menu sequence:

Configuration → *Interfaces (A-C)*

2. The Interfaces menu appears. Enter the desired value on each selected screen and field and press Return.

Table 5-3. Interfaces Options (1 of 2)

General (Interfaces)	A-C-A
<p>Gives the user the ability to view basic card interface information or to configure Maximum Transfer Units (MTUs).</p> <p>Interface Name – 15 characters. s1b = backplane that connects all the cards, e1a = ethernet port, s1c, s1d, s1e and s1f = DSL ports. Depending on your selection in this field, the following pre-populated fields appear:</p> <p>Type – Static or dynamic.</p> <p>Protocol – HDLC, PPP, or Ether.</p> <p>Port List – e1a, s1b, s1c, s1d, s1e, s1f.</p> <p>MTU (max) – 64-64000 (Default = 1500).</p> <p style="padding-left: 40px;">NOTE: These are the only values you may enter. Do not change the MTU of s1b from the default of 1500. Make certain that you change numbers that are appropriate to your network and do a card reset or reset the Ethernet interface.</p>	
IP Network	A-C-B
<p>Gives the user the ability to configure up to 16 IP addresses for a port.</p> <p>IP Interface – 15 characters. s1b = backplane, e1a = ethernet port, s1c, s1d, s1e, and s1f = DSL ports.</p> <p>Base IP Addr – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Base Subnet Mask – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>IP Addr – <i>nnn.nnn.nnn.nnn</i> format. (You may enter up to 16 addresses for LANs.)</p> <p>Subnet Mask – <i>nnn.nnn.nnn.nnn</i> format. (You may enter one for each address above.)</p> <p>Input Filter – Optional.</p> <p>Output Filter – Optional.</p> <p>Peer IP Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Route to Peer – Net or Host. Must be Net for s1b.</p> <p style="padding-left: 40px;">NOTE: If you have made any changes to this screen, you must do a card reset or restart the Ethernet interface.</p>	

Table 5-3. Interfaces Options (2 of 2)

PPP	A-C-C
<p>Gives the user the ability to configure parameters for the PPP links used for the DSL connections.</p> <p>Interface Name – s1c, s1d, s1e, or s1f</p> <p>Restart Timer – 1-10000 in seconds (Default = 3)</p> <p>Max Terminates – (Default = 2)</p> <p>Negotiate Options</p> <p> MAU: no</p> <p> ACCM: no</p> <p> MAGIC: no</p> <p> Quality: no</p> <p> PFC: no</p> <p> ACFC: no</p> <p>Option Values</p> <p> Local MRU (max) – 64-64000 bytes (Default = 1500)</p> <p> ACCM: Default = fffff</p> <p> LQR Freq: Default = 10</p> <p>Link Options</p> <p> Trace: on/off/raw/decode (Default = off)</p> <p> Echo Probe: yes/no (Default = no)</p> <p>Option Values</p> <p> Echo Freq: Default = 10</p> <p> Echo Policy: Default = 5</p> <p>NOTE: Most of the fields on this screen are pre-populated.</p>	
Control (Control Interface)	A-C-D
<p>Gives the user the ability to restart, stop, and monitor (up, down, or testing) the current state of an interface.</p> <p>This screen is populated depending on your entry in the Command and Interface Name fields. For example, if you select Monitor mode and enter s1b for the Interface name, the following information is displayed: Type, State, Link Protocol, IP State, Uptime, Inactive, Connect Time, Port, Local IP Addr, and Peer IP Addr.</p>	

DSL Configuration Users Screens

Use the Users screens to configure login accounts.

► Procedure

1. Follow this menu sequence:
Configuration → Users (A-D)
2. The Users menu appears. Enter the desired values on this screen and fields and press Return.

Table 5-4. Users Options

Users (Configure Account)	A-D-A
Gives the user the ability to add, edit, or delete a user from a system account and to edit user passwords and privileges. Up to 10 active users can be supported..	
Login ID – Enter your login ID.	
Password – Enter the password associated with the login ID.	
Repeat Password – Re-enter your password.	
Privilege – Operator/Administrator. Enter Operator for read only access; enter Administrator for complete system access.	
NOTE: Use Ctrl-v to see a list of all user accounts.	

DSL Configuration IP Router Screens

Use the IP Router screens to configure static routes to protocols and filters.

► Procedure

To configure static routes, martian networks, and IP router filters:

1. Follow this menu sequence:
Configuration → IP Router (A-E)
2. The IP Router menu appears. Enter the desired values on this screen and fields and press Return.

Table 5-5. IP Router Options (1 of 3)

Static Routes	A-E-A
<p>Gives the user the ability to add or delete static routes in the system.</p> <p>Item – Press Return on 0 field to add entry.</p> <p>Host/Net – <i>nnn.nnn.nnn.nnn</i> format or space to delete entry.</p> <p>Next Hop – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Preference – Measure of how preferable one route is to another, if you have two routes going to the same destination. (The lower the number, the more preferable.) This route is compared to others for the same address.</p>	
Martian Networks	A-E-B
<p>Gives the user the ability to configure addresses that the system recognizes as invalid.</p> <p>Item – Press Return on 0 field to add entry.</p> <p>Martian Net ID – <i>nnn.nnn.nnn.nnn</i> format or space to delete entry. Enter IP address of unwanted source.</p> <p>Martian Net Mask – <i>nnn.nnn.nnn.nnn</i> format. Enter IP mask of unwanted source.</p> <p>NOTE: The system is shipped with default martian networks. It is recommended that you do not remove entries. If you have made changes to this screen, you must do a card reset.</p>	

Table 5-5. IP Router Options (2 of 3)

IP Router Filters (IP Filter Configuration)	A-E-C
<p>Gives the user the ability to build name sets of filter rules. You can add, edit, or delete router filter rules within a named set.</p> <p>Rules apply to the source and destination ports going to the PC. You may have up to 16 rules per filter, but the greater number of rules, the lesser the performance of the router filter.</p> <p>Action – Add/Delete/Edit.</p> <p>Filter Name – Up to 16 characters. (Optional.)</p> <p>Rule # – Optional.</p> <p>Source Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Source Address Mask – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Source Port No – 0–65536 (Default = 0).</p> <p>Comparison Type – Ignore – Ignore ports, EQ – Equal to, NRQ – Not Equal To, GT – Greater than, LT – Less than, In_Range – Maximum source port, Out_Range – Minimum source port.</p> <p>Destination Address – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Destination Address Mask – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>Destination Port Number – 0–65536 (Default = 0).</p> <p>Filter Action – Discard/Forward.</p> <p>NOTE: You have to reset the IP router (A-E-F) for any changes to take effect.</p>	
ARP (Parameters, Add Entry, and Delete Entry)	A-E-D A, B, or C
<p><i>Select:</i></p> <p>ARP Parameters (A)</p> <p>Gives the user the ability to configure general Address Resolution Protocol (ARP) cache parameters.</p> <p>Complete Entry Timeout (minutes) – 1–200000 (Default = 20).</p> <p>Incomplete Entry Timeout (minutes) – 1–200000 (Default = 20).</p> <p>NOTE: If you have made changes to this screen, you must do a card reset.</p> <p>Add ARP Entry (B)</p> <p>Gives the user the ability to add entries into the ARP cache.</p> <p>IP Address/Host Name – <i>nnn.nnn.nnn.nnn</i> format.</p> <p>MAC Address – <i>xx-xx-xx-xx-xx-xx</i> format.</p> <p>Trailers – Yes/No (Default = No).</p> <p>Proxy – Yes/No (Default = No).</p> <p>Add Entry – Enter yes to add an entry or exit.</p> <p>Delete ARP Entry (C)</p> <p>Gives the user the ability to delete entries line by line in the ARP cache.</p> <p>Select the line you want to delete, select yes/no, and press Return.</p> <p>NOTE: For the Add and Delete ARP Entry screens, any information entered is not stored in the NV memory and will be lost when you reset the card.</p>	

Table 5-5. IP Router Options (3 of 3)

Host Table (IP Host Table)	A-E-E
<p>Gives the user the ability to define mappings between IP addresses and end user host names (names of host devices located at the customer's site).</p> <p>Enter the IP Address and Host Name in <i>nnn.nnn.nnn.nnn</i> format and press Return after each entry.</p> <p>NOTE: You have to reset the IP Router (A-E-F) for any changes to take effect.</p>	
Reset Router (Reinitialize Router)	A-E-F
<p>Gives the user the ability to reset the IP router so that any configuration changes made to router parameters can take effect.</p> <p>NOTE: If you select yes on this screen, the router stops processing and resets to the new router parameters. Only the router and its tables are reset—the rest of the system continues to function without interruption.</p>	

DSL Configuration SNMP Screens

► Procedure

To configure SNMP security, SNMP Logical entities, and SNMP Communities/Traps:

1. Follow this menu sequence:
Configuration → SNMP (A-F)
2. The IP Router menu appears. Enter the desired values on this screen and fields and press Return.

Table 5-6. SNMP Options (1 of 1)

Security (SNMP Security)	A-F-A
<p>Gives the user the ability to configure allowable NMS IP addresses and to configure SNMP agent.</p> <p>IP Address Security – Enable/Disable (Default = Disable).</p> <ul style="list-style-type: none"> ■ Enabling allows DSLAM to accept SNMP messages from SNMP managers whose IP source addresses have been entered in IP Address field. ■ Disabling allows stops this IP address checking <p>IP Address – <i>nnn.nnn.nnn.nnn</i> format. Enter up to five IP source addresses of NMS managers.</p> <p>Access – ReadOnly(ro)/ReadWrite(rw)/NoAccess(na). Permissions to be granted to NMS manager.</p>	
Logical Entities (SNMP Logical Entities)	A-F-B
<p>Gives the user the ability to configure get/set permissions, thresholds, or Ethernet ports.</p> <p>This screen displays information on the logical table of the Entity MIB. Only the logical description field can be edited. others are read only.</p> <ul style="list-style-type: none"> ■ I (Index) column shows the index number of DSL ports two to five. ■ T (Type) column shows “Remote.” ■ Read Only Comm and Read Write Comm show the community strings of the RTU attached to this port. It is used when the DSLAM downloads configuration data to the RTU. 	
Communities/Traps (SNMP Communities/Traps)	A-F-C
<p>Gives the user the ability to enable the Authentication Failure Trap Mechanism, stores SNMP Community string names for the DSL card, and stores NMS host IP addresses to which the DSLAM sends trap messages.</p> <p>It also lets the user configure four communities with three trap destinations that can be configured for each of those communities.</p> <p>Authentication Failure Trap – Enable to send a trap when a SNMP request community string does not match or when the password for a Telnet session is incorrect.</p> <p>Community Name – 32 characters, up to four unique entries per screen.</p> <p>Access – ReadOnly(ro)/ReadWrite(rw)/NoAccess(na), up to four entries per screen.</p> <p>IP Address – <i>nnn.nnn.nnn.nnn</i> format. Enter NMS system host address.</p> <p>Input Number (port) – <i>nnn</i> format, Enter NMS system port number.</p> <p>IP Address Security – Enable to send traps to the host IP address.</p>	

Monitoring the HotWire DSLAM

6

Overview

The HotWire DSLAM lets you to monitor the activity of the HotWire MCC and DSL cards. When you select Monitoring from the HotWire MCC or DSL Main Menu, a menu tree of selections on history and error logs, performance statistics, card status, and physical and logical interface status information is presented.

Most of the Monitoring screens are read only; that is the information displayed is to help you gather pertinent information and isolate potential problem areas. For diagnostic tools and hardware and software troubleshooting techniques, see *Chapter 7, Diagnostics and Troubleshooting*.

MCC Monitoring Card Status Screens

Use the Card Status screens to display read-only system information.

► Procedure

To view general card information, login history, and the syslog:

1. Follow this menu sequence:
Monitoring → Card Status (B-A)
2. The Card Status menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-1. Card Status Options (1 of 2)

Card Info (General Card Information)	B-A-A
Displays card information such as system name, location and contact, system up time, available buffers, instruction ram size, buffer ram size, fast data ram size, card type, model and serial number, and firmware, CAP, and hardware release number.	

Table 6-1. Card Status Options (2 of 2)

Login History	B-A-B
Displays a list of the 10 most recent logins, the least recent login, the user ID, whether it was a local or remote connection, the number of unsuccessful Console logins, and the number of unsuccessful Telnet logins (console and Telenet logins were incorrectly entered).	
Syslog	B-A-C
Displays a timestamp sequential list of operational type errors (such as invalid IP addresses) by date and error. There is one logged error per line in a downward scrolling list.	

MCC Monitoring Physical Layer Screens

Use the Physical Layer screens to display read-only system information about physical ports.

► Procedure

To view the active ports list, ethernet statistics, and HDLC bus statistics:

1. Follow this menu sequence:

Monitoring → *Physical Layer* (**B-B**)

2. The Physical Layer menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-2. Physical Layer Options

Active List (Active Ports List)	B-B-A
Displays a list of the current status of all the active ports (e1a =ethernet, s1b = backplane, s1c, s1d, s1e, and s1f = DSL cards) in the card such as the port number, port name, port type, MAC address, and status of the port (active or disconnected).	
Ether Statistics (Ethernet Statistics)	B-B-B
Displays a list of the Ethernet statistics of the LAN port such as port name, LAN address, bytes (running account of how many bytes have been received since last reset), packets (running account of how many packets have been received since last reset) and errors received and transmitted, number of disconnects, number of fast restarts, number of endless and startless packets, and amount of babble. You may enter Ctrl-r at any time to reset counters.	
HDLC Bus Stats (HDLC Bus Statistics)	B-B-C
Displays a list of of the HDLC backplane port statistics for the s1b port, bytes received and transmitted, packets received and transmitted, and errors received and transmitted. (If a high number of errors have been received, the card may have to be reset.) You may enter Ctrl-r at any time to reset counters.	

MCC Monitoring Interfaces Screens

Use the Interfaces screens to display read-only system information about interfaces.

► Procedure

To view the active interfaces list, and interface status list:

1. Follow this menu sequence:
Monitoring → *Interfaces* (**B-C**)
2. The Interfaces menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-3. Interfaces Options

Active List (Active Interfaces List)	B-C-A
Displays a list of the current status of all of the active interfaces in the card such as the interface number, interface name, interface type, interface link, interface state, ll-state, and port name. Link is a description of the protocol on an interface. State is the current state of the interface. (The only information that changes on this screen is the state active or port wait column.)	
Status (Interface Status)	B-C-B
Displays a list of additional information, after a specific interface (port) has been selected, such as interface name, interface protocol, interface port, user name, interface type, number of restarts and link-downs, interface state, and the interface timeout inactivity.	

MCC Network Protocol Screens

Use the Network Protocol screens to display read-only system information.

► Procedure

To view socket statistics, UDCP statistics, TCP data and connection statistics, IP statistics, ICMP statistics, SNMP statistics, and HDLC statistics:

1. Follow this menu sequence:
Monitoring → *Network Protocol (B-D)*
2. The Network Protocol menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-4. Network Protocol Options (1 of 2)

Socket Statistics	B-D-A
Displays information and statistics on the application program assigned to the specific socket number such as socket name, socket family, socket type (stream or datagram), input bytes and output bytes, and PDU and byte drops. Enter the socket name from the active socket list to view information on the application assigned to the specified socket number.	
UDP Statistics	B-D-B
Displays information on UDP statistics such as input packets, output packets, packets with checksum errors, bad length packets, and other information. The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.	
TCP Statistics (TCP Data Statistics and TCP Connection Statistics)	B-D-C
Displays information on Transmission Control Protocol statistics such as input packets, output packets, and discarded packets. When you press Return, the TCP Connection Statistics screen is displayed, giving you additional TCP information. The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.	
IP Statistics	B-D-D
Displays information on IP statistics such as total packets received and sent, fragments received, packets forwarded, and network broadcast information received, forwarded, or processed. The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.	
ICMP Statistics (ICMP Packet Statistics)	B-D-E
Displays information on Internet Control Message Protocol statistics such as echo replies, source quench messages, and information requests with their output, input, and status. When you press Return, an additional screen of information is displayed. The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.	

Table 6-4. Network Protocol Options (2 of 2)

SNMP Statistics (SNMP Statistics and SNMP Authentication Statistics)	B-D-F
<p>Displays information on SNMP statistics such as number of set packets, number of get requests, and parsing errors. When you press Return, the SNMP Authentication Statistics screen is displayed, giving you additional Community Administration information.</p> <p>The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.</p>	
HDLC Statistics (HDLC Statistics and HDLC Bus Statistics)	B-D-G
<p>Displays information on High-Level Data Link Control statistics for the backplane bus such as number of octets and frames transmitted, packet receive errors, and framing errors. When you press Return, the HDLC Bus Statistics screen is displayed, giving you additional port information.</p> <p>The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.</p>	

MCC IP Router Screens

Use the IP Router screens to display the working copy of the routing table and ARP table.

► Procedure

To view the routing and ARP tables:

1. Follow this menu sequence:
Monitoring → *IP Router* (**B-E**)
2. The IP Router menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-5. IP Router Options

Routing Table	B-E-A
Displays the working routing table. Routes will appear only for interfaces that are up. Details for the selected destinations are shown in the lower right corner. You may select a different destination by entering a number at the "Destination #" prompt. If more than one route exists for the given destination, you may view subsequent routes by entering the number at the "Route #" prompt.	
ARP Table	B-E-B
Displays the current Address Resolution Protocol (ARP) cache. Permanent entries show an age of 0. (Entries for which proxy ARP is the action will show incomplete MAC addresses.)	

DSL Monitoring Card Status Screens

Use the Card Status screens to display read-only system information.

► Procedure

To view general card information, login history, and the syslog:

1. Follow this menu sequence:
Monitoring → *Card Status* (**B-A**)
2. The Card Status menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-6. Card Status Options

Card Info (General Card Information)	B-A-A
Displays card information such as system name, location and contact, system up time, available buffers, instruction ram size, buffer ram size, fast data ram size, card type, model and serial number, and firmware, CAP, and hardware release number.	
Login History	B-A-B
Displays a list of the 10 most recent logins, the least recent login, the user ID, whether it was a local or remote connection, the number of unsuccessful Console logins, and the number of unsuccessful Telnet logins (console and Telenet logins were incorrectly entered). NOTE: A remote IP address of 0.0.0.0 is the MCC card.	
Syslog	B-A-C
Displays a timestamp sequential list of operational type errors (such as invalid IP addresses) by date and error. There is one logged error per line in a downward scrolling list.	

DSL Monitoring Physical Layer Screens

Use the Physical Layer screens to display read-only system information.

► Procedure

To view the active ports list, ethernet statistics, HDCL bus statistics, DSL link performance, DSL performance stats, DSL error stats, and DSL transmission stats screens:

- Follow this menu sequence:
Monitoring → *Physical Layer* (**B-B**)
- The Physical Layer menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-7. Physical Layer Options (1 of 2)

Active List (Active Ports List)	B-B-A
Displays a list of the current status of all the active ports (e1a = ethernet, s1b = backplane, s1c, s1d, s1e, and s1f = DSL cards), in the card such as the port number, port name, port type, MAC address (ethernet port only displayed), and status of the port (active or disconnected).	
Ether Statistics (Ethernet Statistics)	B-B-B
Displays a list of the Ethernet statistics of the LAN port such as port name, LAN address, bytes (running account of how many bytes have been received since the last reset), packets (running account of how many packets have been received since the last reset), and errors received and transmitted, number of disconnects, number of fast restarts, number of endless and startless packets, and amount of babble. You may enter Ctrl-r at any time to reset counters.	

Table 6-7. Physical Layer Options (2 of 2)

HDLC Bus Stats (HDLC Bus Statistics)	B-B-C
<p>Displays a list of of the HDLC backplane port statistics for the s1b port, bytes received and transmitted, packets received and transmitted, and errors received and transmitted.</p> <p>You may enter Ctrl-r at any time to reset counters.</p>	
DSL Link Perf (DSL Link Performance Summary)	B-B-D
<p>Display a summary of the link performance for each of the DSL ports. Enter port number one to four to see the fields for current 15 min. period (real time count of events during the past 0 to 15 minutes), previous 15 min. period (data updated every 15 minutes based on the card's timer), previous one hour period (data updated every hour based on the card's timer), and 24 hour period (data updated every 24 hours based on the card's timer).</p>	
DSL Perf Stats (DSL Performance Stats)	B-B-E
<p>Displays the link performance for each of the DSL ports. Tells you the number of times the link has been down and the elapsed time the link has been up. Enter port number one to four to see the fields for current 15 min. period (real time count of events during the past 0 to 15 minutes), previous 15 min. period (data updated every 15 minutes based on the card's timer), previous one hour period (data updated every hour based on the card's timer), and 24 hour period (data updated every 24 hours based on the card's timer). Additional fields are link down count (number of times the DSL link has gone down), elp link up (count in seconds of the elapsed time the link has been down), and 15m valid (number of 15 minutes intervals in which downstream performance data has been received across the DSL link form the RTU).</p>	
DSL Error Stats	B-B-F
<p>Displays the error performance (margin) rates for each of the DSL ports after selecting a specific DSL port number. Enter port number one to four to see the fields for current 15 min. period (real time count of events during the past 0 to 15 minutes), previous 15 min. period (data updated every 15 minutes based on the card's timer), previous one hour period (data updated every hour based on the card's timer), and 24 hour period (data updated every 24 hours based on the card's timer). A margin of 0 db equals a bit. (The higher the margins, the fewer the errors.)</p> <p>You may enter Ctrl-r at any time to reset counters.</p>	
DSL Xmit Status (DSL Transmit Stats)	B-B-G
<p>Displays the transmit and receive statistics for each of the DSL ports after selecting a specific DSL port number. Enter port number one to four to see the fields for current 15 min. period (real time count of events during the past 0 to 15 minutes), previous 15 min. period (data updated every 15 minutes based on the card's timer), previous one hour period (data updated every hour based on the card's timer), and 24 hour period (data updated every 24 hours based on the card's timer).</p> <p>You may enter Ctrl-r at any time to reset counters.</p>	

DSL Monitoring Interface Screens

Use the Physical Layer screens to display read-only system information.

► Procedure

To view the active interfaces list and interface status:

1. Follow this menu sequence:
Monitoring → *Interface (B-C)*
2. The Interface Layer menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-8. Interface Options

Active List (Active Interfaces List)	B-C-A
Displays a list of the current status of all of the active interfaces in the card such as the interface number, interface name, interface type, interface link, interface state, II state, and port name. Link is a description of the protocol on an interface. State is the current state of the interface. (The only information that changes on this screen is the state active or port wait column.)	
Status (Interface Status)	B-C-B
Displays a list of additional information, after a specific interface (port) has been selected, such as interface name, interface protocol, interface port, user name, interface type, number of restarts and link-downs, interface state, and the interface timeout inactivity.	

DSL Network Protocol Screens

Use the Network Protocol screens to display read-only system information.

► Procedure

To view socket statistics, UDCP statistics, TCP data and connection statistics, IP statistics, ICMP statistics, SNMP statistics, HDLC statistics, and PPP statistics:

1. Follow this menu sequence:
Monitoring → *Network Protocol (B-D)*
2. The Network Protocol menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-9. Network Protocol Options (1 of 2)

Socket Statistics	B-D-A
<p>Displays information on the active sockets such as socket name, socket family, socket type (stream or datagram), input bytes and output bytes, and PDU and byte drops. Enter the socket name from the active socket list to view information on the application assigned to the specified socket number.</p>	
UDP Statistics	B-D-B
<p>Displays information on UDP statistics such as input packets, output packets, packets with checksum errors, bad length packets, and other information.</p> <p>The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.</p>	
TCP Statistics (TCP Data Statistics and TCP Connection Statistics)	B-D-C
<p>Displays information on Transmission Control Protocol statistics such as input packets, output packets, and discarded packets. When you press Return, the TCP Connection Statistics screen is displayed, giving you additional TCP information.</p> <p>The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.</p>	
IP Statistics	B-D-D
<p>Displays information on IP statistics such as total packets received and sent, fragments received, packets forwarded, and network broadcast information received, forwarded, or processed.</p> <p>The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.</p>	
ICMP Statistics (ICMP Packet Statistics)	B-D-E
<p>Displays information on Internet Control Message Protocol statistics such as echo replies, source quench messages, and information requests with their output, input, and status.</p> <p>The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.</p>	
SNMP Statistics (SNMP Statistics and SNMP Authentication Statistics)	B-D-F
<p>Displays information on SNMP statistics such as number of set packets, number of get requests, and parsing errors. When you press Return, the SNMP Authentication Statistics screen is displayed, giving you additional Community Administration information.</p> <p>The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.</p>	
HDLC Statistics (HDLC Statistics and HDLC Bus Statistics)	B-D-G
<p>Displays information on High-Level Data Link Control statistics for the backplane bus such as number of octets and frames transmitted, packet receive errors, and framing errors. When you press Return, the HDLC Bus Statistics screen is displayed, giving you additional port information.</p> <p>The counters increment in real time and you may enter Ctrl-r at any time to reset the counters.</p>	

Table 6-9. Network Protocol Options (2 of 2)

PPP Stats (General, LCP Stats, BNCP Stats, and IPCP Stats)	B-D-H
<p data-bbox="477 321 565 352"><i>Select:</i></p> <p data-bbox="477 363 581 394">General</p> <p data-bbox="477 405 1377 489">Displays a general statistics report for the interface that has been entered (s1c-DSL port 1, s1d-DSL port 2, s1e-DSL port 3, s1f-DSL port4) such as octets transmitted, packet receive errors, and framing errors.</p> <p data-bbox="477 499 613 531">LCP Stats</p> <p data-bbox="477 541 1377 573">Displays Link Control Protocol (LCP) information after the interface name is entered.</p> <p data-bbox="477 583 630 615">BNCP Stats</p> <p data-bbox="477 625 1425 688">Displays Bridging Network Control Protocol (BNCP) information after the interface name is entered.</p> <p data-bbox="477 699 613 730">IPCP Stats</p> <p data-bbox="477 741 1377 772">Displays IP Control Protocol (IPCP) information after the interface name is entered.</p>	

DSL IP Router Screens

Use the IP Router screens to display read-only system information.

► Procedure

To view routing and ARP tables:

1. Follow this menu sequence:

Monitoring → *IP Router* (**B-E**)

2. The IP Router menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 6-10. IP Router Options

Routing Table	B-E-A
Displays the working routing table. Routes will appear only for interfaces that are up. Details for the selected destinations are shown in the lower right corner. You may select a different destination by entering a number at the "Destination #" prompt. If more than one route exists for the given destination, you may view subsequent routes by entering the number at the "Route #" prompt.	
ARP Table	B-E-B
Displays the current Address Resolution Protocol (ARP) cache. Permanent entries show an age of 0. (Entries for which proxy ARP is the action will show incomplete MAC addresses.)	

Diagnostics and Troubleshooting

7

Applications Screens

Use the Applications submenu to dial up remote hosts and clients.

► **Procedure**

To use the Ping and Telnet functions:

1. Follow this menu sequence:

Applications → *Ping or Telnet* (**C-A or B**)

1. Select *Applications* from the HotWire MCC or DSL main menu.
2. The Applications menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 7-1. Applications Options

Ping (MCC and DSL)	C-A
Gives the user the ability to conduct a non-disruptive packet loopback test between the MCC or DSL card and any IP-aware device with network connectivity. Downstream devices include HotWire RTUs and user host computers; upstream devices include Network Service Provider routers and Network Management System (NMS) stations.	
IP Address – <i>nnn.nnn.nnn.nnn</i> format.	
Packet – 12 to 1600 bytes (Default = 64).	
Timeout (before next try) – one to 30 seconds (Default = 5).	
The results of this test include packets sent, received, and a scrolling list of timeouts, along with the minimum, maximum, and average round trip times of the packets.	
Telnet (MCC Card only)	C-B
Gives the user the ability to connect with a remote host. Enter the host name or the Internet Protocol address for the destination to which you wish to connect.	

Diagnostic Screens

Use the Diagnostics submenu to dial up remote hosts and clients.

► Procedure

To view selftest, card alarm, and packet test information:

1. Follow this menu sequence:

Diagnostics → *Selftest* or → *Alarms* or → *Packet Echo Test* (**D-A** or **B** or **C**)

2. The Diagnostics menu appears. Select the sub-menu option and enter the desired value on each screen and field and press Return.

Table 7-2. Diagnostics Options

Selftest	D-A
Displays the results of the last disruptive selftest of the DSL card. This selftest is only performed on power up of the system or a reset of the card. Each subsystem (processors, memory, and interfaces) report pass or fail. If all subsystems pass, the card has passed selftest. If a subsystem fails, reset or replace the card.	
Alarms (Card Alarms)	D-B
Displays all active card alarm conditions. Major alarms include Selftest failure, Processor failure (sanity timer), and DSL or Ethernet port failures. Minor alarms include Config Error (configuration has been corrupted) and threshold exceed for DSL margin, Error Rate, or Link Down events.	
Packet Echo Test (DSL only)	D-C
Gives the user the ability to run a non-disruptive test of a DSL port and the loop circuit to the RTU. Test packets are sent to the RTU at one percent of the line rate and echoed back to this card where they are counted and checked for errors.	
To run on any active DSL port, enter the port number (1, 2, 3, 4) the test time length(30 to 900 seconds), and yes and press Return. The results of the test are displayed in non real time and will continue until the time you specified in the test time length field has expired.	

Troubleshooting

Review the following symptoms and possible solutions to help in solving any problems you may encounter on the HotWire DSLAM.

Network Problems

PROBLEM: Intranetworking communication problems.

- ACTION:**
1. Verify that the internetworking network cables meet IEEE standards for local Ethernet networks.
 2. Check cable connections to other computers in the network.
 3. Determine whether or not your system is the only one in the network with a problem.

PROBLEM: Cannot PING or Telnet after entering IP address.

- ACTION:**
1. Restart the interface. (See Chapter 5)
 2. Reset or power cycle before the IP address changes take effect.
 3. Check to see if you entered the correct IP address. (See Chapter 3)
 4. Check to see that the IP address is unique and matches the class of the subnet. (For example, if using a Class B address, make sure the first two numbers match.)
 5. Check to see that the sub-net mask is set correctly. If in doubt, leave the default sub-net mask. (See chapter 3)
 6. Check to see that the IP next-hop address matches that of the router (if communicating through IP router) (See Chapter 4).
 7. Verify that your address, port, or IP protocol is not being filtered from the port or bridge. (Turn off the filters if you are not sure.)
 8. Check to see that the port in question is forwarding traffic.
 9. Check received packets. (See Chapter 6)

Slow Performance

PROBLEM: Performance is slow.

- ACTION:**
1. Verify that there are enough buffers on the System Info screen. See Chapter 6.
 2. Check the Ethernet Statistics screen for excessive Cycle Redundancy Check (CRC) errors. (See Chapter 6)

Excessive Collisions

PROBLEM: Excessive collisions on an Ethernet port.

- ACTION:**
1. Determine if your network is too large or long (single Ethernet cable or end-to-end cable).
 2. Check to see if there are too many repeaters.
 3. Check to see if there are too many users on a single Ethernet.

No SNMP Connection Established

PROBLEM: Cannot establish an SNMP session/connection.

- ACTION:**
1. Check to see that you have entered an IP address, especially if you also cannot PING or Telnet to the router. (See Chapter 3)
 2. Check to see if you have properly configured the SNMP parameters. (See Chapters 4, especially SNMP Security, and 5)
 3. Enable an SNMP, then reset the software or power the router.

Filters Not Working

PROBLEM: Filters are not working properly.

- ACTION:**
1. Check to see that filters have been configured properly. (See Chapters 3 and 4)
 2. Check to see if there is a conflict with the order of the filter tests. They should perform in the following order: Port-to-Port (PTOP), Host-to-Port (HTOP), Host-to-Host (HTOH), Protocol Type (PROTOCOL), Bit Filtering.
 3. Check to see interface has been restarted since filters were added, deleted, or changed.

IP Routing Problems

PROBLEM: Stations cannot communicate through the router.
Incorrect IP address.

- ACTION:**
1. Check to see that IP addresses have been configured correctly. (See Chapters 3, 4, and 5)
 2. Go to: *Configuration* → *Interface* → *Control* and check the state of the system for e1a Bridge Up (forwarding).

Incorrect Subnet Mask

PROBLEM: Stations cannot communicate.

- ACTION:**
1. Check to see that IP addresses have been configured correctly. (See Chapters 3, 4, and 5)
 2. Go to: *Configuration* → *Interface* → *Control* and check the state of the system for e1a Bridge Up (forwarding).

No PPP Traffic

PROBLEM: PPP circuit is forwarding no traffic.

- ACTION:**
1. Verify that the DSL link is up.
 2. Go to: *Configuration* → *Interface* → *Control* and check the state of the system.
 3. If the IP state is up and the local and peer IP addresses are displayed, IPCP is completed.
 4. If the IP state is missing from the screen, check that the port has an IP address assigned.
 5. If the IP state is missing from the screen, check that the port has an IP address assigned.

No Response at Start Up

PROBLEM: DSL cards do not respond at start-up after re-booting chassis.

- ACTION:**
1. Reset the MCC card.
 2. Be sure LEDs go through the reset sequence once. Then, a second time after 15-20 seconds.
 3. Reconfigure each DSL card. (See Chapter 3)

System Does Not Recognize New DSL Cards

PROBLEM: System does not recognize new DSL cards with new addresses (Addresses not pre-configured on MCC card).

- ACTION:**
1. Configure new DSL cards from MCC screen.
 2. Restart s1b interface. (See Chapter 3)
 3. Reset DSL card from the MCC screen. (See Chapter 3)
 4. Pull the card out and push it back in.

Unusual Number of TRAPS

PROBLEM: DSL cards not using MCC Router ID as source address for traps.

- ACTION:**
1. In standard configuration, MCC and DSLs are in separate sub-nets and Router ID is the same as IP Base Address of MCC's LAN (e1a) interface. Set the Router ID to the mgmt IP address on MCC's LAN interface.
 2. Set this as "Base IP Address" for LAN interface.
 3. Reset MCC and all cards. (See Chapters 3, 4, and 5)

Cannot Communicate with Interface

PROBLEM: Cannot communicate with Ethernet or other interface after adding, changing, or deleting IP addresses on DSL or MCC card.

- ACTION:**
1. When you add, change, or delete addresses on a DSL card, you must restart that interface. (See Chapter 5)

Cannot Upload Configurations to a Unix Server

PROBLEM: TFTP server denies write permission (Message is "TFTP recv failure").

- ACTION:**
1. Before uploading configurations, create a dummy file and give it global Read-Write permissions.
 2. Configure TFTP host to have Write permissions is specified directory.

Unexpected Sub-Net Data

PROBLEM: Proxy ARP not properly set for HotWire 5446 RTU.

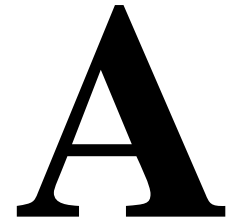
- ACTION:**
1. Reconfigure DSL cards affected.
 2. Set Proxy ARP only for HotWire 5446 RTU, not entire subnet.

Cannot Communicate with HotWire 5446 from MCC Card

PROBLEM: Error in setting peer address on s1b.

- ACTION:**
1. Set peer host address to 0. For example, where MCC's s1b address is 198.152.180.10. and local sub-net is "180", peer address must be set to 198.152.180.0.

Checklist for Configuring the HotWire DSLAM



Overview

This appendix provides a checklist of the mandatory steps required to configure the MCC cards, DSL cards, and RTUs for the HotWire DSLAM. Use this checklist as a quick reference for configuring your system.

For specific information on mandatory configuration procedures, see *Chapter 3, Configuring the HotWire DSLAM*.

Setting Time and Date

To set the time and date on the MCC card:

- Select *Configuration* → *Card Status* → *Time/Date (A-A-C)*.
- Enter time at the *hh.mm* (am or pm) prompt.
- Enter Broadcast or Unicast at the *Client NTP Mode* prompt.
- Enter the NTP server address at the *(nnn.nnn.nnn.nnn)* prompt.
- Enter 1-24 at the *Input Number* prompt.
- Press Ctrl-z and save changes.

Assigning IP Addresses to the Backplane

To assign an IP address to the backplane (s1b):

- Select *Configuration* → *Interfaces* → *IP Network (A-C-B)*.
- Enter the interface name at the *Input Interface Name* prompt.
- Enter the base IP address at the *(nnn.nnn.nnn.nnn)* prompt.
- Enter the base subnet mask at the *(nnn.nnn.nnn.nnn)* prompt.

- Enter the peer IP address at the (nnn.nnn.nnn.nnn) or address pool prompt.
- Enter route type **NET** (for network) at the Route to peer (host/net): prompt.
- Press Ctrl-z and save changes.

Assigning IP Addresses to the DSL Cards (Management Domain)

To assign IP addresses to the DSL cards:

- Select *Configuration* → *DSL Cards* → *Set IP Addresses (A-F-A)*.
- Enter the DSL card subnet mask at the (nnn.nnn.nnn.nnn) prompt. This is the subnet mask for the backplane (s1b) management subnet.
- Enter the IP address for each DSL card at the (nnn.nnn.nnn.nnn) prompt.
- Press Ctrl-z and save changes.

Creating the Default Route

To create the default route:

- Select *Configuration* → *IP Router* → *Static Routes (A-E-A)*.
- Enter **0** or press Return at the Item Number prompt.
- Enter **0.0.0.0** at the Destination (or space to delete route): prompt.
- Press Return at the subnet (nnn.nnn.nnn.nnn) prompt.
- Enter the IP address of the default route to the next hop address at the Next Hop IP Address (nnn.nnn.nnn.nnn) prompt.
- Enter **1** at the Input Number prompt.
- Press Return at the S/D prompt (Default = Dst.).
- Press Return at the PA prompt (Default = No).
- Confirm the save and Press Ctrl-z.

Resetting the System

To reset all the cards in the system:

- Select *Configuration* → *Card Status* → *Card Reset (A-A-F)*.
- Enter *yes* to verify MCC reset.
- Wait for the MCC card to reboot.
- From the MCC, select *Configuration* → *DSL Cards* → *Reset Slot (A-G-B)*.
- Enter *y* at the prompt to confirm.
- Wait for the DSL cards to BOOTP.

Selecting a DSL Card to Configure

To select a DSL card to configure:

- From the HotWire Chassis Main Menu, select Card Selection.
- Enter *DSLnn* where *nn* is the number of the DSL card you want to configure and press Return.
The HotWire DSL menu is displayed.
- Select Configuration
The Configuration Menu is displayed.

Configuring 5446 RTU IP Host Addresses on the DSL Card

To configure 5446 RTU IP Host Addresses on the DSL cards:

- Select *Configuration* → *Interfaces* → *IP Network (A-C-B)*.
- Enter the interface name at the *Input Interface Name* prompt (*s1c*).
- Enter the peer IP address at the *(nnn.nnn.nnn.nnn)* or *address pool* prompt.
- Enter route type **Host** at the *Route to peer* prompt.
- Press Ctrl-z and save changes to exit.
- Repeat the above procedure for interfaces *s1d*, *s1e*, and *s1f* (DSL ports 2, 3, and 4, respectively).

Configuring a Static Route to the Network Management System (on each DSL Card)

To configure a static route to the Network Management System:

- Select *Configuration* → *IP Router* → *Static Routes* (**A-E-A**).
- Enter **0** or press *Return* at the *Item Number* (0 to add new record): prompt to add a new record.
- Enter the address of the NMS (*nnn.nnn.nnn.nnn*) at the *Destination* prompt.
- At the *Subnet* prompt, enter either *255.255.255.255* for the host route or *255.255.255.0* for the subnet route.
- Enter the backplane IP address of the MCC card (s1b) at the *Next Hop IP Address* (*nnn.nnn.nnn.nnn*) prompt.
- Enter **1** at the *Input Number* prompt to specify the preference.
- Confirm the save and Press *Ctrl-z*.

Assigning IP Addresses to the DSL Cards (Customer Domain)

To assign IP addresses to the DSL cards:

- Select *Configuration* → *Interfaces* → *IP Network* → (**A-C-B**).
- Enter the interface name at the *Input Interface Name:* prompt (e1a).
- Enter the IP address at the (*nnn.nnn.nnn.nnn*) prompt. This address must be different than the management domain IP address.
- Enter the subnet mask at the (*nnn.nnn.nnn.nnn*) prompt.
Up to 16 IP addresses and subnet masks can be entered. Enter the IP addresses and subnet masks for each ISP domain supported by the specified DSL card.
- Press *Ctrl-z* and save changes.

Creating Default Routes or Source Routes on the DSL

To create the default route:

- Select *Configuration* → *IP Router* → *Static Routes (A-E-A)*.
- Enter **0** or press *Return* at the *Item Number* prompt.
- To create a default route, enter **0.0.0.0** at the *Destination (or space to delete route):* prompt.
- To create a static route, enter the source route address at the *Destination (or space to delete route)* prompt
- Press *Return* at the *subnet (nnn.nnn.nnn.nnn)* prompt.
- To create a default route, enter the IP address of the default route at the *Next Hop IP Address (nnn.nnn.nnn.nnn)* prompt.
- To create a source route, enter the IP address of the source route at the *Next Hop IP Address (nnn.nnn.nnn.nnn)* prompt.
- Enter **1** at the *Input Number* prompt.
- Enter *src* or *dst* at the *Source (Src)/Destination (dst)* prompt.
- Press *Return* at the *PA* prompt (Default = No).
- Confirm the save and Press *Ctrl-z*.

Resetting the DSL Card

To reset the DSL card:

- Enter *Ctrl-t* or *Ctrl-a* to go to the HotWire DSL menu.
- Select *Card Selection*.
- Enter *MCC*.
- Select *Configuration* → *DSL Cards* → *Reset Slot* → **(A-G-B)**.
- Enter *dslnn*, where *nn* is the slot number for the DSL card you just configured.
- Enter *Y* at the prompt to confirm.
- If you have entered yes, verify that the LEDs on the DSL card go through the reset sequence once, and then a second time after approximately 15-20 seconds.

Checklist for Setting Up User Accounts on the MCC and DSL Cards

B

Overview

User accounts provide security for the DSLAM by requiring that anyone who is trying to log onto the system has a valid password to gain access. User accounts on the MCC provide security to users accessing the system from the VT100 terminal interface and via Telnet over the management domain LAN.

It is recommended that user accounts also be set up for each DSL card, even if you do not intend to telnet directly to the DSL cards, so that no unauthorized telnet sessions can be made. Each card will support up to 10 user accounts with either Operator (read only) or Administrator (read/write) permissions.

MCC User Accounts

Use the following checklist when configuring MCC user accounts.

- From the MCC Main menu select *Configuration* → *Users* → *Accounts (A-D-A)*.
- Enter the login name (up to 15 characters). This field is case sensitive.
- Enter the password for this account (up to 15 characters). This field is case sensitive.
- Re-enter the password.
- Enter the privilege level (operator for read only access, administrator for read/write access).
- Enter Y to save changes and Ctrl-z to return to the HotWire Chassis Main Menu tree.

Reboot Card (MCC)

Use the following checklist to reboot MCC card after changes have been made.

- From the MCC Main menu select *Configuration* → *Card Status* → *Card Reset (A-A-F)*.
- Enter Y at the yes/no prompt.
- At the initial screen display after reboot, press Return.
- Enter Operator ID.
- Enter Operator Password.
The HotWire Chassis Main Menu is displayed.

DSL User Accounts

Use the following checklist when configuring DSL user accounts.

- From the DSL Main menu select *Configuration* → *Users* → *Accounts (A-D-A)*.
- Enter the login name (up to 15 characters). This field is case sensitive.
- Enter the password for this account (up to 15 characters). This field is case sensitive.
- Re-enter the password.
- Enter the privilege level (operator for read only access, administrator for read/write access).
- Enter Y to save changes and Ctrl-z to return to the HotWire Chassis Main Menu tree.

Reboot Card (DSL)

Use the following checklist to reboot DSL cards after changes have been made.

- At the Card Selection screen, enter *DSLnn*.
- From the DSL Main menu select *Configuration* → *Card Status* → *Card Reset (A-A-F)*.
- Enter Y at the yes/no prompt.
- After reboot, enter MCC at the Card Selection screen.
- Select *Applications* → *Telnet (C-B)*.
- Enter the Host Name of IP Address of Ethernet card and verify that you can telnet there.
- Enter Operator ID.
- Enter Operator Password.
The HotWire Chassis Main Menu is displayed.

Navigation Keys

C

The following table lists navigation keys and their definitions. These commands are used to move around the HotWire DSLAM menus and screens.

Keys	Definition
Ctrl-a	Moves Home or to the top of the menu
Ctrl-b	Moves left
Ctrl-c	Moves Home or to the top of the current menu
Ctrl-f	Moves right
Ctrl-k	Moves up to the previous menu selection or entry field
Ctrl-l	Refreshes the screen
Ctrl-n	Moves down or to the next selection
Ctrl-p	Moves up or to the next selection
Ctrl-r	Resets counters (on monitoring statistics displays)
Ctrl-t	Moves Home or to the top of the menu
Ctrl-u	Clears the current input or prompt line
Ctrl-v	Displays a list of active users
Ctrl-y	Moves Home or to the top of the menu
Ctrl-z	Moves back or exits from screen
Up arrow	Moves up to the previous menu selection or entry field
Down arrow	Moves down to the next menu choice or entry field
Left arrow	Moves left to the previous menu box or entry field
Right arrow	Moves right to the next menu box or entry field
Enter or Return	Accepts entry
Tab	Moves down or to the next selection
?	Displays the Online help screen

Traps

D

Traps are configured via a Telnet or terminal session. The addition or removal of a card or another hardware component within the HotWire DSLAM system causes a trap to be generated. These traps indicate a configuration change notification (CCN) of a card (a hardware replacement or a software upgrade).

The DSL card sends the following traps.

Event	Trap Class	Comment
CCN (Configuration Change Notice)	warning	Configuration changed – software upgraded
DSL link up or down Transitions threshold exceeded	minor	Number of link down events above threshold. This rate is limited to once every 15 minutes.
Authentication failure	minor	SNMP community string, Telnet passwords
Port speed	warning	—
Decrease to lower bound		—
Ethernet link down	major	—
Ethernet link up	normal	—
DSL margin low	minor	Margin estimate below customer set threshold
DSL error rate high	minor	Error rate estimate above customer set threshold
Cold start	warning	—
Test start	normal	Test started by any name
Test clear	normal warning	Test over

The MCC card sends the following traps.

Event	Trap Class	Comment
CCN (Configuration Change Notice)	warning	Configuration changed – software upgraded
Authentication failure	minor	SNMP community string, Telnet and terminal passwords
Fan module failure	minor	Fan module reporting subnormal performance
Fan module restored	normal	Fan module back to normal operation
Power source switch over/source failure	minor	One of the power sources has failed and the system is now operating off one source
Power source normal	normal	Both power sources are operating normally
Ethernet link down	major	—
Ethernet link up	normal	—
No response to slot poll	major	Card is there but not functioning
New card detected on poll	warning	—
Cold start	warning	MCC card is being powered up
Warm start	warning	Power on reset
Test start	normal	Test started
Test clear	normal	Test over

Glossary

Address	A symbol (usually numeric) that identifies the interface attached to a network.
Alarm System	Consists of an audible or visual alarm in the central office indicating the rack with an alarm condition.
ARP	Address Resolution Protocol. The TCP/IP protocol used to dynamically bind a high-level IP address to a low-level physical hardware address. ARP is only across a single physical network and is limited to networks that support hardware broadcast.
Backplane	A common bus at the rear of the COMSPHERE 3000 Series Carrier connecting each circuit card slot to the shared diagnostic control panel (SDCP) and/or shared diagnostic unit (SDU). It also distributes low-voltage ac power to each slot.
Bandwidth	The range of frequencies that a circuit can pass. The greater the bandwidth, the more information that can be sent in a given amount of time.
Bit	Binary digit. The smallest unit of information, representing a choice between a one or a zero (sometimes called mark or space).
BOOTP	Bootstrap Protocol. Protocol a host uses to obtain startup information, including its IP address, from a server.
bps	Bits per second. Indicates the speed at which bits are transmitted across a data connection.
byte	A sequence of successive bits (usually eight) handled as a unit in data transmission.
Central Office	The physical building where all local telephone service wiring is distributed to a surrounding area.
DNS	Domain Name System. An online distributed database that maps machine names into IP addresses.
Downstream	In extended networks, the direction in which diagnostic messages flow from the diagnostic control site to any intermediate links and then to the final tributary modem.
Ethernet	A type of network that supports high-speed communication among systems. It is a 10-Mb/s standard for LANs. All hosts are connected to a coaxial cable where they contend for network access using a Carrier Sense Multiple Access with Collision Detection (CSMA/CD) paradigm.
Ethernet Address	A six-part hexadecimal number in which a colon separates each part (for example, 8:0:20:1:2f:0). This number identifies the Ethernet communications board installed in a PC and is used to identify the PC as a member of the network.
FTP	File Transfer Protocol. A protocol that allows a user on one host to access, and transfer files to and from, another host over a network. The FTP application is used to provide file transfer services across a wide variety of systems through the use of the File Transfer Protocol (FTP). Usually implemented as application level programs, FTP uses the TELNET and TCP protocols. The server side requires a client to supply a login identifier and password before it will honor requests.
HDLC	High-Level Data Link Control. A communications protocol defined by the International Standards Organization (ISO).
ICMP	Internet Control Management Protocol. Internet protocol that allows for the generation of error messages, tests packets, and information messages related to IP.

IP	Internet Protocol. The TCP/IP standard protocol that defines the IP as a unit of information passed across an Internet and provides the basis for packet delivery service. IP includes the ICMP control and error message protocol as an integral part. The entire protocol suite is often referred to as TCP/IP because TCP and IP are the two most fundamental protocols.
IP Address	Internet Protocol address. This is a 32-bit address assigned to host on a TCP/IP Internet. The IP address has a host component and a network component.
ISN	Interservice Network.
ISP	Internet Service Provider.
LAN	Local Area Network. A network that spans a small geographic area (e.g., a building).
MAC Address	Areas of memory your CPU uses to distinguish between the various peripheral devices connected to your system when transferring or receiving data.
MCC	Management Communications Controller.
Multiplex	Combine many low-speed data sources into a single, high speed serial data stream. The data is coded at transmission, and decoded at reception. Interleave or simultaneously transmit two or more messages on a single circuit. Some multiplexing techniques include Frequency Division Multiplexing (FDM), Time Division Multiplexing (TDM), and Statistical Multiplexing (Stat MUX).
Multiplexing	A method for interleaving several access channels onto a single circuit for transmission over the network.
Node	A connection or switching point on the network.
Packet	A set of control (header) and data characters (data and control signals) that are treated as one block or packet within a communications network.
Packet Forwarder	Functional capability of DSL and MCC cards to forward packets to proper I/O ports..
POTS	Plain Old Telephone Service.
PPP	Point-to-Point Protocol. Serial protocol used for operation in a TCP/IP network. Point-to-Point Protocol. A link layer protocol used by SNMP. Point-to-Point Protocol, as defined in Internet RFC 1661.
RADSL	Rate Adaptive Digital Subscriber Line. The RADSL design guide 2.0 currently specifies rates up to 2.240M/952K bps. The RADSL downstream rates are planned to exceed 7.1 Mbps in future releases.
SNMP	Simple Network Management Protocol. A software program housed within a device to provide SNMP functionality. Each agent stores management information and responds to the manager's request for this information.
SNMP Agent	A software program housed within a device to provide SNMP functionality. Each agent stores management information and responds to the manager's request for this information.
SNMP Trap	A notification message to the SNMP manager when an unusual event occurs on a network device, such as a reinitialization.
Synchronous data	Data transmission that is synchronized by timing signals. Characters are sent at a fixed rate.
Synchronous transmission	Transmission in which the data characters and bits are transmitted at a fixed rate with transmitter and receiver synchronized. This eliminates the need for start and stop bits as used in asynchronous transmission, and is thus faster and more efficient.

TCP	Transmission Control Protocol. An Internet standard transport layer protocol defined in STD 7, RFC 793. It is connection-oriented and stream-oriented.
TCP/IP	Transmission Control Protocol/Internet Protocol. The dominant protocol in the worldwide Internet, TCP allows a process on one machine to send data to a process on another machine using the IP protocol. TCP can be used as a full-duplex or one-way simplex connection.
Telnet	Virtual terminal protocol in the Internet suite of protocols. Allows the user of one host computer to log into a remote host computer and interact as a normal terminal user for that host.
Terminal Emulation	Software that allows a session to work as if it was running a specific type of terminal; e.g., VT100 or 3270 to logically connect your terminal to a mainframe computer.
TFTP	Trivial File Transfer application. A standard TCP/IP protocol that allows simple file transfer to and from a remote system without directory or file listing.
T1	A term for a digital carrier facility used to transmit a DS1 formatted digital signal at 1.544 Mbps.
Upstream	In extended networks, the direction in which diagnostic messages flow from the final tributary diagnostic modem to the intermediate links to the diagnostic control site.
VT100	Terminal emulation mode used for asynchronous communications.

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