



PARTNER[®] **Advanced Communications System**

1600 DSL Module User Guide

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1. Introduction

The Avaya PARTNER™ Advanced Communications System(ACS) 1600 DSL module allows you to simultaneously transport both voice and data services over a DSL, without the cost of additional lines.

The PARTNER ACS 1600 DSL module supports a variety of network transports, including ATM and Frame Relay, as well as SDSL and phone connections.

Supported Interface standards include:

- ◆ DSL-SDSL (Symmetrical Digital Subscriber Line) that supplies voice lines and data connection for the PARTNER ACS System
- ◆ LAN - 10/100BaseT Ethernet
- ◆ Console Port (DB9 Connector [RS232 Serial Interface])
- ◆ USI - V.35 Interface

Organization of this guide

This user guide contains the following chapters:

Chapter 1, “Introduction”, introduces the PARTNER ACS 1600 DSL module, describes customer support and hardware and software requirements, as well as the organization of this user guide.

Chapter 2, “PARTNER ACS 1600 DSL module basics”, describes the PARTNER ACS 1600 DSL module hardware and software requirements, as well as the physical IAD.

Chapter 3, “Getting started”, walks you through the procedures to connect and log on to the PARTNER ACS 1600 DSL module. It also provides information about the Menu interface, restarting the PARTNER ACS 1600 DSL module, auto log off, exiting the menu interface and verifying an IP address.

Chapter 4, “Administration”, provides information about the PARTNER ACS 1600 DSL module security, as well as how to configure the Simple Network Management Protocol (SNMP) and upgrade ACOS.

Chapter 5, “WAN configuration”, details how to configure the PARTNER ACS 1600 DSL module for voice and data operation.

Chapter 6, “Router configuration”, describes how to configure the PARTNER ACS 1600 DSL module as a router.

Chapter 7, “Bridge configuration”, describes how to configure the PARTNER ACS 1600 DSL module as a bridge.

Chapter 8, “NAT configuration”, walks you through the steps required to configure the Network Address Translation (NAT).

Chapter 9, “DHCP server configuration”, walks you through the steps required to configure the Dynamic Host Configuration Protocol (DHCP) server.

Chapter 10, “Menu interface”, provides information on the PARTNER ACS 1600 DSL module menus, submenus and commands.

Chapter 11, “Verification”, describes how to verify that the PARTNER ACS 1600 DSL module operates properly after installation. It also covers maintenance, and how to display the current configuration.

Appendix A, “PARTNER ACS 1600 DSL module menu hierarchy”, outlines the PARTNER ACS 1600 DSL module menu interface.

Appendix B, “PARTNER ACS 1600 DSL module specifications”, lists all specifications for the PARTNER ACS 1600 DSL module.

Appendix C, “Connector pinouts”, provides interface pinout information.

Appendix D, “USI cables”, provides information about the various USI cables.

Appendix E, “IP Filtering”, provides information about the IP filtering process.

2. PARTNER ACS 1600 DSL module basics

This chapter describes the PARTNER ACS 1600 DSL module hardware and software requirements, as well as the physical IAD.

Hardware and software requirements

You must use a terminal emulation program, such as HyperTerminal or ProCommPlus, to configure the PARTNER ACS 1600 DSL module. Once you configure an IP address, you can also use Telnet to remotely administer the PARTNER ACS 1600 DSL module. For more information, see the “Getting started” chapter.

Connectors

The PARTNER ACS 1600 DSL module contains the following connectors:

Console cable

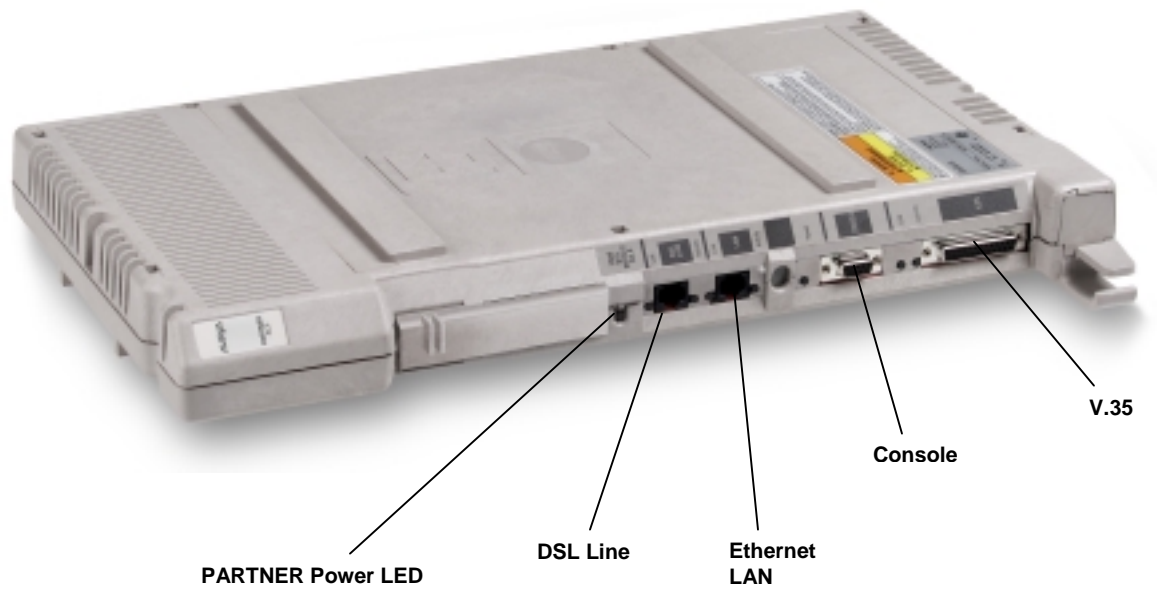
Connects the PARTNER ACS 1600 DSL module to a local PC, using a straight through 9 pin serial (DB9 RS 232) cable. You can then configure the PARTNER ACS 1600 DSL module using terminal emulation software. For more information on configuring the PARTNER ACS 1600 DSL module, see “PARTNER ACS 1600 DSL module configuration” later in this chapter.

Interfaces

Available interfaces include the following:

- ◆ DSL-SDSL (Symmetrical Digital Subscriber Line) that supplies voice lines and data connection for the PARTNER ACS System
- ◆ LAN - 10/100BaseT Ethernet
- ◆ Console Port (DB9 Connector [RS232 Serial Interface])
- ◆ USI - V.35 Interface

Front View



3. Getting started

This chapter walks you through the procedures to connect and log on to the PARTNER ACS 1600 DSL module. It also provides information about the Menu interface, restarting the PARTNER ACS 1600 DSL module, auto log off, exiting the menu interface and verifying an IP address.

For more information on the menus, submenus and commands in this chapter, see the “Menu interface” chapter.

Connecting

You can configure the PARTNER ACS 1600 DSL module while connected to a PARTNER system or as a stand-alone unit.

To configure within the confines of a PARTNER system, you must place it in the first slot of a 5-slot carrier.

To configure it as a stand-alone unit, you must connect a power cord to the rear of the PARTNER ACS 1600 DSL module. For more information on how to connect power to the unit, see the *PARTNER User Guide*.

To connect the PARTNER ACS 1600 DSL module to a PC using a DB9 connector

1. Insert the provided DB9 connector into the serial port (DB9) connector on the PARTNER ACS 1600 DSL module.
2. Attach an RS-232 connector to the appropriate COM port on the PC.
3. Plug the power cable into PARTNER ACS 2 or 5-slot carrier, and then into a wall outlet.

Once connected, you need to log on to the PARTNER ACS 1600 DSL module.

Logging on

There are two ways that you can log on to the PARTNER ACS 1600 DSL module:

- ◆ A terminal emulation program through the console port.
- ◆ A Telnet program through the Ethernet port.

Using a terminal emulation program

To use a terminal emulation program to log on to a PARTNER ACS 1600 DSL module

1. Open the terminal emulation program.
2. Select the name, icon and COM port for the PARTNER ACS 1600 DSL module connection.
3. Type or select the following settings, and then save your changes.

Bits per second: **19200**
Data bits: **8**
Parity: **None**
Stop bits: **1**
Flow control: **None**
Emulation: **ANSI**
Font: **Terminal**

For more information, see your terminal emulation program documentation.

4. Press ENTER.

The log on message displays.

```
Enter Login ID >
```

5. Type your User ID, and press ENTER.

The following are the default User IDs and passwords:

Access Level	User ID	Password
User	<Enter>	<Enter>
Network Administrator	NetMan	<Enter>

For more information, see the "Administration" chapter.

The password message displays.

```
Enter Password >
```

6. Type your password, and the press ENTER.

The **Main Menu** displays.

```
*****  
*                               *  
*               Main Menu       *  
*                               *  
*****
```

1. Reports Menu
2. Configure IP Router
3. Configure Bridge
5. Configure WAN
6. Configure LAN
7. Configure SNMP

- 8. Configure Login
- 9. System Utilities
- D. Configure DHCP Server
- N. Configure NAT
- T. Derived Timing
- Z. Diagnostics Menu
- C. Command Line Interface
- P. VoicePath Configure

For more information on the menus, submenus and commands on the **Main Menu**, see the “Menu interface” chapter.



Using a Telnet program

You must set an IP address for the Ethernet port *before* you can use a Telnet program to access the PARTNER ACS 1600 DSL module.

Configuring a port IP address

To configure a port IP address:

1. On the Main Menu, select **Configure IP Router**.

The **Router Configuration Menu** displays.

```
*****
*           Router Configuration Menu           *
*****

C. Configure Port IP Address
U. Unconfigure Port IP Address
S. Add/Remove a Static Route
R. Enable/Disable RIP
V. Configure RIP Version by Port
P. Configure RIP Poisoned Reverse by Port
N. Configure DNS Client
H. Configure DHCP Client
L. Configure DHCP Relay
T. Configure Telnet Server Port
F. Configure IP Filtering
D. Display Route Table
```

2. Select **Configure Port IP Address**.

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :

Interfaces may or may not display, depending on the IAD in use.



3. Type the number of the port for which you want to configure an IP address.

The following message (or one similar) displays:

IP interfaces on port 1:

<u>ID</u>	<u>IPAddr</u>	<u>IPMask</u>	<u>Priority</u>
0	255.255.255.0	255.255.255.0	NORMAL

Enter connection to configure:

4. Type the ID number of the connection that you want to configure (range = 0-7), and then press ENTER.
5. Type the new IP address, or press ENTER to select the current IP address.

The following instructions display on-screen:

Current subnet mask = 0.0.0.0

Enter new subnet mask for this interface:

6. Type the new subnet mask address, or press ENTER to select the current subnet mask.

The following instructions display on-screen:

Select priority Normal/High [N/H] (N):

7. Do one of the following, and then type **Y**:
 - ◆ To give the interface high priority, type **H**.
 - ◆ To give the interface normal priority, type **N**.
8. Repeat steps 1-6 for each port for which you want to configure an IP address.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

You can now run the Telnet program.

Running the Telnet program

To use a Telnet program to log on to a PARTNER ACS 1600 DSL module

1. Open the Telnet program.
2. Type the IP address of the port that you configured in steps 1-6, press `CONNECT`, and then press any key.

The log on message displays.

```
Enter Login ID >
```

3. Type your User ID, and press `ENTER`.

The following are the default User IDs and passwords:

Access Level	User ID	Password
User	User	TBD
Network Administrator	NetMan	TBD

For more information, see the "Administration" chapter.

The password message displays.

```
Enter Password >
```

4. Type your password, and the press `ENTER`.

The **Main Menu** displays.

```
*****  
*                               *  
*               Main Menu       *  
*                               *  
*****
```

1. Reports Menu
2. Configure IP Router
3. Configure Bridge
5. Configure WAN
6. Configure LAN
7. Configure SNMP
8. Configure Login
9. System Utilities
- D. Configure DHCP Server
- N. Configure NAT
- T. Derived Timing
- Z. Diagnostics Menu
- C. Command Line Interface
- P. VoicePath Configure

For more information on the menus, submenus and commands on the **Main Menu**, see the "Menu interface" chapter.



The User ID and password transmit as "clear text", which can be captured by unauthorized individuals. If you are concerned with network security, you may not want to use a Telnet program to configure the PARTNER ACS 1600 DSL module.

Menu interface

The PARTNER ACS 1600 DSL module provides an ASCII-based menu interface for system configuration and monitoring. Menus, submenus, and commands may or may not display, depending on the options configured or the access level that you use to log on:

- ◆ User
- ◆ NetMan

For more information on the access levels, see the "Administration" chapter. For more information on the menus, submenus and commands on the **Main Menu**, see the "Menu interface" chapter.

For a hierarchical overview of the Main menu and its submenus and commands, see the "PARTNER ACS 1600 DSL module menu hierarchy" appendix.

Default values

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

For example, if you press ENTER when the following message displays,

```
Enter a new subnet mask for this interface:  
(255.255.255.0) -)
```

the PARTNER ACS 1600 DSL module sets 255.255.255.0 as the subnet mask value.

Restarting

Any time you use the Menu interface to make changes or change any of the physical characteristics of the PARTNER ACS 1600 DSL module, such as the MAC address of the Ethernet port, you must restart the PARTNER ACS 1600 DSL module for the new settings to take effect.

For more information, see the "Logging on" section earlier in this chapter.

Auto Log off

After three minutes of inactivity, the PARTNER ACS 1600 DSL module automatically logs off.

To restart, you must log on to the system again. This does not affect routing functionality - network traffic continues to process. For more information, see the "Logging on" section earlier in this chapter.

Exiting

To exit the menu interface:

- ◆ On the **Main Menu**, press ESC.

Verifying an IP address

When running the PARTNER ACS 1600 DSL module, there are several different IP addresses:

- ◆ One for a computer running Windows 95/98/Me/2000.
- ◆ One or more for the PARTNER ACS 1600 DSL module.

A computer running Windows 95/98/Me/2000

To verify the IP address of your computer:

1. Click the **Start** button, point to Settings, and then click **Control Panel**.
2. In Control Panel, double-click the **Network** icon, and then click the **Configuration** tab.
3. In **The following network components are installed** list, click **TCP/IP**, and then click **Properties**.
4. Click the **IP Address** tab, and note the IP address that displays.

You can also run the **winipcfg** command at the command prompt to verify the IP address of your computer.

The PARTNER ACS 1600 DSL module

To verify the IP address of the PARTNER ACS 1600 DSL module:

1. On the **Main Menu**, select **Reports Menu**.

The **Reports Menu** displays.

```
*****  
*                               *  
*               Reports Menu   *  
*****
```

- C. Display Current Configuration
- N. Display Network Statistics
- I. Display Interface Statistics
- M. Display Media Statistics
- R. Display Route Table
- A. Display ARP Table
- B. Display Bridge Forwarding Database
- S. Display Bridge Status
- P. Display PPP Authorization Entries
- U. Display System Uptime

2. Select **Display Current Configuration**.
3. Note the IP addresses for the Ethernet and SDSL Interface.

4. Menu interface

This chapter provides information on the PARTNER ACS 1600 DSL module menus, submenus, and commands.

Menus, submenus, and commands that display on the Main Menu depend on the access level that you use to log on or the options that you configure.

For an outline of the PARTNER ACS 1600 DSL module menu structure, see the "PARTNER ACS 1600 DSL module menu hierarchy" appendix.

Select a menu, submenu, or command to display its options.

To return to the previous menu or to exit the program from the Main Menu, press ESC.

Main Menu

The **Main Menu** contains following submenus.

- 1. Reports Menu
- 2. Configure IP Router
- 3. Configure Bridge
- 5. Configure WAN
- 6. Configure LAN
- 7. Configure SNMP
- 8. Configure Login
- 9. System Utilities
- I. Interworking Connections
- D. Configure DHCP Server
- N. Configure NAT
- T. Derived Timing
- Z. Diagnostics Menu
- C. Command Line Interface
- P. VoicePath Configure
- M. Manage MGCP/NCS Embedded Client
- E. CopperCom Call Control
- E. Call Control Settings
- U. Configure Tollbridge Voice Client

1. Reports Menu

The **Reports Menu** contains the following submenus and commands.

C. Display Current Configuration

Displays the following configuration settings and information about the installed Interfaces.

Information may or may not display, depending on the Interfaces installed.

- **Software version** – version of ACOS.
- **ICTRL** - For manufacturing use only.
- **I - Cache** – instruction cache; enabled or disabled.
- **D - Cache** – data cache; enabled or disabled.
- **SYPCR register SWRI bit** - generate NMI (debug) or generate hard reset (normal).
- **Routing Information Protocol (RIP)** – enabled or disabled globally.
- **Bridging** – enabled or disabled globally.
- **Bridge Database Aging Time** – 1-3600 seconds (default = 300 seconds).
- **Spanning Tree** - enabled or disabled globally.
- **Spanning Tree bridge priority** - 1-65,535 (default = 32,768).
- **Spanning Tree hello time** - 1-10 seconds (default = 2 seconds).
- **Spanning Tree max age** - 6-40 seconds (default = 20 seconds).
- **Spanning Tree forward delay** - 4-30 seconds (default = 15 seconds).
- **Simple Network Management Protocol (SNMP)** - enabled or disabled.
- **SNMP System Contact** - user-defined (maximum = 39 alphanumeric characters).
- **SNMP System Name** - user-defined (maximum = 39 alphanumeric characters).
- **SNMP System Location** - user-defined (maximum = 39 alphanumeric characters).
- **SNMP Community** - name must match the SNMP host (maximum = 39 alphanumeric characters); If SNMP is

enabled and the SNMP Community Name is null, SNMP goes into read-only mode.

- **SNMP Trap Host IP Address** - IP address of the SNMP trap host.
- **Telnet Server Port** - port number of the Telnet server.
- **DNS Server IP Address** – IP address of the DNS Server.
- **DNS Server Timeout**
- **Application Information** - loaded program files.
- **Support File Information** - loaded support files.
- **Interface type** – enabled or disabled.
 - **Electrical Interface** – WAN interface type: RS-530 or v.35.
 - **RIP** - enabled or disabled.
 - **Poisoned Reverse** - enabled or disabled.
 - **Dynamic Host Configuration Protocol (DHCP) Client** – enabled or disabled.
 - **Bridging** - enabled or disabled.
 - **Spanning Tree** - enabled or disabled.
 - **Port Priority** - 0-255 (default = 128).
 - **Path Cost** - 1-65,535 (default = 32,768).
 - **DataLink Protocol** - Totally Transparent, Raw HDLC, Cisco compatible HDLC, IP-Plus compatible HDLC, PPP (over Raw HDLC), ATM or Frame Relay.
 - **SDSL Mode** - Customer Premises Equipment (CPE) or Central Office (CO). For development purposes only.
 - **Line Rate** - Auto, Fixed, 1152 Kbps, 768 Kbps, 384 Kbps, 192 Kbps, 2320 Kbps or manually set.
 - **PPP Auth Type** – None, PAP Client, PAP Server, CHAP Client or CHAP Server.
 - **Userid** – PAP User ID.
 - **Password** – PPP password.
 - **Peer Name**
 - **Frame Relay Management**
 - **DLCI** – RAW (No Encapsulation), Proprietary Voice DLCI, RFC 1490 or ATM RFC 1483 (Tunneling).
 - **VPI/VCI** – RAW (AAL5), RAW (AAL0), Proprietary Voice, RFC 1483 (using VC Muxing), RFC 1483 (with LLC Encapsulation), RFC 2364 (PPPoATM with LLC Encapsulation) or RFC 2364 (PPPoATM using VC Muxing).

- **ID** – host ID.
- **IPAddr** - IP Addresses for the ID (maximum = 8).
- **IPMask** - number of bits reserved for the host ID (maximum = 8).
- **Priority** – normal or high.
- **Ethernet address** – Ethernet for the Interface.
- **Full duplex** – enabled or disabled (Ethernet).

N. Display Network Statistics

Displays the **Network Statistics** submenu, which contains commands to display the following statistical information about the packets handled by the Ethernet and WAN ports:

C. Display ICMP Statistics

I. Display IP Statistics

T. Display TCP Statistics

U. Display UDP Statistics

Z. Clear a Network Statistic

Displays the **Clear Statistics** submenu, which contains the following commands:

C. Clear ICMP Statistics

I. Clear IP Statistics

T. Clear TCP Statistics

U. Clear UDP Statistics

Select your choice.

I. Display Interface Statistics

Displays the following statistical information about the total packets handled between layer 2 and layer 3 on a per port basis.

Type the number of the Interface, the number of the port, and then choose a command from the **Interface Statistics** submenu.

Commands may or may not display, depending on the modules installed.

A. Display ARP Statistics

I. Display Interface Statistics

B. Display Bridge Statistics**

D. Display DLCI Statistics

A. Display ATM PVC Statistics

Z. Clear ATM PVC Statistics

Z. Clear a Statistic

Displays the **Clear Statistics** submenu, which contains the following commands:

A. Clear ARP Statistics

I. Clear Interface Statistics

B. Clear Bridge Statistics

D. Clear Frame Relay DLCI Statistics

Select your choice.

**You must enable bridging for this table to display. For more information on enabling bridging, see the "PARTNER ACS 1600 DSL module basics" chapter.

M. Display Media Statistics

Displays the following statistical information about the total packets handled (Layer 2) on a per port basis.

Type the number of the Interface, and then choose a command from the **Media Statistics** submenu. Commands may or may not display, depending on the protocols configured.

F. Display Frame Relay Statistics

S. Display Serial Statistics

Z. Clear a Statistic

Displays the **Clear Statistics** submenu, which contains the following commands:

F. Clear Frame Relay DLCI Statistics

S. Clear Serial Statistics

Select your choice.

1. Display ATM Statistics

Z. Clear ATM Statistics

1. Display ENET Statistics

Z. Clear ENET Statistics

1. Display POTS Statistics

Z. Clear POTS Statistics

Select your choice.

R. Display Route Table

Displays the following information about statically configured routes and dynamically learned ones:

- **NETWORK ADDRESS** - destination address.
- **NETMASK** - IP subnet mask; number of bits reserved for the host ID.
- **GATEWAY ADDRESS** - IP address of packets sent to destination.
- **interface** - IP address of outgoing interface.
- **Metric** - number of hops (routers) required to reach the specified gateway.
- **Type** – static or dynamic.

A. Display ARP Table

The Address Resolution Protocol (ARP) obtains the Ethernet MAC address for a known IP address.

Displays the following information about mappings between Ethernet Media Access Control (MAC) addresses (hardware addresses) and IP addresses:

- **IP ADDRESS** - IP address that corresponds to the MAC address.
- **ETHERNET ADDRESS** - Ethernet address of the device; assigned by the manufacturer.
- **interface** - the interface for the Ethernet address.

B. Display Bridge forwarding database

Displays the following information about mappings between Ethernet addresses and devices connected to the LAN:

- **ETHERNET ADDRESS** - Ethernet address of the device; assigned by the manufacturer.
- **interface** - the interface for the Ethernet address.
- **PORT** - the port for the Ethernet interface.
- **TIMER** - number of seconds until this entry deletes from the database. The time counts down from the Bridge database aging time value, in one-second intervals; at zero, the entry deletes from the database.

You must enable bridging for this table to display. For more information on enabling bridging, see the "PARTNER ACS 1600 DSL module basics" chapter. For more information on the maximum aging time value, see "Configure bridge" later in this chapter.

S. Display Bridge status

Displays the following information about bridging:

- **interface** - interface for the active slot for bridging.
- **PORT** - port for the preceding interface.
- **Spanning Tree Protocol (STP)** - enabled or disabled.
- **STATE** - Spanning tree state: disabled, blocking, listening, learning or forwarding.
- **ROOT** - root port for the bridge: yes or no.
- **DESIGNATED** - designated port for the bridge: yes or no.
- **TIMERS** - current values of the spanning state timer (first value) and the hello timer (second value).

The spanning state timer value is for listening or learning states and counts down from the forward delay time to zero.

The hello timer value is valid only if the active port is the Root Bridge of the network. It counts down from the hello time to zero.

- **Root priority** - priority of the root bridge on the network.
- **Id** - Ethernet MAC address of the root bridge on the network.

P. Display PPP Authorization Entries

Displays the following information about PPP authorization entries:

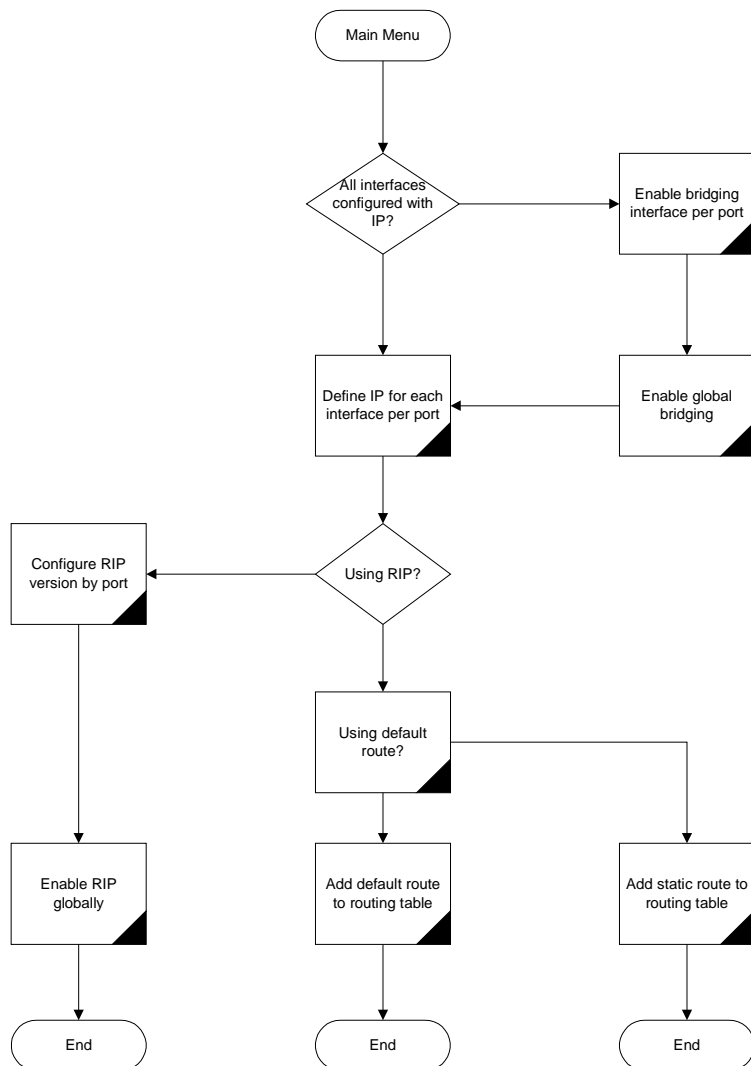
- **Authorization type** - None, Password Authentication Protocol (PAP) Client, PAP Server, Challenge Handshake Authentication Protocol (CHAP) Client or CHAP Server.
- **Slot #/Interface #/Port #** - active slot for the PPP interface.
- **Userid/Password/Peer Name** – values for the PPP interface.

U. Display System Uptime

Displays the amount of time elapsed during the active session.

2. Configure IP Router

The **Router Configuration Menu** contains the following submenus and commands.



You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information, see the "PARTNER ACS 1600 DSL module basics" chapter.

C. Configure Port IP Address

Sets the IP address and subnet mask for the selected interface.

Type the number of the Interface, the number of the port or connection to configure, and then enter the following:

- New IP address
- New subnet mask
- Priority

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

U. Unconfigure Port IP Address

Deletes the IP address of the selected interface. Type the number of the port to unconfigure, confirm, and then press ENTER.

S. Add/Remove a Static Route

Displays the **Router Modification Menu**, which contains the following commands:

A. Add a Static Route

Creates a static route and adds it to the Route Table.

Type the following information for the route you want to add, and then press ENTER:

- Destination (IP) address
- Network mask
- Gateway

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

R. Remove a Route

Deletes a static route from the Route Table. Type the IP address of the route to remove, and then press ENTER.

F. Add/Change Default Route

Creates or changes the default static route, and then adds it to the Route Table. Type the Gateway address for the default route, and then press ENTER.

T. Remove the Default Route

Deletes the default static route from the Route Table. Type the IP address to remove, and then press ENTER.

D. Display Route Table

Displays the following information about statically configured routes and dynamically learned ones:

- **NETWORK ADDRESS** - destination address.
- **NETMASK** - IP subnet mask; number of bits reserved for the host ID.
- **GATEWAY ADDRESS** - IP address of packets sent to destination.
- **interface** - IP address of outgoing interface.
- **Metric** - number of hops (routers) required to reach the specified gateway.
- **Type** – static or dynamic.

R. Enable/Disable RIP

Enables and disables the Routing Information Protocol (RIP). RIP sends routing information from one router to adjacent routers, dynamically "learning" network topology.

When you enable RIP, the PARTNER ACS 1600 DSL module stores sent routing information in the Route Table. For more information on the Route Table, see "Reports Menu" earlier in this chapter.

V. Configure RIP Version by Port

Sets the RIP version for the selected port.

Type the number of the Interface, the port number, and then select one of the following RIP Versions:

0. Disabled
1. Version 1 Broadcast
2. Version 2 Broadcast
3. Version 2 Multicast

P. Configure RIP Poisoned Reverse by Port

Enables and disables RIP Poisoned Reverse for the selected interface.

Type the number of the Interface, and then enable or disable.

N. Configure DNS Client

Displays the **DNS Client Menu**, which contains the following commands to configure the Domain Name Server (DNS) client:

A. Set DNS Server IP Address

Sets the IP address of the DNS Server. Type the DNS Server IP address, and then press ENTER.

T. Set DNS Server Timeout

Sets the DNS Server Timeout, a value between 5 - 20 seconds (default = 5 seconds). Type the DNS Server Timeout value, and then press ENTER.

S. Display DNS Cache and Statistics

Displays information about the data in the DNS cache.

H. Configure DHCP Client

Enables and disables the Dynamic Host Configuration Protocol (DHCP) client for the selected Interface. Type the number of the Interface, the number of the port, and then enable or disable.

L. Configure DHCP Relay

Displays the **DHCP Relay Menu**, which contains the following commands to configure the DHCP Relay:

E. Enable/Disable DHCP Relay

Enables and disables the DHCP Relay.

When you enable the DHCP Relay, you must also enter a new DHCP server IP address. Type the DHCP Server IP address, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

C. Configure DHCP Relay

Sets the DHCP server IP address. Type the DHCP Server IP address, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

S. Display DHCP Relay Statistics

Displays the following information about the DHCP Relay:

- DHCP client requests forwarded to DHCP server
- DHCP client requests dropped
- Server responses forwarded to DHCP clients
- Server responses dropped
- Unknown server responses
- Server requests timed out

T. Configure Telnet Server Port

Sets the port for the Telnet Server (default = 23).

Type the number of the port, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

F. Configure IP Filtering

Displays the **IP Filtering Configuration Menu**, which contains the following submenu and commands to configure IP filtering. For more information, see the "IP Filtering" appendix.

P. Choose port for IP filtering

Sets the port on which to use IP filtering.

Type the number of the interface, the number of the port (if applicable), and then press ENTER.

F. Globally enable/disable input or output filters

Enables and disables the input and output filters for all installed interfaces.

You must globally enable the filters for the associated filtering to work.

Follow the on-screen instructions to enable or disable both the input and output filters globally.



T. Toggle input or output type filters to view/edit

Switches between the input and output filter types.

The filter type that you set here determines what displays when you select any of the following commands:

- **Display all filters of the chosen type**
- **Insert a new or buffered filter of the chosen type**
- **Append a new or buffered filter to the end of the list**
- **Edit filter of the chosen type**
- **Copy filter operations menu**
- **Delete one filter of the chosen type**
- **Delete all filters of the chosen type**

D. Display all filters of the chosen type

Displays all filters of the type set with the **Toggle input or output type filters to view/edit** command.

I. Insert a new or buffered filter of the chosen type

Adds a new filter of the type set with the **Toggle input or output type filters to view/edit** command anywhere in the list that displays when you select **Display all filters of the chosen type**.

Type the number of the filter before which you want to insert the new filter, and then follow the on-screen messages to enter the following information:

- Filter state – Idle or Active
- Filter action – Pass or Discard
- Filter protocol – IP, ICMP, IGMP, TCP, UDP
- Filter Source IP Low Address
- Filter Source IP High Address
- Filter Source Port Low
- Filter Source Port High
- Filter Destination IP Low Address
- Filter Destination IP High Address
- Filter Destination Port Low
- Filter Destination Port High

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

A. Append a new or buffered filter to the end of the list

Adds a new filter of the type set with the **Toggle input or output type filters to view/edit** command to the end of list that displays when you select **Display all filters of the chosen type**.

Type **Y**, and then follow the on-screen messages to enter the following information:

- Filter state – Idle or Active
- Filter action – Pass or Discard
- Filter protocol – IP, ICMP, IGMP, TCP, UDP
- Filter Source IP Low Address
- Filter Source IP High Address
- Filter Source Port Low
- Filter Source Port High
- Filter Destination IP Low Address
- Filter Destination IP High Address
- Filter Destination Port Low
- Filter Destination Port High

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

E. Edit filter of the chosen type

Displays all filters of the type that you set with the **Toggle input or output type filters to view/edit** command that you can edit.

Type the number of the filter to edit, and then follow the on-screen messages to enter the following information:

- Filter state – Idle or Active
- Filter action – Pass or Discard
- Filter protocol – IP, ICMP, IGMP, TCP, UDP
- Filter Source IP Low Address
- Filter Source IP High Address
- Filter Source Port Low – TCP or UDP packets only
- Filter Source Port High - TCP or UDP packets only
- Filter Destination IP Low Address
- Filter Destination IP High Address
- Filter Destination Port Low

- Filter Destination Port High

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

C. Copy filter operations menu

Displays the **IP Filter Copy to Buffer Menu**, which contains the following commands for all filters of the type that you set with the **Toggle input or output type filters to view/edit** command.

C. Copy a filter of the chosen type to the buffer

Copies the filter that you select to the buffer. Type the number of the filter to copy, and then press enter.

D. Display the filter in the copy buffer

Displays the following information about the filter in the copy buffer:

- **num** – number of the filter
- **state** – Idle or Active
- **action** – Pass or Discard
- **srcLwP** - Filter Source Port Low – TCP or UDP packets only
- **srcHiP** - Filter Source Port High - TCP or UDP packets only
- **source.ip.addr.low** - Filter Destination IP Low Address
- **source.ip.addr.high** - Filter Source IP High Address
- **proto** - Filter protocol – IP, ICMP, IGMP, TCP, UDP
- **mask** – ICMP or TCP only
- **dstLwP** - Filter Destination Port Low
- **dstHiP** - Filter Destination Port High
- **dest.ip.addr.low** - Filter Destination IP Low Address
- **dest.ip.addr.high** - Filter Destination IP High Address

E. Edit the filter in the copy buffer

Edits the filter in the copy buffer.

Follow the on-screen messages to enter the following information:

- Filter state – Idle or Active
- Filter action – Pass or Discard
- Filter protocol – IP, ICMP, IGMP, TCP, UDP
- Filter Source IP Low Address
- Filter Source IP High Address
- Filter Source Port Low – TCP or UDP packets only
- Filter Source Port High - TCP or UDP packets only
- Filter Destination IP Low Address
- Filter Destination IP High Address
- Filter Destination Port Low
- Filter Destination Port High

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

X. Deletes the filter in the copy buffer

Deletes the filter in the copy buffer.

X. Delete one filter of the chosen type

Deletes the filter that you select from the copy buffer. Type the number of the filter to delete and then press ENTER.

Z. Delete all filters of the chosen type

Deletes all filters in the copy buffer.

S. Show IP filtering statistics

Displays the total number of input and output data packets filtered.

Y. Clear IP filtering statistics

Deletes all data from the **Show IP filtering statistics** command.

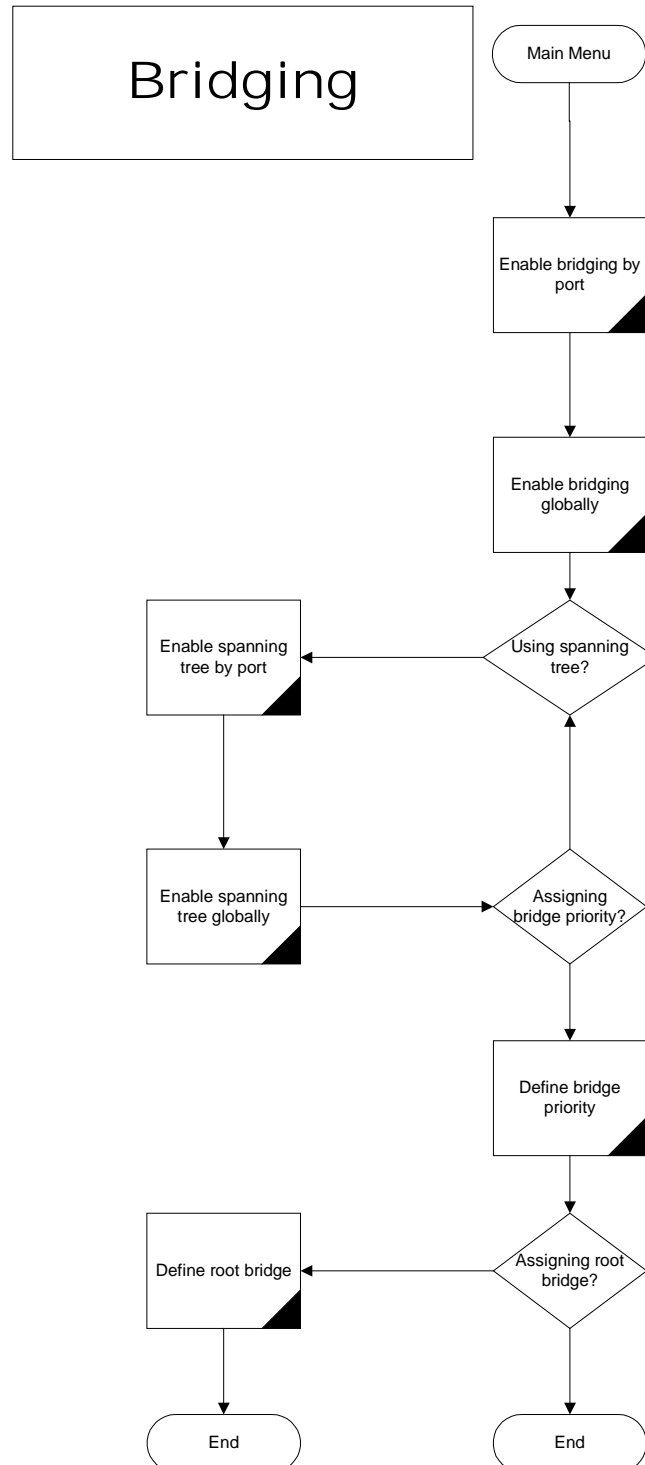
D. Display Route Table

Displays the following information about statically configured routes and dynamically learned ones:

- **NETWORK ADDRESS** - destination address.
- **NETMASK** - IP subnet mask; number of bits reserved for the host ID.
- **GATEWAY ADDRESS** - IP address of packets sent to destination.
- **interface** - IP address of outgoing interface.
- **Metric** - number of hops (routers) required to reach the specified gateway.
- **Type** – static or dynamic.

3. Configure Bridge

Displays the **Bridge Configuration Menu**, which contains the following submenu and commands.



Your settings display in the **Display Current Configuration** command in the **Reports Menu**. For more information, see "Reports Menu" earlier in this chapter.

You must enable bridging both globally and by port number, and then restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "PARTNER ACS 1600 DSL module basics" chapter.

G. Enable/Disable Bridging Globally

Enables and disables bridging for all installed interfaces.

P. Enable/Disable Bridging by Port

Enables and disables bridging by port.

Type the number of the Interface to enable or disable, and then press ENTER.

A. Configure Bridge Aging Timer

Sets the bridge database aging time, a value between 1-3,600 seconds (default = 300 seconds). Type the bridge aging time value, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

The time counts down in one-second intervals; at zero, the entry deletes from the database.

T. Enable/Disable Spanning Tree Globally

Enables and disables the Spanning Tree protocol for all installed interfaces.

O. Enable/Disable Spanning Tree by Port

Enables and disables the Spanning Tree protocol for the selected Interface.

Type the number of the Interface, and then select enable or disable.

R. Configure Spanning Tree Bridge Priority

Sets the Spanning Tree bridge priority, a value between 1-65,565 (default = 32,768). Type the Spanning Tree bridge priority value, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

The Spanning Tree algorithm selects the bridge with the lowest priority on the network as the Root Bridge.

Q. Configure Spanning Tree Port Priority

Sets the Spanning Tree priority by port, a value between 0-255 (default = 128). The lower the value, the higher the priority.

Type the number of the Interface to configure, the port priority value, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.



The spanning tree algorithm uses the **spanning tree bridge priority** to determine which bridge to use as the Ethernet LAN destination when two or more bridges are bridging between the same LAN.

H. Configure Spanning Tree Hello Time

Sets the Spanning Tree hello time, a value between 1-10 seconds (default = 2 seconds). Type the hello time value, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

S. Configure Spanning Tree Max Age

Sets the Spanning Tree max age, a value between 6-40 seconds (default = 20 seconds). Type the max age value, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

F. Configure Spanning Tree Forward Delay

Sets the Spanning Tree forward delay, a value between 4-30 seconds (default = 15 seconds). Type the forward delay value, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

C. Configure Spanning Tree Path Cost

Sets the Spanning Tree path cost, a value between 1- 65,535 (default = 32,768).

Type the number of the Interface to configure, type the path cost value, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

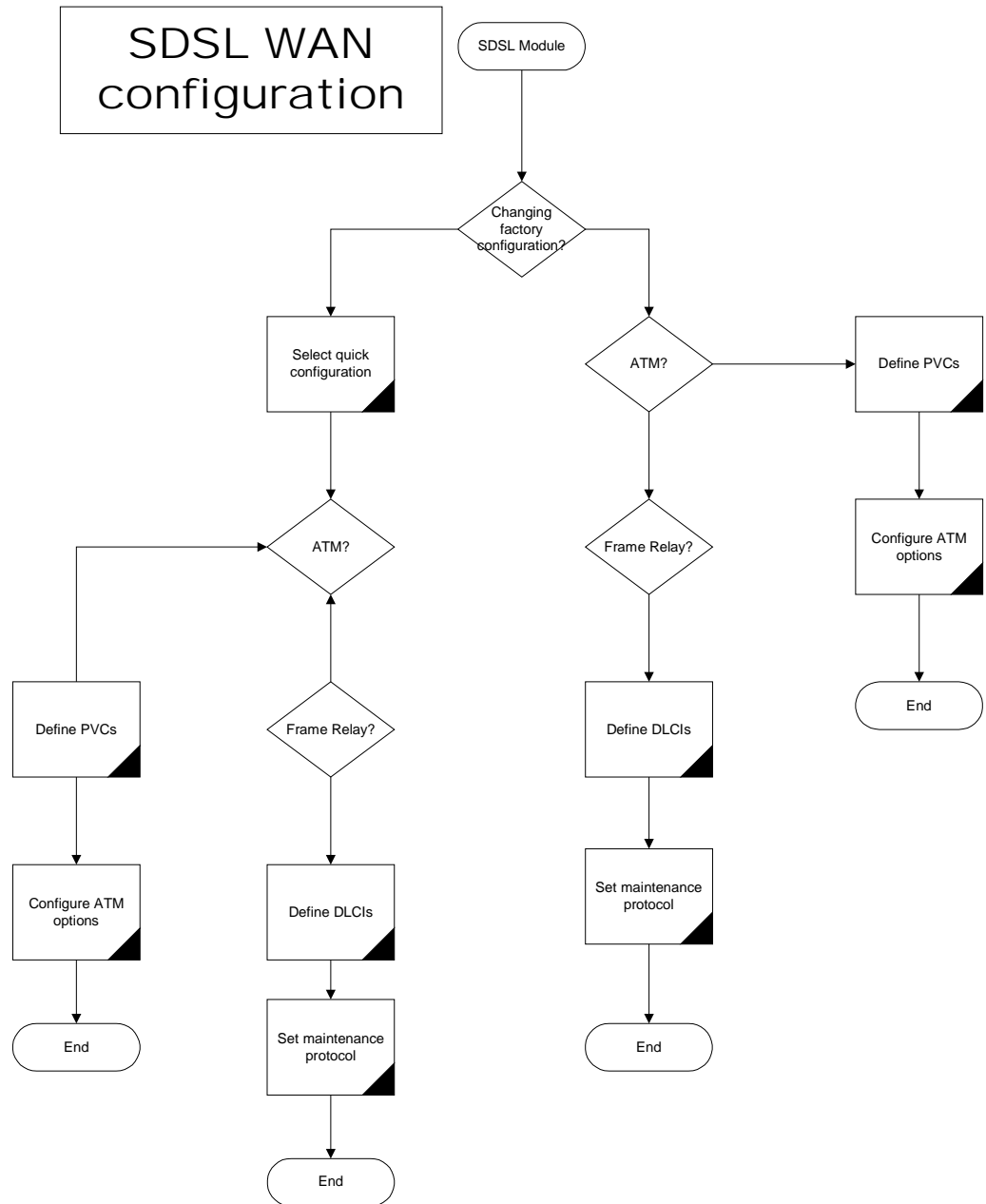
When there are multiple paths to the Root Bridge, the Spanning Tree algorithm selects the port with the lowest total path cost as the route port.

D. Delete Bridge Forwarding Database Entry

Deletes an Ethernet address from the bridge forwarding database. Type the Ethernet address to delete, and then press ENTER.

5. Configure WAN

Displays the **WAN Configuration Menu**, which contains the following submenu and commands. Commands may or may not display, depending on the datalink protocol that you select and the Interface installed.



0. Quick Configuration

Displays the **Quick Configuration** submenu, which contains the following commands to quickly configure the NetEngine PARTNER ACS 1600 DSL module .

1. **Lucent Stinger (Conexant Autobaud, Payload Scrambling)**
2. **Nokia (Auto Cycle)**
3. **Copper Mountain (Auto Sense)**
4. **Paradyne (Framed 784Kbps, Payload Scrambling)**
5. **AccessLan CPE**
6. **Nortel IMAS**
7. **ATM (Unframed, 1152Kpbs fixed)**
8. **Frame Relay (784Kpbs fixed)**

Select your choice.

The PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "PARTNER ACS 1600 DSL module basics" chapter.

1. Configure Datalink Protocol

Displays the **WAN Datalink Protocol Configuration Menu**, which contains the following commands to set the data link control protocol for the active interface.

1. **Lucent Stinger (Conexant Autobaud, Payload Scrambling)**
2. **Nokia (Auto Cycle)**
3. **Copper Mountain (Auto Sense)**
4. **Paradyne (Framed 784Kbps, Payload Scrambling)**
5. **AccessLan CPE**
6. **ATM**
7. **Frame Relay**

Select your choice.

The IAD automatically restarts.

Your settings display in the **Display Current Configuration** command in the **Reports Menu**. For more information, see "Reports Menu" earlier in this chapter.

2. Configure Physical Interface

Configure Physical Interface submenus and commands may or may not display, depending on the Interface that you select.

Universal Serial Interface (USI) Mode

Displays **USI Configuration Menu**, which contains the following commands:

1. Set WAN interface type

Displays the **USI Interface Type** submenu, which contains the following commands that set the electrical configuration for the USI WAN mode.

- 1. RS-530**
- 2. V.35**

Select your choice.

2. Configure Data Rate and Clocking Options

Displays the **Serial Interface Clock Speed Option Menu**, which contains the following commands to set the receive clock speed:

- 1. Track USI speed to SDSL speed**
- 2. Set Clock Speed Manually**

Displays the **USI Datarate** submenu, which contains the following commands that set the electrical configuration for the USI WAN mode.

- 1. Externally provided**
- 2. 5.0 MBps**
- 3. 2.083 MBps**
- 4. 1.562 MBps**
- 5. 520 KBps**
- 6. 112 KBps**

Select your choice.

- 3. Use Internal Receive Clock**
- 4. Use External Receive Clock**

Select your choice.

SDSL Mode

Displays **SDSL Configuration** submenu, which contains the following commands to set the SDSL mode or speed.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

1. Toggle SDSL Mode (CO or CPE)

2. Set SDSL Speed to Auto Cycle (Nokia)

Displays the **Auto Cycle First Speed Option** submenu, which contains the following commands to set the initial speed.

- 1. 1536 Kbps**
- 2. 1152 Kbps**
- 3. 768 Kbps**
- 4. 384 Kbps**
- 5. 192 Kbps**

Select your choice.

3. Set SDSL Speed to Auto Sense (Copper Mountain)

4. Enable/Disable Conexant AutoBaud Mode

Enables and disables the Conexant AutoBaud rate adaptation mode.

5. Set SDSL Sync Delay (Lucent)

Sets the SDSL sync delay. Follow the on-screen messages to disable AutoBaud. You must disable AutoBaud to set the SDSL sync delay.

6. Set SDSL to AccessLan CPE Mode

7. Set SDSL Speed Manually

Sets the SDSL speed, a value between 144-2,320 Kbps. Type the SDSL data rate value, and then press ENTER.

8. Restart SDSL Activation Sequence

9. SDSL Interface Mode (Bit Order)

A. Enable/Disable SDSL AutoBaud Debug Messages

Enables and disables the display of SDSL AutoBaud debugging messages. Select to enable. Select a second time to disable.

D. Enable/Disable SDSL Debug Messages

Enables and disables the display of SDSL debugging messages. Select to enable. Select a second time to disable.

Y. Enable/Disable Sync Msgs

Enables and disables the display of configuration synchronization messages. Select to enable. Select a second time to disable.

P. Preactivation Debug Mode

Enables and disables the preactivation debug messages. Select to enable. Select a second time to disable.

Select your choice.

3. Configure DLCIS (Frame Relay)

Displays the **FR DLCI Config Menu**, which contains the following commands to set the current DLCI value.

1. Add New DLCI

Type the DLCI number, press ENTER, and then choose a command from the **FR Encapsulation Configuration** submenu.

- 1. RAW (No Encapsulation)**
- 2. Proprietary Voice DLCI**
- 3. RFC 1490**
- 4. ATM RFC 1483 (Tunneling)**

Select your choice, and then choose a command from the **FR DLCI Options** submenu.

1. Configure Transmit CIR

Follow the on-screen messages to enter the following information.

Questions below may or not display, depending on the options that you select.

- Transmit Committed Information Rate (CIR)
- Committed burst size (Bc)
- Circuit Throughput
- Excess burst size (Be)

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

2. Configure Receive CIR

Follow the on-screen messages to enter the following information. Questions below may or not display, depending on the options that you select.

- Receive Committed Information Rate (CIR)
- Committed burst size (Bc)
- Circuit Throughput
- Excess burst size (Be)

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

3. Configure FRF.12 Fragmentation

Displays the **End-to-End Fragmentation Configuration** submenu, which contains the following commands.

1. Enable/Disable End-to-End FRF.12

Enables and disables End-to-End FRF.12.

2. Set Fragmentation Size

Sets the maximum fragmentation size, a value between 100-1,600 bytes.

Type the fragmentation size, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

Select your choice.

2. Modify Existing DLCI

Type the DLCI number, press ENTER, and then choose a command from the **FR Encapsulation Configuration** submenu.

1. **RAW (No Encapsulation)**
2. **Proprietary Voice DLCI**
3. **RFC 1490**
4. **ATM RFC 1483 (Tunneling)**

Select your choice, and then choose a command from the **FR DLCI Options** submenu.

1. Configure Transmit CIR

Follow the on-screen messages to enter the following information.

Questions below may or not display, depending on the options that you select.

- Transmit Committed Information Rate (CIR)
- Committed burst size (Bc)
- Circuit Throughput
- Excess burst size (Be)

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

2. Configure Receive CIR

Follow the on-screen messages to enter the following information. Questions below may or not display, depending on the options that you select.

- Receive Committed Information Rate (CIR)
- Committed burst size (Bc)
- Circuit Throughput
- Excess burst size (Be)

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

3. Configure FRF.12 Fragmentation

Displays the **End-to-End Fragmentation Configuration** submenu, which contains the following commands.

1. Enable/Disable End-to-End FRF.12

Enables and disables End-to-End FRF.12.

2. Set Fragmentation Size

Sets the maximum fragmentation size, a value between 100-1,600 bytes.

Type the fragmentation size, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

Select your choice.

3. Delete DLCI

Type the number of the port to delete, and then press ENTER.

4. Show Current DLCIs

Displays encapsulation information about the active DLCI values on per port basis.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “PARTNER ACS 1600 DSL module basics” chapter.

3. Configure PVCS (ATM)

Displays the **ATM PVC Config Menu**, which contains the following commands to set the current Permanent Virtual Circuit (PVC) Virtual Port Identifier (VPI) and Virtual Circuit Identifier (VCI) values by port:

1. Add New PVC

Type the VPI, the VCI, and then choose a command from the **ATM Encapsulation Configuration** submenu.

1. AAL5 (None)

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

1. CBR

2. UBR

Select your choice, and then follow the on-screen messages to set the Peak Cell Rate (PCR) value.

2. AAL0 (None)

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

- 1. CBR**
- 2. UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

3. Proprietary Voice

Select for Voice encapsulation over a specific PVC.

4. RFC 1483 (using VC Muxing)

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

- 1. CBR**
- 2. UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.



This options supports either routing or bridging, but not both.

5. RFC 1483 (with LLC Encapsulation)

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

- 1. CBR**
- 2. UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

6. RFC 2364 (PPPoATM with LLC Encapsulation)

Displays the following commands to set the PPP authorization type:

- 0. None**
- 1. PAP Client**
- 2. PAP Server**
- 3. CHAP Client**
- 4. CHAP Server**

Select your choice, and then follow the on-screen messages to enter the following:

- New PPP Userid
- New PPP Password
- New CHAP Peer Name

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

1. **CBR**
2. **UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

7. RFC 2364 (PPPoATM using VC Muxing)

Displays the following commands to set the PPP authorization type:

0. **None**
1. **PAP Client**
2. **PAP Server**
3. **CHAP Client**
4. **CHAP Server**

Select your choice, and then follow the on-screen messages to enter the following:

- New PPP Userid
- New PPP Password
- New CHAP Peer Name

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

1. **CBR**
2. **UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

2. Modify Existing PVC

Type the virtual port identifier (VPI), the virtual circuit identifier (VCI) and then choose a command from the **ATM Encapsulation Configuration** submenu.

1. RAW (AAL5)

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

1. **CBR**
2. **UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

2. RAW (AAL0)

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

- 1. CBR**
- 2. UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

3. Proprietary Voice

Select for Voice encapsulation over a specific PVC.

4. RFC 1483 (using VC Muxing)

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

- 1. CBR**
- 2. UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

This option supports either routing or bridging, but not both.

5. RFC 1483 (with LLC Encapsulation)

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

- 1. CBR**
- 2. UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

6. RFC 2364 (PPPoATM with LLC Encapsulation)

Displays the following commands to set the PPP authorization type:

- 0. None**
- 1. PAP Client**
- 2. PAP Server**
- 3. CHAP Client**
- 4. CHAP Server**

Select your choice, and then follow the on-screen messages to enter the following:

- New PPP Userid
- New PPP Password
- New CHAP Peer Name



Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

1. **CBR**
2. **UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

7. RFC 2364 (PPPoATM using VC Muxing)

Displays the **ATM Service Category Configuration** submenu, which contains the following commands to set the service category:

1. **CBR**
2. **UBR**

Select your choice, and then follow the on-screen messages to set the PCR value.

3. Delete PVC

Type the number of the port to delete, and then press ENTER.

4. Show Current PVCs

Displays statistical information about the active PVC values on per port basis.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “PARTNER ACS 1600 DSL module basics” chapter.

4. Configure FR Options (Frame Relay)

Displays the **Frame Relay Options** submenu, which contains the following commands to set the Frame Relay options

1. Configure Fragmentation

Displays the **FR Fragmentation Configuration** submenu, which contains the following commands to configure fragmentation.

1. Configure FRF.12 Fragmentation

Displays the **FR FRF.12 Configuration** submenu, which contains the following commands.

1. Enable/Disable FRF.12

Enables and disables FRF.12 fragmentation.

2. Enable Automatic Fragment Sizing

3. Set Manual Fragment Size

Sets the maximum fragment size, a value between 0-50 ms or 100-1600 bytes.

Type the fragment size, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

2. Configure Copper Mountain Fragmentation

Displays the **FR FRF.12 Configuration** submenu, which contains the following commands.

1. Enable/Disable CuMtn Fragmentation

Enables and disables Copper Mountain fragmentation.

2. Set Real-Time DLCI

Sets a real time value for a DLCI port.

Type the number of the port, and then press ENTER.

2. Configure Maintenance Protocol

Displays the **Frame Relay Maintenance Protocol** submenu, which contains the following commands to set the Frame Relay maintenance protocol:

0. None

1. CCITT Q.933 Annex a Network

2. CCITT Q.933 Annex a User

3. CCITT Q.933 Annex a Both

4. ANSI T1.617 Annex D Network

5. ANSI T1.617 Annex D User

6. ANSI T1.617 Annex D Both

7. LMI Network (FRF.1.1)

8. LMI User (FRF.1.1)

9. LMI Both (FRF.1.1)

Select your choice.

3. Configure Congestion Parameters

Displays the **FR Congestion Configuration** submenu, which contains the following commands to configure fragmentation.

1. Configure Transmit Congestion Parameters

Follow the on-screen messages to enter the following transmit congestion parameter information.

- FECN/BECN condition set size
- FECN/BECN condition clear size
- FECN/BECN maximum number of bytes to store

2. Configure Receive Congestion Parameters

Follow the on-screen messages to enter the following receive congestion parameter information.

- FECN/BECN condition set size
- FECN/BECN condition clear size
- FECN/BECN maximum number of bytes to store

Select your choice.

Your settings display in the **Display Current Configuration** command in the **Reports Menu**. For more information, see "Reports Menu" earlier in this chapter.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "PARTNER ACS 1600 DSL module basics" chapter.

4. Configure ATM Options (ATM)

Displays the **ATM Configuration Menu**, which contains the following submenus and commands to configure the ATM options.

1. Configure Payload Scrambling

Enables and disables payload scrambling.

2. Configure F4 OAM VPI

Sets the F4 OAM VPI value, a value between 0 and 255. Type the VPI value, and then press ENTER.

The VPI value must match the VPI from a currently configured PVC.

3. Configure F4 OAM Type

Displays the **F4 OAM Type Configuration Menu**, which contains the following options to set the F4 OAM type.

0. None

4. F4 End to end OAM

Select your choice.

4. Display F4 OAM Configuration

Displays the F4 OAM type.

5. Send OAM Loopback

Sends an OAM Loopback cell on the port that you select.

6. Configure EmptyCells

Configures any empty cells. Type **1** to configure idle cells or **2** to configure unassigned cells.



You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "PARTNER ACS 1600 DSL module basics" chapter.

6. Configure LAN

Displays the **LAN Configuration Menu**, which contains the following command:

F. Set/Clear Full Duplex

Enables and disables full duplex Ethernet mode, which allows simultaneous transmission and receipt of Ethernet packets.

Type the number of the port, select enable or disable, and then press ENTER.

Your settings display in the **Display Current Configuration** command in the **Reports Menu**. For more information, see "Reports Menu" earlier in this chapter.

7. Configure SNMP

Displays the **SNMP Configuration Menu**, which contains the following commands to configure the simple network management protocol (SNMP):

E. Enable/Disable SNMP

Enables and disables SNMP.

P. Configure System Contact

Sets the name of the SNMP contact person (maximum = 39 alphanumeric characters). Type the new system contact information, and then press ENTER.

N. Configure System Name

Sets the name of the SNMP host server (maximum = 39 alphanumeric characters). Type the descriptive information, and then press ENTER.

L. Configure System Location

Sets the location of the SNMP host server (maximum = 39 alphanumeric characters). Type the new location information, and then press ENTER.

C. Configure SNMP Community

Sets the SNMP community to which your device belongs (maximum = 39 alphanumeric characters). This name must match the name of the SNMP host. Type the name, and then press ENTER.

If SNMP you enable and the Community Name is null, SNMP goes into read-only mode.

T. Configure SNMP Trap Host IP Address

Sets the IP address of the system setup for trap operations. Type the IP address, and then press ENTER.

8. Configure Login

Displays the **Password Configuration Menu**, which contains the following commands to set the default User ID and the default User and Network Administrator passwords:

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "PARTNER ACS 1600 DSL module basics" chapter.

1. Change User ID

Changes the default User ID. Type the new User ID (maximum 17 alphanumeric characters), and then press ENTER.

2. Change User Password

Changes the default User password. Type the new password (maximum 17 alphanumeric characters), and then press ENTER. Retype the new password, and then press ENTER.

3. Change NetMan Password

Changes the default Network Administrator password. Type the new password (maximum 17 alphanumeric characters), and then press ENTER. Retype the User password, and then press ENTER.

For more information on changing the User ID or password, see the "Administration" chapter.

9. System Utilities



Displays the **Utilities Menu**, which contains the following submenus and commands that either upgrade the ACOS software or support ACOS application development.

Except for **Ping Utility** and **Trace Route**, these commands are only for application development, software upgrades or to restore factory defaults.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “PARTNER ACS 1600 DSL module basics” chapter.

P. Ping Utility

Uses the Ping protocol to check for the presence of a host on the Internet.

Type the following information, and then press ENTER:

- IP address or complete host name to Ping**
- Ping packet size
- Number of times to Ping

** You must enter the domain name with the host name. For example, mycomputer.mydomain.com.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

T. Trace Route

Traces the route to a specific host.

Enter the IP address or host name** to trace, and then press ENTER.

** You must enter the domain name with the host name. For example, mycomputer.mydomain.com.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

Z. Configure Console Baud Rate

Displays the following commands to set the console Baud rate:

0. Unset (use Default)

1. 9600

2. 19200

3. 38400

4. 57600

5. 115200

Select your choice.

V. Configure Console Timeout

Sets the console timeout, a value between 0-60 minutes (default = 3 minutes). Type the timeout value, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

R. Hard Reset or Reload ACOS from FLASH

Restarts the PARTNER ACS 1600 DSL module using all values set during the active session and reloads ACOS from FLASH memory. For more information, see the "PARTNER ACS 1600 DSL module basics" chapter.

D. Set System Defaults

Switches to the factory default configuration.

W. Save System Settings as Defaults

Saves the current system settings as the default configuration.

F. File System Menu

Displays the **File System Menu**, which contains the following commands that support ACOS application development.

D. Directory of all Files

Displays a list of all files stored in Flash memory in the PARTNER ACS 1600 DSL module.

C. Copy file

Copies and saves the entered file under a new file name. Type the name of the file to copy, and then type the new file name.

R. Rename File

Replaces the old file name with a new one. Type the old file name, and then type the new one.

X. Remove File by name

Deletes the entered file from the file system.

F. Format File System drive

Deletes all files in the file system, including the configuration file (config.st).

If you delete the configuration file, you will have to reconfigure every setting.



S. Space left in File System

Displays the available disk space (bytes) in the file system.

X. File Transfer Menu

Displays the **File Transfer Menu**, which contains the following commands to transfer files on to the PARTNER ACS 1600 DSL module.

B. Load Boot ROM

Displays the **File Transfer Method** submenu, which contains the following commands that download the Boot ROM to the file system stored in Flash memory in the PARTNER ACS 1600 DSL module:

- 1. Receive via TFTP**
- 2. Receive via XMODEM**

Select your choice.

O. Update ACOS [acos.bin]

Displays the **File Transfer Method** submenu, which contains the following commands that download Polycom's Atlas Communications Operating System (ACOS) to the file system stored in Flash memory in the PARTNER ACS 1600 DSL module:

- 1. Receive via TFTP**
- 2. Receive via XMODEM**

Select your choice.

Type the IP address of the computer that has a TFTP server, and then type the name of the file to download.

You must restart the PARTNER ACS 1600 DSL module to load the new version of ACOS. For more information on restarting the PARTNER ACS 1600 DSL module or on upgrading your software using TFTP, see the “PARTNER ACS 1600 DSL module basics” chapter.

X. Update Entire System

Uses TFTP to download files to update the IAD.

A. File Transfer Utilities

Displays the **File Transfer Method** submenu, which contains the following commands that download a file to the file system stored in Flash memory in the PARTNER ACS 1600 DSL module:

- 1. Receive via TFTP**
- 2. Send or Receive via XMODEM**

Select your choice.

I. Interworking Connections

Displays the **Connections Menu**, which contains the following commands. This menu only displays when an USI Interface is installed.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information the PARTNER ACS 1600 DSL module, see the “PARTNER ACS 1600 DSL module basics” chapter.

1. Add Interworking Connection

Follow the on-screen messages to create an interworking connection.

Questions below may or not display, depending on the options that you select.

- Type the number of the NIM with the datalink protocol = Frame Relay.
- Select the port to use.
- Type the number of the NIM with the datalink protocol = ATM.
- Select the port to use.

The **Available interworking types** menu displays, which contains the following commands and submenus that create a Frame Relay to ATM Interworking connection:

1. FRF5

Displays the **FRF.5 DE Mapping** submenu, which contains the following commands to set how the DE maps to the CLPI:

0. Set FR-SSCS, ATM = 0

Displays the **FRF.5 CLPI Mapping** menu, which contains the following commands to set FR-SSCS:

- A. Set FR-SSCS according to ATM
- B. Use both FR-SSCS and ATM

1. Set FR-SSCS, ATM = 1

Displays the **FRF.5 CLPI Mapping** menu, which contains the following commands to set FR-SSCS:

- A. Set FR-SSCS according to ATM
- B. Use both FR-SSCS and ATM

B. Use both FR-SSCS and ATM

Displays the **FRF.5 CLPI Mapping** menu, which contains the following commands to set FR-SSCS:

- A. Set FR-SSCS according to ATM
- B. Use both FR-SSCS and ATM

2. FRF8

Displays the **FRF.8 Translation** submenu, which contains the following commands to set the FRF.8 translation parameters:

T. True

Displays the **FRF.8 DE Mapping** menu, which contains the following commands to set the mapping value:

0. Always 0

Displays the **FRF.8 FECN Mapping** menu, which contains the following commands to set the FECN mapping value:

- 0. Always 0
- 1. Always 1
- M. Map FR FECN to ATM EFCI

1. Always 1

Displays the **FRF.8 FECN Mapping** menu, which contains the following commands to set the FECN mapping value:

- 0. Always 0
- 1. Always 1
- M. Map FR FECN to ATM EFCI

M. Map FR FECN to ATM EFCI

Displays the **FRF.8 FECN Mapping** menu, which contains the following commands to set the FECN mapping value:

0. Always 0

1. Always 1

M. Map FR FECN to ATM EFCI

F. False

Displays the **FRF.8 DE Mapping** menu, which contains the following commands to set the DE mapping value:

0. Always 0

Displays the **FRF.8 FECN Mapping** menu, which contains the following commands to set the FECN mapping value:

0. Always 0

1. Always 1

M. Map FR FECN to ATM EFCI

1. Always 1

Displays the **FRF.8 FECN Mapping** menu, which contains the following commands to set the FECN mapping value:

0. Always 0

1. Always 1

M. Map FR FECN to ATM EFCI

M. Map FR DE to ATM CLPI

Displays the **FRF.8 FECN Mapping** menu, which contains the following commands to set the FECN mapping value:

0. Always 0

1. Always 1

M. Map FR FECN to ATM EFCI

2. Delete Interworking Connection

Deletes the selected interworking connection. Type the number of the connection to delete, and then press ENTER.

3. Print Interworking Connections

Displays the following information about all active interworking connections:

- **ID** - ID number for the interface.
- **Type** - FRF.5 or FRF.8.
- **FR Slot** - frame relay for this ID.
- **DLCI** - the frame relay datalink connection identifier.

- **ATM Slot** - ATM slot number for this ID.
- **VPI** - the ATM virtual path identifier (VPI) for this ID.
- **VCI** - the virtual circuit identifier (VCI) for this ID.

For more information about a connection, type the ID number, and then press ENTER.

4. Default Interworking Connections

Restores the default interworking connections.

D. Configure DHCP Server

Displays the **DHCP Server Configuration Menu**, which contains the following commands to configure DHCP.

DHCP dynamically assigns an IP address to all devices connected to the PARTNER ACS 1600 DSL module. You must select the Ethernet Interface to correctly use the following commands.

You must restart the PARTNER ACS 1600 DSL module for the changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module or on upgrading your software using TFTP, see the “PARTNER ACS 1600 DSL module basics” chapter.

E. Enable/Disable DHCP

Enables and disables DHCP.

B. Enable/Disable DHCP Debug Messages

For factory use only.

I. Configure DHCP Server Parameters

Sets the DHCP server parameters.

Type the number of the Interface, the number of the port, the following information, and then press ENTER:

- Gateway IP address
- DNS Server IP address
- NetBIOS Server IP address
- Subnet Mask
- Domain Name
- DHCP Lease Time

The **NetBIOS Type Configuration Menu** displays, which contains the following commands to set the NetBIOS node type:

1. B-node
2. P-node
4. M-node
8. H-node

Select your choice.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

Your settings display in the **Display DHCP Configuration** command.

P. Configure DHCP Address Range Pool

Sets the DHCP IP address range.

Type the high IP address, the low IP address, and then press ENTER. Both IP addresses must be on the same Subnet mask.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

C. Configure DHCP Client Entry

Assigns the same IP address every time to the client that you enter.

Type the following information, and then press ENTER:

- Client entry number
- DHCP Client MAC address (enter value without colons)
- Host Name
- Lease Time
- IP Address
- Subnet Mask
- Default Gateway
- DNS Server

Your settings display in the **Display DHCP Entry Details** command.

F. Display DHCP Configuration

Displays the following information about the DHCP configuration:

- **Default gateway** - IP address of packets sent to DHCP Clients.
- **Default DNS server** - IP address of the DNS server.
- **Default NetBIOS server** - IP address of the NetBIOS server.
- **Node type** - NetBIOS nodes type: B-node, P-node, M-node or H-node.
- **Default subnet** - IP subnet mask; number of bits reserved for the host ID.
- **Default lease** - length of time to keep the Internet connection active.
- **Domain name** - defines the entity that owns the IP address. For example, avaya.com.
- **Low address** - minimum IP address to assign.
- **High address** - maximum IP address to assign.
- **Client Number** - client entry number.
- **Host name** - name of the host.
- **IP address** - IP address of outgoing interface.
- **Subnet mask** - IP subnet mask; number of bits reserved for the host ID.
- **Lease time** - length of time to keep the Internet connection active.
- **Gateway** - IP address of packets sent to destination.
- **DNS Server** - IP address of the DNS server.

S. Display DHCP Server Statistics

Displays the following information about the DHCP Server.

- **plain bootp requests received**
- **plain bootp replies sent**
- **discover packets sent**
- **offer packets sent**
- **dhcp request packets received**
- **declines received**
- **releases received**
- **acks sent**

- **nacks sent**
- **requests for other servers**
- **protocol errors**

For the preceding to display, you must attach DHCP Client devices that use DHCP to obtain an IP address to the PARTNER ACS 1600 DSL module.

A. Display DHCP Server Assigned Addresses

Displays the following information about the DHCP Server assigned addresses.

- **IP** - IP address of the device, assigned by the PARTNER ACS 1600 DSL module.
- **Client ID** - Ethernet MAC address for the device.
- **Status** - how the IP address is assigned to the device: through DHCP or manually.

For the preceding to display, you must attach DHCP Client devices that use DHCP to obtain an IP address to the PARTNER ACS 1600 DSL module.

D. Display DHCP Entry Details

Displays the following information about the DHCP entries.

- **IP address** - IP address of the device.
- **Client ID** - Ethernet MAC address for the device.
- **Status** - how the IP address is assigned to the device: through DHCP or manually.
- **Subnet** - IP subnet mask; number of bits reserved for the host ID.
- **Gateway** - IP address of packets sent to destination.
- **DNS** - IP address of the DNS server.
- **Lease** - length of time to keep the Internet connection active.
- **Type** - type of IP address: static or dynamic.
- **Name** - name of the device.

For the preceding to display, you must attach DHCP Client devices that use DHCP to obtain an IP address to the PARTNER ACS 1600 DSL module.

X. Delete a DHCP Client Entry

Deletes a Client entry from the **Display DHCP Configuration** command. Type the Client number to delete, and then press ENTER.

Y. Delete a DHCP Assignment Entry

Deletes an assigned IP address from the **Display DHCP Server Assigned Addresses** command. Type the IP address to delete, and then press ENTER.

N. Configure NAT

Displays the **NAT Configuration Menu**, which contains the following commands to configure the Network Address Translation (NAT).

NAT allows you to use one IP address of every workstation in your company. This hides your internal Intranet addresses.

You must restart the PARTNER ACS 1600 DSL module for the changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module or on upgrading your software using TFTP, see the "PARTNER ACS 1600 DSL module basics" chapter.

B. Enable/Disable NAT Debug Messages

Enables and disables NAT debugging messages.

P. Enable/Disable NAT Translation by Port

Enables and disables NAT by port. Type the number of the Interface, the number of the port to enable, and then press ENTER. You must enable NAT for all ports that connect to the Internet.

T. Configure NAT TCP Timeout

Sets the NAT TCP Connection Timeout, a value between 60 - 3,600 seconds (default = 300 seconds). Type the TCP Timeout value, and then press ENTER.

U. Configure NAT UDP Timeout

Sets the NAT UDP Connection Timeout, a value between 60-3,600 seconds (default = 120 seconds). Type the UDP Timeout value, and then press ENTER.

R. Configure NAT Port Range

Sets the range of port numbers to assign to IP connections, with a low value between 5,000-65,534 (default = 50,000) and a high range between 50,000-65,535 (default = 65,535).

The size of the NAT port range defines the number of simultaneous connections permitted. a small port range limits



the number connections. Since the range that you assign must be outside the range of the programs in use, do not set port ranges under 5,000.

Type the Low End of NAT Port Range value, the High End of NAT Port Range value, and then press ENTER.

N. Configure NAT Local Server Entry

Makes local servers visible to the Internet.

Type the following information, and then press ENTER:

- Local Server entry number
- NAT Local Server Translated IP address
- NAT Local Server Translated Port Number
- NAT Local Server Standard Port Number
- NAT Local Server Protocol

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

Your settings display in the **Display NAT Local Server Table** command.

S. Display NAT Statistics

Displays the following information about the NAT configuration:

- **Local IP** - IP address in use.
- **Timeouts** - TCP and UDP Timeout values.
- **Local to inet** - number of packets and bytes transferring to the Internet.
- **inet to Local** - number of packets and bytes receiving from the Internet.
- **Connections** - the number of active TCP, UDP and ICMP connections, as well as the number created and deleted.
- **Errors** - the number of cksum, retries and bad packets.
- **Total IP packets** - number of IP packets received and sent.
- **Reserved addresses** - number of reserved IP addresses.

C. Display NAT Connection Table

Displays the following information about the NAT connections:

- **TCP** - Ethernet MAC address of the device.
- **out_port**
- **pkts** - out, in
- **state**
- **idle**

D. Display NAT Connection Details

Displays the following information about the NAT connections:

- **Outside port number of connection**
- **Foreign IP**
- **Local IP**
- **# Ports** - outside, inside, foreign
- **Outgoing packets/# bytes**
- **Incoming packets/# bytes**
- **Type** - TCP or UDP
- **Seconds since use**
- **TCP/UDP Sequence**
- **Ack**
- **State**
- **Retrys** - local, foreign
- **Bad checksum** - local, foreign

O. Display NAT Local Server Table

Displays the following information about the local server:

- **Entry** - table entry number.
- **Local IP Address** - IP address in use.
- **Local Port** - local port number.
- **Internet Port** - Internet port number.
- **Protocol** - TCP or UDP.

X. Delete IP Address from NAT Tables

Deletes an IP address entry from the **Display NAT Statistics**, **Display NAT Connection Table** and **Display NAT Connection Details** commands. Type the IP address to delete, and then press ENTER.

Y. Delete NAT Local Server Entry

Deletes an NAT Local Server entry from the **Display NAT Statistics**, **Display NAT Connection Table** and **Display NAT Connection Details** commands. Type the Local Server entry to delete, and then press ENTER.

T. Derived Timing

Displays the **Derived Timing** submenu, which contains the following commands to enable/disable derived timing and display debugging messages.

1. Enable/Disable Derived Timing

Enables and disables derived timing.

You must restart the PARTNER ACS 1600 DSL module for the changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module or on upgrading your software using TFTP, see the “PARTNER ACS 1600 DSL module basics” chapter.

2. Enable/Disable Derived Timing Debug Messages

Displays the **Derived Timing Debug** submenu, which contains the following commands to enable/disable derived timing debugging messages.

1. Enable/Disable ****All**** Derived Timing Debug Messages

Displays the **Derived Timing Debug** submenu, which contains the following commands to enable/disable all derived timing debugging messages.

1. Enable

2. Disable

Select your choice.

2. Enable/Disable ****PSTN ONLY**** Derived Timing Debug Messages

Displays the **Derived Timing Debug** submenu, which contains the following commands to enable/disable only PSTN derived timing debugging messages.

1. Enable

2. Disable

Select your choice.

3. Enable/Disable **Local Clock ONLY**** Derived Timing Debug Messages**

Displays the **Derived Timing Debug** submenu, which contains the following commands to enable/disable only local clock derived timing debugging messages.

1. Enable

2. Disable

Select your choice.

Select your choice.

Z. Diagnostics Menu

Displays the **Diagnostics** submenu, which contains the following command.

P. POTS Diagnostics

Displays the **POTS Diagnostics** submenu, which contains the following commands to test the voice lines.

H. Hotline Test

R. Ring Test

O. On/Off Hook Test

Select your choice.

S. SDSL Diagnostics

Displays the **SDSL Diagnostics** submenu, which contains the following commands to test the voice lines.

P. Transmit Isolated Pulses

Displays the **Transmit Isolated Pulses** submenu, which contains the following pulse values to transmit.

1. +3 level

2. +1 level

3. -1 level

4. -3 level

Select your choice.

2. Continuous 2-level transmission

4. Continuous 4-level transmission

L. Digital Far Loopback

Select your choice.

C. Command Line Interface

For future implementation.

Displays the command line interface, which supports the following syntax and commands.

Command line syntax

The command syntax is:

COMMAND <required parameters> (optional parameters)

For example:

```
Set wan ip address 192.3.4.5 255.255.255.0 2 0 0 1
```

- ◆ The required parameters are the ip address <192.3.4.5> and the netmask <255.255.255.0>.
- ◆ The optional parameters are the slot (2), interface(0), port(0) and connection(2).



The command and its parameters are NOT case sensitive.

Commands

The following are the commands that are currently supported:

- ◆ **exit** – quits the command line interface and returns to the menu system.
- ◆ **quit** – quits the command line interface and returns to the menu system.
- ◆ **set ip route <IPRoute> <netmask> <IPGatewayAddress>** - sets a static IP route.
- ◆ **set ip default route <DefaultIPAddress>** - sets the default IP address.
- ◆ **set wan ip address <IPAddress> <netmask> (slot) (interface) (port) (connection)** – sets the WAN IP address. If you do not enter any optional parameters, it finds the first available slot, interface, port and connection.
- ◆ **set lan ip address <IPAddress> <netmask> (slot) (interface) (port) (connection)** – sets the LAN IP address. If you do not enter any optional parameters, it finds the first available slot, interface, port and connection.
- ◆ **set wan datalink <framerelay or atm> (slot) (interface) (port)** – sets the datalink protocol to Frame Relay or ATM. . If you do not enter any optional parameters, it finds the first available slot, interface and port.
- ◆ **set wan framerelay dlcil <dlci number> <1490 or 1483> (slot) (interface) (port)** – sets the Frame Relay

DLCI number and encapsulation type to RFC1490 or RFC1483. . If you do not enter any optional parameters, it finds the first available slot, interface, port and connection.

- ◆ **set nat <on or off> (slot) (interface) (port)** – sets NAT on or off. . If you do not enter any optional parameters, it finds the first available slot, interface and port.
- ◆ **set dns server address <DSN server IPAddress>** - sets the DNS server IP address.
- ◆ **set system defaults** – sets the system to the default parameters.
- ◆ **show configuration** – displays the current configuration.
- ◆ **show ip routes** – displays the IP route table.
- ◆ **ping <IPAddress> (size of pings) (number of pings)** – pings an IP address.

P. VoicePath Configure

Displays the **Voice Configuration** submenu, which contains the following commands:

V. Set Voice Gateway

Displays the **Voice Gateway Selection** submenu, which contains the following commands to set the voice gateway.

0. No Voice Gateway
1. MGCP 0.1/NCS 1.0
2. CopperCom
3. JetStream
4. TollBridge

Select your choice.

J. Set Jitter Delay

Sets the jitter delay, a value between 0 and 50 ms (default = 0 ms).

Jitter delay is defined by equation as:

Jitter Equation $[CASZ97]^2$

Inter-arrival jitter is the difference in relative transit time for two packets. It is the difference between the packet's RTP time-stamp and the receiver's clock at the time of arrival of the packet.

As shown in the equation below, this is equivalent to the difference in the "relative transit time" for two packets: the **relative transit time** is the difference between a packet's RTP time-stamp and the receiver's clock at the time of arrival, measured in the same units.

If S_i is the RTP time-stamp from packet i , and R_i is the time of arrival in RTP time-stamp units for packet i , then for two packets i and j , D can be expressed as:

$$D(ij) = (R_j - R_i) - (S_j - S_i) = (R_j - S_j) - (R_i - S_i)$$

The interval jitter is calculated continuously as each data packet i is received from source $SSRC-n$, using this difference D for that packet and of the previous packet $i-1$ in order of arrival (not necessarily in sequence), according to the formula:

$$J = J + \{D(i-1, i) - J\} / 16$$

This value should only be set by your Network Administrator.



D. Display Jitter Delay

Displays the jitter delay value.

T. Set SLIC Control Mode

Displays the **SLIC Control Mode Selection** submenu, which contains the following commands to set the SLIC Control Mode:

A. AUTO Control Mode

B. MANUAL Control Mode

Select your choice.

Voice gateway applications, such as CopperCom or JetStream, will override the value set by this command.



U. Set Compander Mode (u-Law, a-Law)

Displays the **Compander Mode Selection** submenu, which contains the following commands to set the Compander mode:

U. u-Law Mode

A. a-Law Mode

Select your choice.

If you are not sure which mode to use, check with your telephone service provider. Normally, u-Law is used in North America and a-Law in Europe.



M. Set Debug Mode

Displays the **Debug Mode Selection** submenu, which contains the following commands.

E. ENABLE Debug

D. DISABLE Debug

Select your choice.

E. Configure Echo Cancellation Default Settings

Displays the **Echo Cancellation Default Settings Configuration Menu**, which contains the following commands.

1. Set Echo Cancellation default setting for all ports

Enables and disables echo cancellation globally.

2. Display current Echo Cancellation default settings

Displays the following Echo Cancellation default settings:

- **Line #** - 1-16.
- **Status** - ENABLED or DISABLED

3. Configure Echo Cancellation default setting per port

Enables and disables Echo Cancellation by port. Type the line number, press ENTER, and then enable or disable.

Select your choice.

M. Manage MGCP/NCS Embedded Client

Displays the **MGCP/NCS Management Menu**, which contains the following submenus and commands.

C. Configure MGCP/NCS parameters

Sets the MGCP/NCS parameters. Type the following information, and then press ENTER:

- Default IP address for Notified Entity
- IP address to use for MGCP signaling (Data) packets
- Type of Service (TOS) field value for the IP header of the outbound signaling packets
- IP address to use for RTP Transport (Voice) packets
- TOS field value for the IP header of the outbound RTP Transport packets

S. Display MGCP/NCS statistics

Displays the Endpoint (line) and connection statistics. If no calls are active, only whether or not the Endpoint is currently connected to its Notified Entity displays.

D. Debug MGCP/NCS

Displays the **MGCP Debug menu**, which contains the following commands.

- 1. Disable all msgs**
- 2. Enable Informational msgs**
- 3. Enable Verbose msgs**

Select your choice.

R. Remove a connection

Removes LOST connections. Type the number of the Connection ID to delete, and then press ENTER.

E. CopperCom Call Control

Displays the **CopperCom Call Control** submenu, which contains the following submenus and commands.

S. Statistics

Displays the **CopperCom Statistics** submenu, which contains the following commands.

D. Display Statistics

Displays the following error statistics:

- **HEC Errors**
- **CID Errors**

C. Clear Statistics

Select your choice.

C. Configure

Displays the **CopperCom Configuration** submenu, which contains the following commands.

D. Display Configuration

Displays the current configuration settings, by port number.

C. Compression Format

Sets compression globally or by port. Type the port number, select a compression, and then press ENTER.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

Select your choice.

D. Debug Control

Displays the **CopperCom Debug Control** submenu, which contains the following commands.

L. Display Line Status

Displays the following information about the active line(s):

- **Line**
- **State**
- **SLIC State**
- **Hook State**

- **Payload**
- **CPE Signal**
- **GWY Signal**

D. Display Debug State/Flags

Displays the following information about the active debug state and flags:

- **Debugging** – ENABLED or DISABLED.
- **Flags:**
 - Globals (DT/PCHES)
 - T10 & T11 Timeouts
 - WAN Signaling
 - WAN Input Ready
 - POTS Input Ready
 - POTS Hook State

C. Control Debug (Enable/Disable)

Enables and disables debugging.

S. Set Debug Flags

Sets values for the following debug flags:

- **Globals (DT/PCHES)**
- **T10 & T11 Timeouts**
- **WAN Signaling**
- **WAN Input Ready**
- **POTS Input Ready**
- **POTS Hook State**

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

Your settings display in the **D. Display Debug State/Flags** command.

Select your choice.

E. Call Control Settings

Displays the **Call Control Settings** submenu, which contains the following commands:

A. Stats Display

Displays the following statistical information:

- WAN RX PKTS
- WAN RX BYTES
- WAN TX PKTS
- WAN TX BYTES
- WAN TX DROPPED
- POTS RX PKTS
- POTS RX BYTES
- POTS TX PKTS
- POTS TX BYTES
- POTS TX DROPPED
- L2 RX PKTS
- L2 RX BYTES
- L2 TX PKTS
- L2 TX BYTES
- AAL2 HEC ERROR

Select your choice.

R. Ring Test

Displays the following commands:

C. Configure Ring Test

Enables the Ring Test.

Type the following information, and then press ENTER:

- Port to enable.
- Number of seconds for port to stay on hook.
- Number of seconds for port to stay off hook.

Your settings display in the **Display parameters** command.

D. Display Parameters

Displays the following information about the Ring Test:

- Port
- On hook time
- Off hook time

S. Start Ring Test

Starts the Ring test.

T. Stop Ring Test

Stops the Ring test.

Select your choice.

S. Display IAD State

Displays the on hook state for each port.

T. Trace

Displays **Trace Settings** submenu, which contains the following commands:

S. Set Trace data

Sets all Trace data.

Type the following information, and then press ENTER:

- L2 Module
- Cc Module
- Mg Module
- L2 Subscriber
- Cc Subscriber
- Cc Port (16 total)

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

Your settings display in the **Display Trace data** command.

D. Display Trace data

Displays the following Trace data:

- L2 Module
- Cc Module
- Mg Module
- L2 Subscriber
- Cc Subscriber

- Cc Port (16 total)

V. Pick sound heard if insufficient WAN B/W to complete call

Displays **Insufficient Bandwidth Indication Setting** submenu, which contains the following commands:

0. Play Silence

1. Play Fast Beeping

Select your choice.

U. Configure Tollbridge Voice Client

Displays the **Tollbridge Configuration Menu**, which contains the following submenus and commands.

The PARTNER ACS 1600 DSL module displays a default or last-used value in parentheses to the left of the command prompt. To accept this value, press ENTER.

0. Set Client IP address

Sets IP address of the client. Type the client IP address, and then press ENTER.

1. Set Voice Gateway IP Address

Sets the voice gateway IP address. Type the voice gateway IP address, and then press ENTER.

2. Print Current Configuration

Displays the following information about the Tollbridge voice client configuration:

- Client IP address
- Gateway IP address
- Priority Voice DLCI (Frame Relay only)
- Debug message flags (OFF or ON)
 - Status/keep-alive messages
 - Provisioning messages
 - State-transition messages

3. Debugging options

Displays the **Tollbridge Debugging Options** submenu, which contains the following commands to enable or disable Tollbridge debugging messages:

0. Enable/Disable all messages

1. Enable/Disable status/keep-alive messages

2. Enable/Disable provisioning messages

3. Enable/Disable state-transition messages

4. Unhide/Hide voice client IP Interface

Select your choice.

5. Administration

This chapter provides information about the PARTNER ACS 1600 DSL module security, as well as how to configure the Simple Network Management Protocol (SNMP) and upgrade ACOS.

For more information on the menus, submenus and commands in this chapter, see the “Menu interface” chapter.

Security

The PARTNER ACS 1600 DSL module provides multilevel security using a single User ID and password, which you can set at the following levels:

- ◆ User
- ◆ NetMan – Network Administrator

The following table lists the default values for both the User IDs and passwords:

Access Level	User ID	Password
User	User	TBD
Network Administrator	NetMan	TBD

The User IDs and passwords are case-sensitive and can contain up to 17 alphanumeric characters – no spaces.

You can change the password at each access level, but the PARTNER ACS 1600 DSL module can only store one password at each access level at one time.

You can only change the User ID at the User level.

Menus, submenus, and commands that display on the Main Menu depend on access level that you use to log on. For example, access level User displays the fewest number of options.



Changing the User ID

To change the User ID:

1. On the **Main Menu**, select **Configure Login**.

The **Password Configuration Menu** displays.

```
*****
*           Password Configuration Menu           *
*****

1. Change User ID
2. Change User Password
3. Change NetMan Password
```

2. Select **Change User ID**.

The following message displays.

```
Enter new User ID (up to 17 characters) >
```

3. Type the new User ID, and then press ENTER.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Changing the Password

Although you can use the same password for all access levels, we recommend that you use a different one for each level.

The following table lists the privileges for each level:

Access level	Menu access level
User	User
Network Administrator	NetMan and User

To change the password:

1. On the **Main Menu**, select **Configure Login**.

The **Password Configuration Menu** displays.

```
*****
*           Password Configuration Menu           *
*****
    1. Change User ID
    2. Change User Password
    3. Change NetMan Password
```

2. Select **Change User Password** or **Change NetMan Password**.

The following message displays.

```
Enter new Password (up to 17 characters) >
```

3. Type the new password, and then press ENTER.
4. Retype the new password, and then press ENTER.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring SNMP

You can use the Simple Network Management Protocol (SNMP) to remotely manage the PARTNER ACS 1600 DSL module. The PARTNER ACS 1600 DSL module currently supports the following SNMP options:

- ◆ Enable/disable SNMP
- ◆ Configure System Contact
- ◆ Configure System Name
- ◆ Configure System Location
- ◆ Configure SNMP Community
- ◆ Configure SNMP Trap Host IP Address

For more information on the SNMP options, see the “Main Menu” chapter.

Enabling/disabling SNMP

To enable or disable SNMP:

1. On the Main Menu, select **Configure SNMP**.

The **SNMP Configuration Menu** displays.

```
*****
*           SNMP Configuration Menu           *
*****

E. Enable/Disable SNMP
P. Configure System Contact
N. Configure System Name
L. Configure System Location
C. Configure SNMP Community
T. Configure SNMP Trap Host IP Address
```

2. Select **Enable/Disable SNMP**.

3. Do one of the following:

- ◆ To enable SNMP, type **E**.
- ◆ To disable SNMP, type **D**.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring the System Contact

To configure the system contact:

1. On the Main Menu, select **Configure SNMP**.

The **SNMP Configuration Menu** displays.

```
*****
*           SNMP Configuration Menu           *
*****

E. Enable/Disable SNMP
P. Configure System Contact
N. Configure System Name
L. Configure System Location
C. Configure SNMP Community
T. Configure SNMP Trap Host IP Address
```

2. Select Configure System Contact.

The following instructions display on-screen:

System Contact is currently:

Enter new System Contact >

3. Type the name of the SNMP contact person (maximum = 39 alphanumeric characters) or press ENTER to accept the default value that displays.

The system contact name is not case-sensitive.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.



Configuring the System Name

To configure the system contact:

1. On the Main Menu, select Configure SNMP.

The **SNMP Configuration Menu** displays.

```
*****
*           SNMP Configuration Menu           *
*****
```

- E. Enable/Disable SNMP
- P. Configure System Contact
- N. Configure System Name
- L. Configure System Location
- C. Configure SNMP Community
- T. Configure SNMP Trap Host IP Address

2. Select Configure System Name.

The following instructions display on-screen:

System Description is currently:

Enter new System Description >

3. Type the name of the SNMP host server (maximum = 39 alphanumeric characters) or press ENTER to accept the default value that displays.

The system name is not case-sensitive.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.



Configuring the System Location

To configure the system location:

1. On the Main Menu, select **Configure SNMP**.

The SNMP Configuration Menu displays.

```
*****
*           SNMP Configuration Menu           *
*****
E. Enable/Disable SNMP
P. Configure System Contact
N. Configure System Name
L. Configure System Location
C. Configure SNMP Community
T. Configure SNMP Trap Host IP Address

ESC to return to previous menu
```

->

2. Select **Configure System Location**.

The following instructions display on-screen:

System Location is currently:

Enter new System Location >

3. Type the SNMP server location or press ENTER to accept the default value that displays.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.



Configuring the System Community

The value that you set must match the write community name of the SNMP host to enable the SNMP Set operation. If you enable SNMP but the community name is not set, SNMP goes into read-only mode.

To configure the system community:

1. On the Main Menu, select **Configure SNMP**.

The **SNMP Configuration Menu** displays.

```
*****
*           SNMP Configuration Menu           *
*****
E. Enable/Disable SNMP
P. Configure System Contact
N. Configure System Name
L. Configure System Location
C. Configure SNMP Community
T. Configure SNMP Trap Host IP Address
```

2. Select **Configure SNMP Community**.

The following instructions display on-screen:

```
SNMP Community is currently:
```

```
Enter new SNMP Community >
```

3. Type the name of the SNMP community to which your system belongs or press ENTER to accept the default value that displays.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Configuring the SNMP Trap Host IP Address

To configure the SNMPP Trap Host IP Address:

1. On the Main Menu, select **Configure SNMP**.

The **SNMP Configuration Menu** displays.

```
*****
*           SNMP Configuration Menu           *
*****
E. Enable/Disable SNMP
P. Configure System Contact
N. Configure System Name
L. Configure System Location
C. Configure SNMP Community
T. Configure SNMP Trap Host IP Address
```

2. Select **Configure SNMP Trap Host IP Address**.

The following instructions display on-screen:

```
Current SNMP Trap Host IP Address = 0.0.0.0
```

```
Enter new SNMP Trap Host IP address:
```

3. Type the IP address of the system setup for trap operations or press ENTER to accept the default value (0.0.0.0) that displays.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Upgrading the system

You can use the Trivial File Transfer Protocol (TFTP) to upgrade the PARTNER ACS 1600 DSL module software. To use TFTP to upgrade, you must properly configure both the PARTNER ACS 1600 DSL module and the computer that contains the TFTP Server program, a program that you must purchase separately.

Before you can run TFTP, you must configure the IP address of the Ethernet or SDSL Interfaces. For more information, see the "Getting Started" chapter.

2. On the Main Menu, select **System Utilities.**

The **Utilities Menu** displays.

```
*****
*                               *
*                               Utilities Menu                               *
*                               *
*****

P. Ping Utility
T. Trace Route
Z. Configure Console Baud Rate
V. Configure Console Timeout
R. Hard Reset or Reload ACOS from FLASH
D. Set System Defaults
W. Save System Settings as Defaults

F. File System Menu
X. File Transfer Menu
```

3. Select **File Transfer Menu.**

The **File Transfer Menu** displays.

```
*****
*                               *
*                               File Transfer Menu                               *
*                               *
*****

B. Load Boot ROM
O. Update ACOS [acos.bin]
X. Update Entire System

A. File Transfer Utilities
```

4. Select **Update Entire System.**

The **File Transfer Method** submenu displays.

```
*****
*                               *
*                               File Transfer Method                               *
*                               *
*****

1. Receive via TFTP
2. Receive via XMODEM
```

5. Select **Receive via TFTP.**

6. Type the IP address of the TFTP Server, and then press ENTER.

You can also upgrade the PARTNER ACS 1600 DSL module software using TFTP via Telnet.

Using Telnet

To upgrade the PARTNER ACS 1600 DSL module software using TFTP via Telnet:

1. Use a Telnet program to connect to the PARTNER ACS 1600 DSL module.

For more information, see the "Getting started" chapter.

2. Follow the procedures described in the "Using TFTP" section.

Verifying the download

To verify that the file downloaded successfully

1. On the **Main Menu**, select **System Utilities**.

The **Utilities Menu** displays.

```
*****
*                               *
*                               Utilities Menu                               *
*                               *
*****
```

```
P. Ping Utility
T. Trace Route
Z. Configure Console Baud Rate
V. Configure Console Timeout
R. Hard Reset or Reload ACOS from FLASH
D. Set System Defaults
W. Save System Settings as Defaults
```

```
F. File System Menu
X. File Transfer Menu
```

2. Select **File System Menu**.

The **File System Menu** displays.

```
*****
*                               *
*                               File System Menu                               *
*                               *
*****
```

```
D. Directory of all files
C. Copy file
R. Rename File
X. Remove File by name
F. Format File System drive
S. Space left in File System
```

3. Select **Directory of all files**.

A list of all installed files displays.

Upgrading ACOS

You can use the Trivial File Transfer Protocol (TFTP) to upgrade the PARTNER ACS 1600 DSL module software. To use TFTP to upgrade, you must properly configure both the PARTNER ACS 1600 DSL module and the computer that contains the TFTP Server program, a program that you must purchase separately.

Before you can run TFTP, you must configure the IP address of the Ethernet or SDSL Interfaces. For more information, see the "Getting Started" chapter.

Configuring the TFTP Server

To configure the TFTP Server:

- ◆ Copy the PARTNER ACS 1600 DSL module software to a file named ACOS.bin in the path that the TFTP Server will use to send files to the PARTNER ACS 1600 DSL module.

For more information, see your TFTP Server documentation.

Using TFTP

To upgrade the PARTNER ACS 1600 DSL module software using TFTP:

1. Log on to the menu interface.

The **Main Menu** displays.

```
*****
*                               *
*                               Main Menu                               *
*                               *
*****

1. Reports Menu
2. Configure IP Router
3. Configure Bridge
5. Configure WAN
6. Configure LAN
7. Configure SNMP
8. Configure Login
9. System Utilities
D. Configure DHCP Server
```

- N. Configure NAT
- T. Derived Timing
- Z. Diagnostics Menu
- C. Command Line Interface
- P. VoicePath Configure

For more information, see the "Getting Started" chapter.

2. On the Main Menu, select **System Utilities.**

The **Utilities Menu** displays.

```
*****
*                               *
*               Utilities Menu   *
*                               *
*****

P. Ping Utility
T. Trace Route
Z. Configure Console Baud Rate
V. Configure Console Timeout
R. Hard Reset or Reload ACOS from FLASH
D. Set System Defaults
W. Save System Settings as Defaults

F. File System Menu
X. File Transfer Menu
```

3. Select **File Transfer Menu.**

The **File Transfer Menu** displays.

```
*****
*                               *
*               File Transfer Menu   *
*                               *
*****

B. Load Boot ROM
O. Update ACOS [acos.bin]
X. Update Entire System

A. File Transfer Utilities
```

4. Select **Update ACOS [acos.bin]**.

The **File Transfer Method** submenu displays.

```
*****
*           File Transfer Method           *
*****

  1. Receive via TFTP
  2. Receive via XMODEM
```

5. Select **Receive via TFTP**.

6. Type the IP address of the TFTP Server, and then press ENTER.

7. Type **ACOS.bin**, and then press ENTER.

It takes up to 2 minutes to download the file, and up to 30 seconds to save it to Flash memory.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

You can also upgrade the PARTNER ACS 1600 DSL module software using TFTP via Telnet.



Using Telnet

To upgrade the PARTNER ACS 1600 DSL module software using TFTP via Telnet:

1. Use a Telnet program to connect to the PARTNER ACS 1600 DSL module.

For more information, see the "Getting started" chapter.

2. Follow the procedures described in the "Using TFTP" section.

Verifying the download

To verify that the file downloaded successfully

1. On the **Main Menu**, select **System Utilities**.

The **Utilities Menu** displays.

```
*****
*           Utilities Menu           *
*****

  P. Ping Utility
  T. Trace Route
  Z. Configure Console Baud Rate
  V. Configure Console Timeout
```

- R. Hard Reset or Reload ACOS from FLASH
- D. Set System Defaults
- W. Save System Settings as Defaults

- F. File System Menu
- X. File Transfer Menu

2. Select File System Menu.

The **File System Menu** displays.

* File System Menu

- D. Directory of all files
- C. Copy file
- R. Rename File
- X. Remove File by name
- F. Format File System drive
- S. Space left in File System

3. Select Directory of all files.

A list of all installed files displays.

Support

For Technical Support, contact you local Authorized Dealer or call the Avaya Help Line at 800 628 2888. Consultation charges may apply.

6. WAN configuration

This chapter details how to configure the PARTNER ACS 1600 DSL module for both data and voice operation. To do so, you must:

- ◆ Configure the datalink protocol
- ◆ Configure the physical interface **
- ◆ Configure ATM PVCs and ATM options (Datalink protocol = ATM)
- ◆ Configure Frame Relay DLCIs and Configure Frame Relay options (Datalink protocol = Frame Relay)
- ◆ Configure the voice path



For the PARTNER ACS 1600 DSL module, you can also use the **Quick Configuration** command to configure the physical interface. For more information, see the “Quick Configuration” section later in this chapter.

Voice and data traffic are each carried in their own PVCs (protocol = ATM) or DLCI (protocol = Frame Relay). The data payload in the PVC/DLCI identifies the voice ports and you can define up to 8 data ports.

For more information on the menus, submenus and commands in this chapter, see the “Menu interface” chapter.

Changing the Datalink Protocol

To change the datalink protocol:

1. On the **Main Menu**, select **Configure WAN**.

The **WAN Configuration Menu** displays.

```
*****
*           WAN Configuration Menu           *
*****

1. Configure Datalink Protocol
2. Configure Physical Interface
3. Configure DLCIs
4. Configure FR Options
```

2. Select **Configure Datalink Protocol**.

The **WAN Datalink Protocol Configuration Menu** displays.

```
*****
```

```
* WAN Datalink Protocol Configuration Menu*
```

```
*****
```

```
Current DataLink Protocol : Frame Relay
```

```
6. ATM
```

```
7. Frame Relay
```

3. Select your choice.

If you select Frame Relay, you must also add or modify a DLCI and then set the Frame Relay options.

For more information, see the “Configuring Frame Relay DLCIs” and “Configuring Frame Relay options” sections later in this chapter, respectively.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

You can now configure the physical interface.



Configuring the Physical Interface

The following are the WAN interfaces that you can configure:

- ◆ SDSL
- ◆ USI

Configuring the SDSL Interface

To configure the SDSL interface:

1. On the **Main Menu**, select **Configure WAN**.

The following instructions display on-screen:

Available WAN Interfaces:

1. SDSL
3. Universal Serial
0. (Abort)

Enter slot number of WAN interface to configure:

2. Type 1.

The **WAN Configuration Menu** displays.

```
*****
*           WAN Configuration Menu           *
*****
```

Configuring SDSL

0. Quick Configuration
1. Configure Datalink Protocol
2. Configure Physical Interface

3. Select **Configure Physical Interface**.

The **SDSL Configuration** submenu displays.

```
*****
*           SDSL Configuration             *
*****
```

Current SDSL configuration:

```
    CPE, AUTO Cycle, Bit Order: Sign.Mag,
    SPEED = 1152 Kbps, Conexant AutoBaud:
    Disabled
```

1. Toggle SDSL Mode (CO or CPE)
2. Set SDSL Speed to Auto Cycle (Nokia)
3. Set SDSL Speed to Auto Sense (Copper Mountain)
4. Enable/Disable Conexant AutoBaud Mode
5. Set SDSL Sync Delay (Lucent)

- 6. Set SDSL to AccessLan CPE Mode
- 7. Set SDSL Speed Manually
- 8. Restart SDSL Activation Sequence
- 9. SDSL Interface Mode (Bit Order)
 - A. Enable/Disable SDSL AutoBaud Debug Messages
 - D. Enable/Disable SDSL Debug Messages
 - Y. Enable/Disable Sync Msgs
 - P. Preactivation Debug Mode

4. Select your choice.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Configuring the USI interface

To configure the USI interface:

1. On the Main Menu, select Configure WAN.

The following instructions display on-screen:

Available WAN Interfaces:

- 1. SDSL
- 3. Universal Serial
- 0. (Abort)

Enter slot number of WAN interface to configure:

2. Type 3.

The **WAN Configuration Menu** displays.

```
*****
*           WAN Configuration Menu           *
*****
```

Configuring Universal Serial

- 1. Configure Datalink Protocol
- 2. Configure Physical Interface

ESC to return to previous menu

3. Select Configure Datalink Protocol.

The **WAN Datalink Protocol Configuration Menu** displays.

```
*****
* WAN Datalink Protocol Configuration Menu*
*****
```

Current DataLink Protocol : Cisco
compatible HDLC

- 6. ATM
- 7. Frame Relay

ESC to return to previous menu

4. Select your choice, and then press ESC.



If you select Frame Relay, you must also add or modify a DLCI and then set the Frame Relay options. For more information, see the “Configuring Frame Relay DLCIs” and “Configuring Frame Relay options” sections later in this chapter, respectively.

The **WAN Configuration Menu** redisplay.

5. Select Configure Physical Interface.

The **USI Configuration** submenu displays.

```
*****
*                USI Configuration                *
*****
```

- 1. Set WAN interface type
- 2. Configure Data Rate and Clocking Options

ESC to return to previous menu

6. Select Set WAN interface type.

The **USI Interface Type** submenu displays.

```
*****
*           USI Interface Type           *
*****
```

USI WAN mode is now: V.10 V.11 Termination Enabled

1. RS-530
2. V.35

7. Select your choice, and then press ESC.

The **USI Configuration** submenu redisplay.

8. Select Configure Data Rate and Clocking Options.

The **Serial Interface Clock Speed Options Menu** displays.

```
*****
* Serial Interface Clock Speed Option Menu*
*****
```

- Serial Data Rate Tracks SDSL WAN Speed:
0
- Receive Clock is External

1. Track USI speed to SDSL speed
2. Set Clock Speed Manually
3. Use Internal Receive Clock
4. Use External Receive Clock

ESC to return to previous menu

9. Select your choice.

For optimal results, select **Track USI speed to SDSL speed** and **Use Internal Receive Clock**.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Quick Configuration

The PARTNER ACS 1600 DSL module contains with a number of predefined configurations.

To use one of the predefined configurations:

1. On the **Main Menu**, select **Configure WAN**.

The following instructions display on-screen:

Available WAN Interfaces:

1. SDSL
3. Universal Serial
0. (Abort)

Enter slot number of WAN interface to configure:

2. Type 1.

The **WAN Configuration Menu** displays.

```
*****
*           WAN Configuration Menu           *
*****
```

Configuring SDSL

0. Quick Configuration
1. Configure Datalink Protocol
2. Configure Physical Interface

3. Select **Quick Configuration**.

The **Quick Configuration** submenu displays.

```
*****  
*           Quick Configuration           *  
*****
```

** System will reset after changing
configuration **

Current configuration:

Differs from listed configurations

1. Lucent Stinger (Conexant Autobaud,
Payload Scrambling)
2. Nokia (Auto Cycle)
3. Copper Mountain (Auto Sense)
4. Paradyne (Framed 784kbps, Payload
Scrambling)
5. AccessLan CPE
6. Nortel IMAS
7. ATM (Unframed, 1152kbps fixed)
8. Frame Relay (784kbps fixed)

4. Select the DLSAM to which the PARTNER ACS 1600 DSL module is connecting.

The PARTNER ACS 1600 DSL module automatically
restarts.

5. Log back on to the PARTNER ACS 1600 DSL module .

For more information, see the "Getting started" chapter.

You can now configure PVCs or DLCIs. However, you must
first change the datalink protocol to ATM (PVCs) or Frame
Relay (DLCIs).

Configuring ATM PVCs

The PARTNER ACS 1600 DSL module contains commands
that allow you to configure ATM PVCs:

- ◆ Add New PVC
- ◆ Modify Existing PVC

- ◆ Delete PVC
- ◆ Show Current PVCs

You can configure up to 24 PVCs on the PARTNER ACS 1600 DSL module.

Adding a PVC

To add a PVC:

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure PVCs**.

The **ATM PVC Config Menu** displays.

```
*****
*           ATM PVC Config Menu           *
*****
1. Add New PVC
2. Modify Existing PVC
3. Delete PVC
4. Show Current PVCs
```

3. Select **Add New PVC**.

4. Type a VPI between 0-255 (default = 0), and then press ENTER.

5. Type a VCI between 32 – 65535 (default = 38 – data or 39 – voice), and then press ENTER.

The **ATM Encapsulation Configuration** submenu displays.

```
*****
*   ATM Encapsulation Configuration   *
*****
```

Current Encapsulation : NONE

1. AAL5 (None)
2. AAL0 (None)
3. Proprietary Voice
4. RFC 1483 (using VC Muxing)
5. RFC 1483 (with LLC Encapsulation)
6. RFC 2364 (PPPoATM with LLC Encapsulation)
7. RFC 2364 (PPPoATM using VC Muxing)



6. Select the encapsulation you want to configure.

If you select **RFC 2364 (PPPoATM with LLC Encapsulation)** or **RFC 2364 (PPPoATM using VC Muxing)**, follow the on-screen messages to set the PPP authorization type. Once complete, continue with step 8.

The **ATM Service Category Configuration** submenu displays.

```
*****
*   ATM Service Category Configuration   *
*****
    1. CBR
    2. UBR
```

7. Do one of the following:

- ◆ Select **CBR** for high priority data.
- ◆ Select **UBR** for low priority data.

Follow the on-screen messages to set the Peak Cell Rate (PCR) value.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Modifying a PVC

To modify a PVC

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure PVCs**.

The **ATM PVC Config Menu** displays.

```
*****
*           ATM PVC Config Menu           *
*****
    1. Add New PVC
    2. Modify Existing PVC
    3. Delete PVC
    4. Show Current PVCs
```

3. Select **Modify Existing PVC**.

4. Type the port number to modify, and then press ENTER.

5. Type a VPI between 0-255 (default = 0), and then press ENTER.

6. Type a VCI between 32 – 65535 (default = 38 – data or 39 – voice), and then press ENTER.

The **ATM Encapsulation Configuration** submenu displays.

```
*****
*   ATM Encapsulation Configuration   *
*****
```

Current Encapsulation : NONE

1. AAL5 (None)
2. AAL0 (None)
3. Proprietary Voice
4. RFC 1483 (using VC Muxing)
5. RFC 1483 (with LLC Encapsulation)
6. RFC 2364 (PPPoATM with LLC Encapsulation)
7. RFC 2364 (PPPoATM using VC Muxing)

7. Select the encapsulation you want to configure.



If you select **RFC 2364 (PPPoATM with LLC Encapsulation)** or **RFC 2364 (PPPoATM using VC Muxing)**, follow the on-screen messages to set the PPP authorization type. Once complete, continue with step 8.

The **ATM Service Category Configuration** submenu displays.

```
*****
*   ATM Service Category Configuration   *
*****
```

1. CBR
2. UBR

8. Do one of the following:

- ◆ Select **CBR** for high priority data.
- ◆ Select **UBR** for low priority data.

9. Follow the on-screen messages to set the Peak Cell Rate (PCR) value.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Deleting a PVC

To delete a PVC:

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure PVCs**.

The **ATM PVC Config Menu** displays.

```
*****
*           ATM PVC Config Menu           *
*****
1. Add New PVC
2. Modify Existing PVC
3. Delete PVC
4. Show Current PVCs
```

3. Select **Delete PVC**.
4. Type the port number to delete, and then press ENTER.
5. Do one of the following:
 - ◆ To delete the PVC, type **y**.
 - ◆ To cancel the deletion, type **n**.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring ATM options

The PARTNER ACS 1600 DSL module contains commands that allow you to configure or display the following ATM options:

- ◆ Payload Scrambling
- ◆ F4 OAM VPI
- ◆ F4 OAM Type
- ◆ F4 OAM Configuration
- ◆ OAM Loopback
- ◆ Empty Cells

Configuring Payload Scrambling

You must enable payload scrambling (default = disabled) for the PARTNER ACS 1600 DSL module to “talk” to a DSLAM that uses payload scrambling.

To enable payload scrambling:

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure ATM Options**.

The **ATM Configuration Menu** displays.

```
*****
*           ATM Configuration Menu           *
*****
```

1. Configure Payload Scrambling
2. Configure F4 OAM VPI
3. Configure F4 OAM Type
4. Display F4 OAM Configuration
5. Send OAM Loopback
6. Configure EmptyCells

3. Select **Configure Payload Scrambling**, and then do one of the following:

- ◆ To enable payload scrambling, type **E**.
- ◆ To disable payload scrambling, type **D**.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring the F4 OAM Cell

To configure the F4 OAM Cell

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select Configure ATM Options.

The **ATM Configuration Menu** displays.

```
*****
*           ATM Configuration Menu           *
*****
1. Configure Payload Scrambling
2. Configure F4 OAM VPI
3. Configure F4 OAM Type
4. Display F4 OAM Configuration
5. Send OAM Loopback
6. Configure EmptyCells
```

3. Select Configure F4 OAM VPI, and then type the VPI.

This value must match one of the WAN PVCS. For more information, see the “Configuring PVCs” section earlier in this chapter.

The ATM Configuration Menu redisplay.

4. Select Configure F4 OAM Type.

The **F4 OAM Type Configuration Menu** displays.

```
*****
*           F4 OAM Type Configuration Menu     *
*****
0. None
4. F4 End to end OAM
```

5. Select your choice.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.



Sending OAM Loopback

To send an OAM Loopback:

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure ATM Options**.

The **ATM Configuration Menu** displays.

```
*****
*           ATM Configuration Menu           *
*****
1. Configure Payload Scrambling
2. Configure F4 OAM VPI
3. Configure F4 OAM Type
4. Display F4 OAM Configuration
5. Send OAM Loopback
6. Configure EmptyCells
```

3. Select **Send OAM Loopback**.

A list of all configured F4 OAM ports and its VPI value displays.

4. Select the port on which to send the OAM Loopback, and then press ENTER.

Configuring Empty Cells

To configure empty cells:

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure ATM Options**.

The **ATM Configuration Menu** displays.

```
*****
*           ATM Configuration Menu           *
*****
1. Configure Payload Scrambling
2. Configure F4 OAM VPI
3. Configure F4 OAM Type
4. Display F4 OAM Configuration
5. Send OAM Loopback
6. Configure EmptyCells
```

3. Select **Configure EmptyCells**.

The following instructions display on-screen:

Empty Cells are currently IDLE

Enter 1 for IDLE cells or 2 for UNASSIGNED cells:

4. Select your choice.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring Frame Relay DLCIs

The PARTNER ACS 1600 DSL module contains commands that allow you to configure Frame Relay DLCIs:

- ◆ Add New DLCI
- ◆ Modify Existing DLCI
- ◆ Delete DLCI
- ◆ Show Current DLCIs

You can configure up to 24 DLCIs on the PARTNER ACS 1600 DSL module.

Adding a DLCI

To add a DLCI:

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure DLCIs**.

The **FR DLCI Config Menu** displays.

```
*****  
*                FR DLCI Config Menu                *  
*****
```

1. Add New DLCI
2. Modify Existing DLCI
3. Delete DLCI
4. Show Current DLCIs

3. Select **Add New DLCI**.

4. Type a DLCI value between 16-1023 (defaults = 32 – data and 33 – voice), and then press ENTER.

The **FR Encapsulation Configuration** submenu displays.

```
*****  
*      FR Encapsulation Configuration      *  
*****
```

Current Encapsulation : None

1. RAW (No Encapsulation)
2. Proprietary Voice DLCI
3. RFC 1490
4. ATM RFC 1483 (Tunneling)

5. Select the encapsulation method to use.

The **FR DLCI Options** submenu displays.

```
*****  
*              FR DLCI Options              *  
*****
```

1. Configure Transmit CIR
2. Configure Receive CIR
3. Configure FRF.12 Fragmentation

6. Do one of the following:

- ◆ Select **Configure Transmit CIR** or **Configure Receive CIR**, and then follow the on-screen messages to set:
 - ◆ Committed burst size (Bc)
 - ◆ Circuit throughput
 - ◆ Excess burst size (Be)
- ◆ Select **Configure FRF .12 Fragmentation**, and then follow the on-screen messages to:
 - ◆ Enable/Disable End-to-End FRF .12
 - ◆ Set Fragment Size

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Modifying a DLCI

To modify a DLCI:

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure DLCIs**.

The **FR DLCI Config Menu** displays.

```
*****  
*                FR DLCI Config Menu                *  
*****
```

1. Add New DLCI
2. Modify Existing DLCI
3. Delete DLCI
4. Show Current DLCIs

3. Select **Modify Existing DLCI**.

4. Type the port number to change, and then press ENTER.

5. Type the DLCI value, and then press ENTER.

The **FR Encapsulation Configuration** submenu displays.

```
*****  
*    FR Encapsulation Configuration    *  
*****
```

Current Encapsulation : None

1. RAW (No Encapsulation)
2. Proprietary Voice DLCI
3. RFC 1490
4. ATM RFC 1483 (Tunneling)

4. Show Current DLCIs

3. Select Delete DLCI.

4. Do one of the following:

- ◆ To delete the DLCI configuration, type **y**.
- ◆ To cancel the deletion, type **n**.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring Frame Relay options

The PARTNER ACS 1600 DSL module contains commands that allow you to configure or display the following Frame Relay options:

- ◆ Fragmentation
- ◆ Maintenance Protocol
- ◆ Congestion Parameters

Configuring fragmentation

To configure fragmentation:

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure FR Options**.

The **Frame Relay Options** submenu displays.

```
*****
*                               *
*           Frame Relay Options           *
*                               *
*****

1. Configure Fragmentation
2. Configure Maintenance Protocol
3. Configure Congestion Parameters
```

3. Select **Configure Fragmentation**.

The **FR Fragmentation Configuration** submenu displays.

```
*****
```

```
*      FR Fragmentation Configuration      *
```

```
*****
```

1. Configure FRF.12 Fragmentation
2. Configure CopperMountain Fragmentation

4. Do one of the following:

◆ **Select Configure FRF.12 Fragmentation.**

The **FR FRF.12 Configuration** submenu displays.

```
*****
```

```
*      FR FRF.12 Configuration      *
```

```
*****
```

1. Enable/Disable FRF.12
2. Enable Automatic Fragment Sizing
3. Set Manual Fragment Size

Select your choice, and then follow the on-screen instructions.

◆ **Select **Configure CopperMountain Fragmentation**.**

The **FR FRF.12 Configuration** submenu displays.

```
*****
```

```
*      FR FRF.12 Configuration      *
```

```
*****
```

1. Enable/Disable CuMtn Fragmentation
2. Set Real-Time DLCI

Select your choice, and then follow the on-screen instructions.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring the congestion parameters

To configure the congestion parameters:

1. On the **Main Menu**, select **Configure WAN**, and then type the slot number of the WAN interface that you want to configure.

The **WAN Configuration Menu** displays.

2. Select **Configure FR Options**.

The **Frame Relay Options** submenu displays.

```
*****
*                               *
*           Frame Relay Options           *
*                               *
*****
1. Configure Fragmentation
2. Configure Maintenance Protocol
3. Configure Congestion Parameters
```

3. Select **Configure Congestion Parameters**.

The **FR Congestion Configuration** submenu displays.

```
*****
*           FR Congestion Configuration           *
*                               *
*****
1. Configure Transmit Congestion
Parameters
2. Configure Receive Congestion
Parameters
```

4. Do one of the following.

- ◆ Select **Configure Transmit Congestion Parameters**, and then follow the on-screen messages to set:
 - ◆ FECN/BECN condition set size
 - ◆ FECN/BECN condition clear size
 - ◆ FECN/BECN max number of bytes to store
- ◆ Select **Configure Receive Congestion Parameters**, and then follow the on-screen messages to:
 - ◆ FECN/BECN condition set size
 - ◆ FECN/BECN condition clear size
 - ◆ FECN/BECN max number of bytes to store

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on

restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring the voice path

After you define the voice PVCs and DLCIs, you need to perform the following steps to configure the voice path:

- ◆ Set the jitter delay
- ◆ Set the SLIC control mode
- ◆ Set the echo cancellation

Setting the jitter delay



When the jitter delay is set, the PARTNER ACS 1600 DSL module holds the incoming packet data from the WAN voice channel to allow for variance in packet arrival time. The time that you set for the jitter delay depends on the data rate in use – the lower the data rate, the higher the delay.

To set the jitter delay

1. On the Main Menu, select **VoicePath Configure**.

The **Voice Configuration** submenu displays.

```
*****  
*                               *  
*           Voice Configuration           *  
*                               *  
*****  
  
V. Set Voice Gateway  
J. Set Jitter Delay  
D. Display Jitter Delay  
T. Set SLIC Control Mode  
U. Set Compander Mode (u-Law, A-Law)  
M. Set Debug Mode  
E. Configure Echo Cancellation Default  
Settings
```

2. Select **Set Jitter Delay**.

The following instructions display on-screen:

```
Enter number of ms to delay :
```

3. Type the number of ms to delay, and then press ENTER.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Setting the SLIC Control Mode

To set the SLIC control mode:

1. On the Main Menu, select **VoicePath Configure**.

The **Voice Configuration** submenu displays.

```
*****
*                               *
*           Voice Configuration           *
*                               *
*****

V. Set Voice Gateway
J. Set Jitter Delay
D. Display Jitter Delay
T. Set SLIC Control Mode
U. Set Compander Mode (u-Law, A-Law)
M. Set Debug Mode
E. Configure Echo Cancellation Default
Settings
```

2. Select **Select SLIC Control Mode**.

The **SLIC Control Mode Selection** submenu displays.

```
*****
*                               *
*           SLIC Control Mode Selection           *
*                               *
*****

Current Control Mode = MANUAL Control
Mode

A. AUTO Control Mode
M. MANUAL Control Mode
```

3. Select your choice.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring Echo Cancellation

When you enable echo cancellation, it isolates and filters unwanted digital signals caused by echoes from the main transmitted signal.

Echo cancellation automatically disables when the PARTNER ACS 1600 DSL module detects a FAX or modem signal. At



the conclusion of the FAX or modem session, echo cancellation automatically re-enables.

To configure echo cancellation:

1. On the Main Menu, select VoicePath Configure.

The **Voice Configuration** submenu displays.

```
*****
*           Voice Configuration           *
*****
V. Set Voice Gateway
J. Set Jitter Delay
D. Display Jitter Delay
T. Set SLIC Control Mode
U. Set Comander Mode (u-Law, A-Law)
M. Set Debug Mode
E. Configure Echo Cancellation Default
  Settings
```

2. Select Configure Echo Cancellation Default Settings.

The **Echo Cancellation Default Settings Configure Menu** displays.

```
*****
* Echo Cancellation Default Settings
  Configure Menu *
*****
1. Set Echo Cancellation default setting
  for all ports
2. Display current Echo Cancellation
  default settings
3. Configure Echo Cancellation default
  setting per port
```

3. Do one of the following, and then follow the on-screen messages:

- ◆ To set the same setting for all ports, select **Set Echo Cancellation default setting for all ports**.
- ◆ To display the current settings for all ports, select **Display current Echo Cancellation default settings**.
- ◆ To set echo cancellation by port, select **Configure Echo Cancellation default setting per port**.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on

restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

7. Router configuration

This chapter describes how to configure the PARTNER ACS 1600 DSL module as a router. For more information on the menus, submenus and commands in this chapter, see the “Menu interface” chapter.

A router is a network layer device that uses one or more metrics to determine the optimal path along which network traffic should be forwarded. Routers forward packets from one network to another based on network layer information. Occasionally called a gateway (although this definition of gateway is becoming increasingly outdated).

You must complete the following steps to configure the PARTNER ACS 1600 DSL module as a router:

- ◆ Configure IP addresses on the LAN and WAN ports
- ◆ Enable the Routing Information Protocol (RIP) poisoned reverse (recommended), add a static route or add a default route
- ◆ Disable bridging globally
- ◆ Disable bridging by port
- ◆ Disable the Spanning Tree Protocol (STP) globally
- ◆ Disable STP by port

You can configure the PARTNER ACS 1600 DSL module as both a router and a bridge – it depends on your application. A router can improve overall efficiency for a complex network, but a bridge provides better speed and flexibility for the overall network.

Configuring an IP address



To configure the PARTNER ACS 1600 DSL module as a router, you must assign an IP address to both the LAN and WAN ports – each with different subnet masks.

You can assign up to 8 IP addresses on each of the WAN and LAN ports.

To configure an IP address:

1. On the Main Menu, select **Configure IP Router.**

The **Router Configuration Menu** displays.

```
*****
*           Router Configuration Menu           *
*****

C. Configure Port IP Address
U. Unconfigure Port IP Address
S. Add/Remove a Static Route
R. Enable/Disable RIP
V. Configure RIP Version by Port
P. Configure RIP Poisoned Reverse by Port
N. Configure DNS Client
H. Configure DHCP Client
L. Configure DHCP Relay
T. Configure Telnet Server Port
F. Configure IP Filtering
D. Display Route Table
```

2. Select **Configure Port IP Address.**

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :

Interfaces may or may not display, depending on the IAD in use.



3. Type the number of the port for which you want to configure an IP address.

The following message (or one similar) displays:

IP interfaces on port 1:

<u>ID</u>	<u>IPAddr</u>	<u>IPMask</u>	<u>Priority</u>
0	255.255.255.0	255.255.255.0	NORMAL

Enter connection to configure:

4. Type the ID number of the connection that you want to configure (range = 0-7), and then press ENTER.

5. Type the new IP address, or press ENTER to select the current IP address.

The following instructions display on-screen:

```
Current subnet mask = 0.0.0.0
```

```
Enter new subnet mask for this interface:
```

6. Type the new subnet mask address, or press ENTER to select the current subnet mask.

The following instructions display on-screen:

```
Select priority Normal/High [N/H] (N):
```

7. Do one of the following, and then type **Y**:
 - ◆ To give the interface high priority, type **H**.
 - ◆ To give the interface normal priority, type **N**.

The **Router Configuration Menu** redisplay.

8. Repeat steps 1-6 for each port for which you want to configure an IP address.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Enabling RIP poisoned reverse



When you enable RIP, the PARTNER ACS 1600 DSL module sends routing data to other adjacent routers and dynamically “learns” the associated network topology.

For RIP to work, you must enable RIP globally or locally (by port), and then setting the RIP version. The order in which you perform the procedures is irrelevant.

Enabling RIP poisoned reverse globally

To enable RIP poisoned reverse globally:

1. On the Main Menu, select **Configure IP Router**.

The **Router Configuration Menu** displays.

```
*****
*           Router Configuration Menu           *
*****
C. Configure Port IP Address
U. Unconfigure Port IP Address
S. Add/Remove a Static Route
R. Enable/Disable RIP
V. Configure RIP Version by Port
P. Configure RIP Poisoned Reverse by Port
N. Configure DNS Client
H. Configure DHCP Client
L. Configure DHCP Relay
T. Configure Telnet Server Port
F. Configure IP Filtering
D. Display Route Table
```

2. Select **Enable/Disable RIP**, and then type **E**.

The **Router Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Enabling RIP poisoned reverse by port

To enable RIP poisoned reverse by port:

1. On the Main Menu, select **Configure IP Router**.

The **Router Configuration Menu** displays.

```
*****
*           Router Configuration Menu           *
*****
C. Configure Port IP Address
U. Unconfigure Port IP Address
S. Add/Remove a Static Route
R. Enable/Disable RIP
V. Configure RIP Version by Port
P. Configure RIP Poisoned Reverse by Port
N. Configure DNS Client
H. Configure DHCP Client
L. Configure DHCP Relay
T. Configure Telnet Server Port
F. Configure IP Filtering
D. Display Route Table
```

2. Select **Configure RIP Poisoned Reverse by Port**.

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :

Interfaces may or may not display, depending on the IAD in use.

3. Type the number of the port for which you want to enable poisoned reverse.

The following instructions display on-screen:

RIP Poisoned Reverse for Slot 1, Port 1 is currently DISABLED

Enter E to Enable, D to Disable :



4. Type **E**.

The **Router Configuration Menu** redisplay.

5. Repeat steps 1-3 for each port for which you want to enable RIP poisoned reverse.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Setting the RIP version

To set the RIP version:

1. On the Main Menu, select **Configure IP Router**.

The **Router Configuration Menu** displays.

```
*****
*           Router Configuration Menu           *
*****

C. Configure Port IP Address
U. Unconfigure Port IP Address
S. Add/Remove a Static Route
R. Enable/Disable RIP
V. Configure RIP Version by Port
P. Configure RIP Poisoned Reverse by Port
N. Configure DNS Client
H. Configure DHCP Client
L. Configure DHCP Relay
T. Configure Telnet Server Port
F. Configure IP Filtering
D. Display Route Table
```

2. Select **Configure RIP Version by Port**.

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :

Interfaces may or may not display, depending on the IAD in use.



3. Type the number of the port for which you want to configure the RIP poisoned reverse version.

The following instructions display on-screen:

```
Enter RIP Version for Port 1
```

- 0. Disabled
- 1. Version 1 Broadcast
- 2. Version 2 Broadcast
- 3. Version 2 Multicast

4. Select your choice, and then press any key.

The **Router Configuration Menu** redisplay.

5. Repeat steps 1-4 for each port for which want to set the RIP poisoned reverse version.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Adding a static route

To add a static route:

1. On the Main Menu, select **Configure IP Router**.

The **Router Configuration Menu** displays.

```
*****
*           Router Configuration Menu           *
*****

C. Configure Port IP Address
U. Unconfigure Port IP Address
S. Add/Remove a Static Route
R. Enable/Disable RIP
V. Configure RIP Version by Port
P. Configure RIP Poisoned Reverse by Port
N. Configure DNS Client
H. Configure DHCP Client
L. Configure DHCP Relay
T. Configure Telnet Server Port
F. Configure IP Filtering
D. Display Route Table
```

2. Select **Add/Remove a Static Route**.

The **Router Modification Menu** displays.

```
*****
*           Router Modification Menu           *
*****

A. Add a Static Route
R. Remove a Route
F. Add/Change the Default Route
T. Remove the Default Route
D. Display Route Table
```

3. Select **Add a Static Route**.
4. Type the destination address that you want to add, and then press ENTER.
5. Type the network mask, and then press ENTER.

6. Type the gateway address, press ENTER, and then type Y.

The **Router Modification Menu** redisplay.

7. Repeat steps 1-6 for each route that you want to add.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Adding a default route

To add a default route:

1. On the Main Menu, select **Configure IP Router**.

The **Router Configuration Menu** displays.

```
*****
*           Router Configuration Menu           *
*****
C. Configure Port IP Address
U. Unconfigure Port IP Address
S. Add/Remove a Static Route
R. Enable/Disable RIP
V. Configure RIP Version by Port
P. Configure RIP Poisoned Reverse by Port
N. Configure DNS Client
H. Configure DHCP Client
L. Configure DHCP Relay
T. Configure Telnet Server Port
F. Configure IP Filtering
D. Display Route Table
```

2. Select **Add/Remove a Static Route**.

The **Router Modification Menu** displays.

```
*****
*           Router Modification Menu           *
*****
A. Add a Static Route
R. Remove a Route
F. Add/Change the Default Route
```

- T. Remove the Default Route
- D. Display Route Table

3. Select Add/Change the Default Route.

- 4.** Type the gateway address for the default route, press ENTER, and then type Y.

The **Router Modification Menu** displays.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Disabling bridging



To configure the PARTNER ACS 1600 DSL module as a router, you must disable bridging both globally and by port. The order in which you perform the procedures is irrelevant.

When you disable bridging globally, it automatically disables bridging for all ports and disables the spanning tree protocol.

Disabling bridging globally

To disable bridging globally:

- 1.** On the Main Menu, select **Configure Bridge**.

The **Bridge Configuration Menu** displays.

```
*****
*           Bridge Configuration Menu           *
*****

G. Enable/Disable Bridging Globally
P. Enable/Disable Bridging by Port
A. Configure Bridge Aging Timer

T. Enable/Disable Spanning Tree Globally
O. Enable/Disable Spanning Tree by Port
R. Configure Spanning Tree Bridge
Priority
Q. Configure Spanning Tree Port Priority
H. Configure Spanning Tree Hello Time
S. Configure Spanning Tree Max Age
F. Configure Spanning Tree Forward Delay
```

C. Configure Spanning Tree Path Cost

D. Delete Bridge Forwarding Database Entry

2. Select **Enable/Disable Bridging Globally**, and the type **D**.

The **Bridge Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Disabling bridging by port

To disable bridging by port:

1. On the Main Menu, select **Configure Bridge**.

The **Bridge Configuration Menu** displays.

```
*****
*          Bridge Configuration Menu          *
*****

G. Enable/Disable Bridging Globally
P. Enable/Disable Bridging by Port
A. Configure Bridge Aging Timer

T. Enable/Disable Spanning Tree Globally
O. Enable/Disable Spanning Tree by Port
R. Configure Spanning Tree Bridge
Priority
Q. Configure Spanning Tree Port Priority
H. Configure Spanning Tree Hello Time
S. Configure Spanning Tree Max Age
F. Configure Spanning Tree Forward Delay
C. Configure Spanning Tree Path Cost

D. Delete Bridge Forwarding Database
Entry
```

2. Select **Enable/Disable Bridging by Port**.

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :

Interfaces may or may not display, depending on the IAD in use.



3. Type the number of the port for which you want to disable bridging, and then type **D**.
4. Repeat steps 1-3 for each port on which you want to disable bridging.

The **Bridge Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Disabling STP

To configure the PARTNER ACS 1600 DSL module as a router, you must disable STP both globally and by port. The order in which you perform the procedures is irrelevant.

Disabling STP globally

To disable STP globally:

1. On the Main Menu, select **Configure Bridge**.

The **Bridge Configuration Menu** displays.

```
*****  
*           Bridge Configuration Menu           *  
*****
```

- G. Enable/Disable Bridging Globally
- P. Enable/Disable Bridging by Port
- A. Configure Bridge Aging Timer

- T. Enable/Disable Spanning Tree Globally
- O. Enable/Disable Spanning Tree by Port

- R. Configure Spanning Tree Bridge Priority
- Q. Configure Spanning Tree Port Priority
- H. Configure Spanning Tree Hello Time
- S. Configure Spanning Tree Max Age
- F. Configure Spanning Tree Forward Delay
- C. Configure Spanning Tree Path Cost

- D. Delete Bridge Forwarding Database Entry

2. Select Enable/Disable Spanning Tree Globally, and the type D.

The **Bridge Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Disabling STP by port

To disable STP by port:

1. On the Main Menu, select Configure Bridge.

The **Bridge Configuration Menu** displays.

```
*****
*           Bridge Configuration Menu           *
*****

G. Enable/Disable Bridging Globally
P. Enable/Disable Bridging by Port
A. Configure Bridge Aging Timer
T. Enable/Disable Spanning Tree Globally
O. Enable/Disable Spanning Tree by Port
R. Configure Spanning Tree Bridge
Priority
Q. Configure Spanning Tree Port Priority
H. Configure Spanning Tree Hello Time
S. Configure Spanning Tree Max Age
F. Configure Spanning Tree Forward Delay
C. Configure Spanning Tree Path Cost
D. Delete Bridge Forwarding Database
Entry
```

2. Select **Enable/Disable Spanning Tree by Port**.

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :



Interfaces may or may not display, depending on the IAD in use.

3. Type the number of the port for which you want to disable STP, and then type **D**.

The **Bridge Configuration Menu** redisplay.

4. Repeat steps 1-3 for each port on which you want to disable STP.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

8. Bridge configuration

This chapter describes how to configure the PARTNER ACS 1600 DSL module as a bridge. For more information on the menus, submenus and commands in this chapter, see the “Menu interface” chapter.

A bridge is a device that connects and passes packets between two network segments that use the same communications protocol.

Bridges operate at the data link layer (Layer 2) of the OSI reference model. In general, a bridge will filter, forward, or flood an incoming frame based on the MAC address of that frame.

Although the PARTNER ACS 1600 DSL module comes with bridging enabled by default, you must still:

- ◆ Enable bridging globally
- ◆ Enable bridging by port
- ◆ Set the bridge aging timer
- ◆ Disable the RIP poisoned reverse globally
- ◆ Disable the RIP poisoned reverse by port
- ◆ Enable STP globally
- ◆ Enable STP by port

You can configure the PARTNER ACS 1600 DSL module as both a router and a bridge – it depends on your application.

A router can improve overall efficiency for a complex network, but a bridge provides better speed and flexibility for the overall network.

Enabling Bridging



For bridging to work, you must enable bridging both globally and by port, and then set the bridge aging timer. The order in which you perform the procedures is irrelevant.

Enabling bridging globally

To enable bridging globally:

1. On the Main Menu, select **Configure Bridge**.

The **Bridge Configuration Menu** displays.

```
*****
*           Bridge Configuration Menu           *
*****

G. Enable/Disable Bridging Globally
P. Enable/Disable Bridging by Port
A. Configure Bridge Aging Timer

T. Enable/Disable Spanning Tree Globally
O. Enable/Disable Spanning Tree by Port
R. Configure Spanning Tree Bridge
Priority
Q. Configure Spanning Tree Port Priority
H. Configure Spanning Tree Hello Time
S. Configure Spanning Tree Max Age
F. Configure Spanning Tree Forward Delay
C. Configure Spanning Tree Path Cost

D. Delete Bridge Forwarding Database
Entry
```

2. Select **Enable/Disable Bridging Globally**, and the type **E**.

The **Bridge Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Enabling bridging by port

To enable bridging by port:

1. On the Main Menu, select **Configure Bridge**.

The **Bridge Configuration Menu** displays.

```
*****
*           Bridge Configuration Menu           *
*****

G. Enable/Disable Bridging Globally
P. Enable/Disable Bridging by Port
A. Configure Bridge Aging Timer

T. Enable/Disable Spanning Tree Globally
O. Enable/Disable Spanning Tree by Port
R. Configure Spanning Tree Bridge
Priority
Q. Configure Spanning Tree Port Priority
H. Configure Spanning Tree Hello Time
S. Configure Spanning Tree Max Age
F. Configure Spanning Tree Forward Delay
C. Configure Spanning Tree Path Cost

D. Delete Bridge Forwarding Database
Entry
```

2. Select **Enable/Disable Bridging by Port**.

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :

Interfaces may or may not display, depending on the IAD in use.

3. Type the number of the port for which you want to disable bridging, and then type **E**.

The **Bridge Configuration Menu** redisplay.



4. Repeat steps 1-3 for each port on which you want to disable bridging.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Setting the bridge aging timer



The **bridge aging timer** sets the amount of time that the PARTNER ACS 1600 DSL module keeps a MAC address in the bridging table. When the timer reaches zero, the database deletes the address and creates a new bridge.

To set the bridge aging timer:

1. On the Main Menu, select **Configure Bridge**.

The **Bridge Configuration Menu** displays.

```
*****
*           Bridge Configuration Menu           *
*****

G. Enable/Disable Bridging Globally
P. Enable/Disable Bridging by Port
A. Configure Bridge Aging Timer

T. Enable/Disable Spanning Tree Globally
O. Enable/Disable Spanning Tree by Port
R. Configure Spanning Tree Bridge
Priority
Q. Configure Spanning Tree Port Priority
H. Configure Spanning Tree Hello Time
S. Configure Spanning Tree Max Age
F. Configure Spanning Tree Forward Delay
C. Configure Spanning Tree Path Cost

D. Delete Bridge Forwarding Database
Entry
```

2. Select **Configure Bridge Aging Timer**.

The following instructions display on-screen:

```
Enter Bridge Aging time in seconds
(1..3600): (300)
```

3. Type the bridge aging time (range = 1-3600 seconds), or press ENTER to accept the default of 300 seconds.

4. Press any key.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Disabling RIP poisoned reverse



Conversely, for bridging to work, you must disable RIP both globally and locally (by port). The order in which you perform the procedures is irrelevant.

Disabling RIP poisoned reverse globally

To disable RIP poisoned reverse globally:

1. On the Main Menu, select **Configure IP Router**.

The **Router Configuration Menu** displays.

```
*****
*           Router Configuration Menu           *
*****
C. Configure Port IP Address
U. Unconfigure Port IP Address
S. Add/Remove a Static Route
R. Enable/Disable RIP
V. Configure RIP Version by Port
P. Configure RIP Poisoned Reverse by Port
N. Configure DNS Client
H. Configure DHCP Client
L. Configure DHCP Relay
T. Configure Telnet Server Port
F. Configure IP Filtering
D. Display Route Table
```

2. Select **Enable/Disable RIP**, and then type **D**.

The **Router Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Disabling RIP poisoned reverse by port

To disable RIP poisoned reverse by port:

1. On the Main Menu, select **Configure IP Router**.

The **Router Configuration Menu** displays.

```
*****
*           Router Configuration Menu           *
*****
C. Configure Port IP Address
U. Unconfigure Port IP Address
S. Add/Remove a Static Route
R. Enable/Disable RIP
V. Configure RIP Version by Port
P. Configure RIP Poisoned Reverse by Port
N. Configure DNS Client
H. Configure DHCP Client
L. Configure DHCP Relay
T. Configure Telnet Server Port
F. Configure IP Filtering
D. Display Route Table
```

2. Select **Configure RIP Poisoned Reverse by Port**.

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :

Interfaces may or may not display, depending on the IAD in use.

3. Type the number of the port for which you want to disable poisoned reverse.

The following instructions display on-screen:

```
RIP Poisoned Reverse for Slot 1, Port 1 is
currently DISABLED
```

Enter E to Enable, D to Disable :

4. Type **D**.

The **Router Configuration Menu** resplays.



5. Repeat steps 1-4 for each port for which you want to disable RIP poisoned reverse.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Enabling STP

Having many bridges creates the potential for network loops. A loop presents conflicting information about the segment on which a specific address is located and forces the bridge to forward all data.

When you enable STP, the PARTNER ACS 1600 DSL module reconfigures the bridge network to channel data along an optimum route to its destination.



To configure the PARTNER ACS 1600 DSL module as a bridge, you must enable STP both globally and by port.

Enabling STP globally

To enable STP globally:

1. On the Main Menu, select **Configure Bridge**.

The **Bridge Configuration Menu** displays.

```
*****
*           Bridge Configuration Menu           *
*****

G. Enable/Disable Bridging Globally
P. Enable/Disable Bridging by Port
A. Configure Bridge Aging Timer
T. Enable/Disable Spanning Tree Globally
O. Enable/Disable Spanning Tree by Port
R. Configure Spanning Tree Bridge
Priority
Q. Configure Spanning Tree Port Priority
H. Configure Spanning Tree Hello Time
S. Configure Spanning Tree Max Age
F. Configure Spanning Tree Forward Delay
C. Configure Spanning Tree Path Cost
D. Delete Bridge Forwarding Database
Entry
```

2. Select **Enable/Disable Spanning Tree Globally**, and the type **E**.

The **Bridge Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Enabling STP by port

To enable STP by port:

1. On the Main Menu, select **Configure Bridge**.

The **Bridge Configuration Menu** displays.

```
*****
*           Bridge Configuration Menu           *
*****
G. Enable/Disable Bridging Globally
P. Enable/Disable Bridging by Port
A. Configure Bridge Aging Timer
T. Enable/Disable Spanning Tree Globally
O. Enable/Disable Spanning Tree by Port
R. Configure Spanning Tree Bridge
Priority
Q. Configure Spanning Tree Port Priority
H. Configure Spanning Tree Hello Time
S. Configure Spanning Tree Max Age
F. Configure Spanning Tree Forward Delay
C. Configure Spanning Tree Path Cost
D. Delete Bridge Forwarding Database
Entry
```

2. Select **Enable/Disable Spanning Tree by Port**.

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :

Interfaces may or may not display, depending on the IAD in use.



3. Type the number of the port for which you want to enable STP, and then type **E**.
4. Repeat steps 1-3 for each port on which you want to enable STP.

The **Bridge Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

9. NAT configuration

This chapter walks you through the steps required to configure the Network Address Translation (NAT). For more information on the menus, submenus and commands in this chapter, see the “Menu interface” chapter.

The setup of IP networks can be difficult and time consuming, as each requires an IP address, subnet mask, DNS address and a default router.

If you enter once piece of information incorrectly, the network connection does not function and there may be no indication of what is wrong.

NAT prevents this scenario by:

- ◆ Modifying IP addresses and checksum without impacting traffic.
- ◆ Automatic network configuration - if you configure DHCP. For more information, see the “DHCP configuration” chapter.
- ◆ Packet level filtering and routing.
- ◆ Traffic logging.

A significant advantage of NAT lies in the fact that you can configure it without having to change host or routers – other than those few routers on which NAT is configured.

NAT multiplexes traffic from the internal network and presents it to the Internet as if it is from a single source that has only one IP address.

You must complete the following steps to configure NAT:

- ◆ Enable NAT translation by port (factory default = disabled)
- ◆ Configure the NAT local server entry
- ◆ Configure the NAT Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) timeouts
- ◆ Configure the NAT port range

Enabling NAT translation

To enable the NAT translation by port:

1. On the Main Menu, select **Configure NAT**.

The **NAT Configuration Menu** displays.

```
*****
*           NAT Configuration Menu           *
*****
B. Enable/Disable NAT Debug Messages
P. Enable/Disable NAT Translation by Port
T. Configure NAT TCP Timeout
U. Configure NAT UDP Timeout
R. Configure NAT Port Range
N. Configure NAT Local Server Entry
S. Display NAT Statistics
C. Display NAT Connection Table
D. Display NAT Connection Details
O. Display NAT Local Server Table
X. Delete IP Address from NAT Tables
Y. Delete NAT Local Server Entry
```

2. Select **Enable/Disable NAT Translation by Port**.

The following instructions display on-screen:

Available Interfaces :

1. SDSL
2. 10/100BaseT Ethernet
3. Universal Serial
0. (Abort)

Selection :

Interfaces may or may not display, depending on the IAD in use.

3. Type the number of the port for which you want to enable NAT, and then type **E**.

The **NAT Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on



restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring the NAT local server entry

When you configure the NAT local server, it allows access from the Internet via the IP address of the NAT-enabled port.

To configure the NAT local server entry:

1. On the Main Menu, select **Configure NAT**.

The **NAT Configuration Menu** displays.

```
*****
*           NAT Configuration Menu           *
*****
B. Enable/Disable NAT Debug Messages
P. Enable/Disable NAT Translation by Port
T. Configure NAT TCP Timeout
U. Configure NAT UDP Timeout
R. Configure NAT Port Range
N. Configure NAT Local Server Entry
S. Display NAT Statistics
C. Display NAT Connection Table
D. Display NAT Connection Details
O. Display NAT Local Server Table
X. Delete IP Address from NAT Tables
Y. Delete NAT Local Server Entry
```

2. Select **Configure NAT Local Server Entry**.

The following instructions display on-screen:

```
Enter NAT Local Server Entry to Configure
(1..10): (1)
```

3. Type the local server entry to configure (range = 1-10), and then press ENTER.

The following instructions display on-screen:

```
Current NAT Local Server Translated IP
Address = 0.0.0.0
Enter new NAT Local Server Translated IP
address:
```

4. Type the new translated IP address (range = 1-65535), and then press ENTER.

The following instructions display on-screen:

```
Current NAT Local Server Translated IP  
Address = 0.0.0.0
```

```
Enter new NAT Local Server Standard IP  
address:
```

5. Type the new standard IP address (range = 1-65535), and then press ENTER.

The following instructions display on-screen:

```
Enter NAT Local Server Protocol (1=TCP  
2=UDP):
```

6. Select the local server protocol, and then press any key.

The **NAT Configuration Menu** displays.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring the NAT timeouts

Under normal circumstances, the timeout default setting is adequate. However, if you interact with multiple-player IP games or video conferencing, you need to configure the timeout.

The local server protocol that you select determines which timeout to configure. TDP and UDP are similar, except that TCP tracks TCP clients on a per-connection basis and removes them from the table as soon as the connection closes.

Configuring a NAT TCP timeout

To configure a NAT TCP timeout:

1. On the Main Menu, select **Configure NAT**.

The **NAT Configuration Menu** displays.

```
*****
*           NAT Configuration Menu           *
*****
B. Enable/Disable NAT Debug Messages
P. Enable/Disable NAT Translation by Port
T. Configure NAT TCP Timeout
U. Configure NAT UDP Timeout
R. Configure NAT Port Range
N. Configure NAT Local Server Entry
S. Display NAT Statistics
C. Display NAT Connection Table
D. Display NAT Connection Details
O. Display NAT Local Server Table
X. Delete IP Address from NAT Tables
Y. Delete NAT Local Server Entry
```

2. Select **Configure NAT TCP Timeout**.

The following instructions display on-screen:

```
Enter NAT TCP Connection Timeout in seconds
(60..3600): (300)
```

3. Type the TCP timeout value (range = 60-3600 seconds), press ENTER, and then press any key to continue.

The **NAT Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Configuring a NAT UDP timeout

To configure a NAT UDP timeout:

1. On the Main Menu, select **Configure NAT**.

The **NAT Configuration Menu** displays.

```
*****
*           NAT Configuration Menu           *
*****
B. Enable/Disable NAT Debug Messages
P. Enable/Disable NAT Translation by Port
T. Configure NAT TCP Timeout
U. Configure NAT UDP Timeout
R. Configure NAT Port Range
N. Configure NAT Local Server Entry
S. Display NAT Statistics
C. Display NAT Connection Table
D. Display NAT Connection Details
O. Display NAT Local Server Table
X. Delete IP Address from NAT Tables
Y. Delete NAT Local Server Entry
```

2. Select **Configure NAT UDP Timeout**.

The following instructions display on-screen:

```
Enter NAT UDP Connection Timeout in seconds
(60..3600): (120)
```

3. Type the UDP timeout value (range = 60-3600 seconds), press ENTER, and then press any key to continue.

The **NAT Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Configuring the NAT port range

Under normal circumstances, the port range default setting is adequate. However, if you interact with multiple-player IP games or video conferencing, you need to configure the port range setting.

To multiplex several connections to a single destination, the PARTNER ACS 1600 DSL module assigns all packets unique port numbers. Each IP packet starts with a header that contain the source and destination addresses, as well as two port numbers. The addresses specify the two routers at each end, while the two port numbers ensure the unique identification of each router pair.

When the PARTNER ACS 1600 DSL module sends TCP or UDP connection from a local port to an Internet port, it changes the sent IP address to the address of the Internet port. Similarly, it changes the TCP or UDP connection port number to a unique value within the NAT port range.



The NAT port range must not include any ports that use applications such as HTTP, TFTP and so on.

To configure the NAT port range:

1. On the Main Menu, select **Configure NAT**.

The **NAT Configuration Menu** displays.

```
*****
*           NAT Configuration Menu           *
*****
B. Enable/Disable NAT Debug Messages
P. Enable/Disable NAT Translation by Port
T. Configure NAT TCP Timeout
U. Configure NAT UDP Timeout
R. Configure NAT Port Range
N. Configure NAT Local Server Entry
S. Display NAT Statistics
C. Display NAT Connection Table
D. Display NAT Connection Details
O. Display NAT Local Server Table
X. Delete IP Address from NAT Tables
Y. Delete NAT Local Server Entry
```

2. Select Configure NAT Port Range.

The following instructions display on-screen:

```
Enter Low End of NAT Port Range  
(5000..65534): (50000)
```

3. Type the low end value (range = 5000-65534), and then press ENTER.

The following instructions display on-screen:

```
Enter High End of NAT Port Range  
(5010..65534): (50000)
```

4. Type the high end value (range = 5000-65534), and then press ENTER.

The **NAT Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

10. DHCP server configuration

This chapter walks you through the steps required to configure the Dynamic Host Configuration Protocol (DHCP) server. For more information on the menus, submenus and commands in this chapter, see the “Menu interface” chapter.

DHCP allows for dynamic allocation of network addresses and configurations to newly attached hosts. DHCP reduces the work required to administer a large network.

You must complete the following steps to configure the DHCP server:

- ◆ Enable DHCP (factory default = disabled)
- ◆ Configure the DHCP server parameters
- ◆ Configure the DHCP address range pool

Enabling DHCP

To enable DHCP:

1. On the Main Menu, select **Configure DHCP Server**.

The **DHCP Server Configuration Menu** displays.

```
*****
*           DHCP Server Configuration Menu           *
*****
E. Enable/Disable DHCP
B. Enable/Disable DHCP Debug Messages
I. Configure DHCP Server Parameters
P. Configure DHCP Address Range Pool
C. Configure DHCP Client Entry
F. Display DHCP Configuration
S. Display DHCP Server Statistics
A. Display DHCP Server Assigned Addresses
U. Display DHCP Server Unassigned
Addresses
D. Display DHCP Entry Details
X. Delete A DHCP Client Entry
```


Y. Delete A DHCP Assignment Entry

2. Select Enable/Disable DHCP.

The following instructions display on-screen:

```
DHCP Server is currently DISABLED
Enter E to Enable, D to Disable :
```

3. Type E.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

Configuring the DHCP server parameters

To configure the DHCP server parameters:

1. On the Main Menu, select Configure DHCP Server.

The **DHCP Server Configuration Menu** displays.

```
*****
*           DHCP Server Configuration Menu           *
*****
E. Enable/Disable DHCP
B. Enable/Disable DHCP Debug Messages
I. Configure DHCP Server Parameters
P. Configure DHCP Address Range Pool
C. Configure DHCP Client Entry
F. Display DHCP Configuration
S. Display DHCP Server Statistics
A. Display DHCP Server Assigned Addresses
U. Display DHCP Server Unassigned
Addresses
D. Display DHCP Entry Details
X. Delete A DHCP Client Entry
Y. Delete A DHCP Assignment Entry
```

2. Select Configure DHCP Server Parameters.

The following instructions display on-screen:

```
Current Gateway address = 0.0.0.0
```

```
Enter new Gateway IP address:
```

3. Type the new gateway IP address, and then press ENTER.

If there is no gateway available, type the address of the Ethernet port.

The following instructions display on-screen:

```
Current DNS Server address = 0.0.0.0
```

```
Enter new DNS Server IP address:
```

4. Type the new DNS server IP address, and then press ENTER.

The following instructions display on-screen:

```
Current NetBIOS Server address = 0.0.0.0
```

```
Enter new NetBIOS Server address:
```

5. Type the new NetBIOS server IP address, and then press ENTER.

The following instructions display on-screen:

```
Current Subnet Mask = 0.0.0.0
```

```
Enter new Subnet Mask:
```

6. Type the subnet mask to return to DHCP clients, and then press ENTER.

The following instructions display on-screen:

```
Current Domain name =
```

```
Enter new Domain Name:
```

7. Type the domain name to return to DHCP clients, and then press ENTER.

The following instructions display on-screen:

```
Current Lease time is 0 seconds
```

```
Enter DHCP Lease Time in seconds
```



8. Type the new lease time, and then press ENTER.

The **NetBIOS Type Configuration Menu** displays.

```
*****  
*           NetBIOS Type Configuration Menu           *  
*****
```

Current NetBIOS Node Type: h-node

1. B-node
2. P-node
4. M-node
8. H-node

ESC to return to previous menu

9. Select your choice, and then press ESC.

The **DHCP Server Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the "Getting started" chapter.

Configuring the DHCP address range pool

You must configure the DHCP address range pool to set the range of IP addresses to return to the DHCP clients.

To configure the DHCP address range pool:

1. On the Main Menu, select **Configure DHCP Server**.

The **DHCP Server Configuration Menu** displays.

```
*****
*           DHCP Server Configuration Menu           *
*****
E. Enable/Disable DHCP
B. Enable/Disable DHCP Debug Messages
I. Configure DHCP Server Parameters
P. Configure DHCP Address Range Pool
C. Configure DHCP Client Entry
F. Display DHCP Configuration
S. Display DHCP Server Statistics
A. Display DHCP Server Assigned Addresses
U. Display DHCP Server Unassigned
Addresses
D. Display DHCP Entry Details
X. Delete A DHCP Client Entry
Y. Delete A DHCP Assignment Entry
```

2. Select **Configure DHCP Address Range Pool**.

The following instructions display on-screen:

```
Current High IP address of range pool =
0.0.0.0
```

Enter new High IP address:

3. Type the new high IP address, and then press ENTER.

The following instructions display on-screen:

```
Current Low IP address of range pool =
0.0.0.0
```

Enter new Low IP address:

4. Type the new low IP address, and then press ENTER.

The **DHCP Server Configuration Menu** redisplay.

You must restart the PARTNER ACS 1600 DSL module for any changes to take effect. For more information on restarting the PARTNER ACS 1600 DSL module, see the “Getting started” chapter.

11. Verification

This chapter describes how to verify that the PARTNER ACS 1600 DSL module operates properly after installation. It also covers maintenance, and how to display the current configuration. Before you can test the voice capabilities of the PARTNER ACS 1600 DSL module, you must first provision it at the voice gateway.

Power-up test

The PARTNER ACS 1600 DSL module shows a brief indication of normal operation when you first turn on the IAD – verify that the **POWER** indicator on the front panel lights green.

Operational test

The following procedure assumes that:

- ◆ You configured Directory numbers (DNs) in the Class 5 switch for the associated POTS ports. For more information, see the “WAN configuration” chapter.
- ◆ You configured PVCs at the DSLAM (defaults = 0, 38 – data and 0, 39 – voice). For more information, see the “WAN configuration” chapter.
- ◆ You configured a data network. For more information, see the “WAN configuration” chapter.
- ◆ You have a dedicated communications circuit available between yourself and a counterpart connected to the associated voice gateway via the PARTNER ACS 1600 DSL module.
- ◆ You connected and configured a WAN link at the associated DSLAM. For more information, see the “WAN configuration” chapter.
- ◆ You have a PC that has an Ethernet adapter and runs a TCP/IP stack. For more information, see the “Getting started” chapter.

To test the PARTNER ACS 1600 DSL module:

1. Verify the WAN link status.
2. Pick up the telephone receiver on the PARTNER phone and check for a dial tone
If no dial tone is present, troubleshoot as necessary.
3. Repeat steps 2-3 for each provisioned line.
4. Disconnect the telephone once you are through testing the analog telephone ports.
5. Use a crossover cable to connect the PC to the Ethernet LAN port on the PARTNER ACS 1600 DSL module.
6. Ping a known good address on the PARTNER ACS 1600 DSL module, and then wait for acknowledgement.
If a timeout occurs, troubleshoot the LAN path to the PARTNER ACS 1600 DSL module as necessary.
7. Ping a known good address on the network, and then wait for acknowledgement.
If a timeout occurs, troubleshoot the LAN path to the PARTNER ACS 1600 DSL module as necessary.
8. Disconnect the PC from the Ethernet LAN port.
9. Use a straight-through cable to connect the Ethernet LAN port to your local LAN patch panel or hub.
10. Connect the PARTNER ACS 1600 DSL module telephone ports to the local distribution frame or patch panel.

The PARTNER ACS 1600 DSL module is ready for service.

Maintenance

The PARTNER ACS 1600 DSL module Menu interface contains built-in utilities for maintenance and development.

Before running the System Utilities, contact your local Authorized Dealer or call the Avaya Help Line at (800) 628 2888. Consultation charges may apply.

Displaying the current configuration

To display the current configuration and data transmission status:

1. On the Main Menu, select **Reports Menu**.

The **Reports Menu** displays.

```
*****
*                               *
*               Reports Menu   *
*                               *
*****

C. Display Current Configuration
N. Display Network Statistics
I. Display Interface Statistics
M. Display Media Statistics
R. Display Route Table
A. Display ARP Table
B. Display Bridge Forwarding Database
S. Display Bridge Status
P. Display PPP Authorization Entries
U. Display System Uptime
```

2. Select **Display Current Configuration**.
3. Follow the on-screen instructions to view the information on the individual slots and ports.

A. Menu hierarchy

1. Reports Menu

C. Display Current Configuration

N. Display Network Statistics

- C. Display ICMP Statistics

- I. Display IP Statistics

- T. Display TCP Statistics

- U. Display UDP Statistics

- Z. Clear a Network Statistic

 - C. Clear ICMP Statistics

 - I. Clear IP Statistics

 - T. Clear TCP Statistics

 - U. Clear UDP Statistics

I. Display Interface Statistics

- A. Display ARP Statistics

- I. Display Interface Statistics

- B. Display Bridge Statistics

- P. Display PPP Statistics

- D. Display DLCI Statistics

- Z. Clear a Statistic

 - A. Clear ARP Statistics

 - I. Clear Interface Statistics

 - B. Clear Bridge Statistics

 - P. Clear PPP Statistics

 - D. Clear Frame Relay DLCI Statistics

 - A. Clear ATM PVC Statistics

- A. Display ATM PVC Statistics

- Z. Clear ATM PVC Statistics

M. Display Media Statistics

- F. Display Frame Relay Statistics
- S. Display Serial Statistics
- Z. Clear a Statistic
 - F. Clear Frame Relay DLCI Statistics
 - S. Clear Serial Statistics
- 1. Display ATM Statistics
- Z. Clear ATM Statistics
- 1. Display ENET Statistics
- Z. Clear ENET Statistics
- 1. Display POTS Statistics
- Z. Clear POTS Statistics

R. Display Route Table

A. Display ARP Table

B. Display Bridge Forwarding Database

S. Display Bridge Status

P. Display PPP Authorization Entries

U. Display System Uptime

2. Configure IP Router

C. Configure Port IP Address

U. Unconfigure Port IP Address

S. Add/Remove a Static Route

- A. Add a Static Route
- R. Remove a Route
- F. Add/Change the Default Route
- T. Remove the Default Route
- D. Display Route Table

R. Enable/Disable RIP

V. Configure RIP Version by Port

P. Configure RIP Poisoned Reverse by Port

N. Configure DNS Client

- A. Set DNS Server IP Address
- T. Set DNS Server Timeout
- S. Display DNS Cache and Statistics

H. Configure DHCP Client

L. Configure DHCP Relay

- E. Enable/Disable DHCP Relay
- C. Configure DHCP Relay
- S. Display DHCP Relay Statistics

T. Configure Telnet Server Port

F. Configure IP Filtering

- P. Choose port for IP filtering
- F. Globally enable/disable input or output filters
- T. Toggle input or output type filters to view/edit
- D. Display all filters of the chosen type
- I. Insert a new or buffered filter of the chosen type
- A. Append a new or buffered filter to the end of the list
- E. Edit a filter of the chosen type
- C. Copy filter operations menu
 - C. Copy a filter of the chosen type to the buffer
 - D. Display the filter in the copy buffer
 - E. Edit the filter in the copy buffer
 - X. Delete the filter in the copy buffer
- X. Delete one filter of the chosen type
- Z. Delete all filters of the chosen type
- S. Show IP filtering statistics
- Y. Clear IP filtering statistics

D. Display Route Table

3. Configure Bridge

- G. Enable/Disable Bridging Globally**
- P. Enable/Disable Bridging by Port**
- A. Configure Bridge Aging Timer**
- T. Enable/Disable Spanning Tree Globally**
- O. Enable/Disable Spanning Tree by Port**
- R. Configure Spanning Tree Bridge Priority**
- Q. Configure Spanning Tree Port Priority**
- H. Configure Spanning Tree Hello Time**
- S. Configure Spanning Tree Max Age**
- F. Configure Spanning Tree Forward Delay**
- C. Configure Spanning Tree Path Cost**
- D. Delete Bridge Forwarding Database Entry**

5. Configure WAN

0. Quick Configuration

1. Lucent Stinger (Conexant Autobaud, Payload Scrambling)
2. Nokia (Auto Cycle)
3. Copper Mountain (Auto Sense)
4. Paradyne (Framed 784 Kbps, Payload Scrambling)
5. AccessLan CPE
6. Nortel IMAS
7. ATM (Unframed, 1152kpbs Fixed)
8. Frame Relay (784 Kbps Fixed)

1. Configure Datalink Protocol

1. Totally Transparent
2. Raw HDLC
3. Cisco compatible HDLC

4. IP-Plus compatible HDLC
5. PPP (over Raw HDLC)
 0. None
 1. PAP Client
 2. PAP Server
 3. CHAP Client
 4. CHAP Server
6. ATM
7. Frame Relay

2. Configure Physical Interface

USI

1. Set WAN interface type
 1. RS-530
 2. V.35
2. Configure Data Rate and Clocking Options
 1. Track USI speed to SDSL speed
 2. Set Clock Speed Manually
 1. Externally provided
 2. 5.0 MBps
 3. 2.083 MBps
 4. 1.562 MBps
 5. 520 MBps
 6. 112 MBps
 3. Use Internal Receive Clock
 4. Use External Receive Clock

SDSL Mode

1. Toggle SDSL Mode (CO Or CPE)
2. Set SDSL Speed To Auto Cycle (Nokia)
 1. 1536 Kbps
 2. 1152 Kbps
 3. 768 Kbps
 4. 384 Kbps
 5. 192 Kbps
3. Set SDSL Speed to Auto Sense (Copper Mountain)
4. Enable/Disable Conexant Autobaud Mode
5. Set SDSL Sync Delay (Lucent)

6. Set SDSL to AccessLan CPE Mode
7. Set SDSL Speed Manually
8. Restart SDSL Activation Sequence
9. SDSL Interface Mode (Bit Order)
 - A. Enable/Disable SDSL Autobaud Debug Messages
 - D. Enable/Disable SDSL Debug Messages
 - Y. Enable/Disable Sync Msgs
 - P. Preactivation Debug Mode

3. Configure DLCIs (Datalink Protocol = Frame Relay)

1. Add New DLCI
 1. Raw (No Encapsulation)
 1. Configure Transmit CIR
 2. Configure Receive CIR
 3. Configure FRF.12 Fragmentation
 1. Enable/Disable End-To-End FRF.12
 2. Set Fragment Size
 2. Proprietary Voice DLCI
 1. Configure Transmit CIR
 2. Configure Receive CIR
 3. Configure FRF.12 Fragmentation
 1. Enable/Disable End-To-End FRF.12
 2. Set Fragment Size
 3. RFC 1490
 1. Configure Transmit CIR
 2. Configure Receive CIR
 3. Configure FRF.12 Fragmentation
 1. Enable/Disable End-To-End FRF.12
 2. Set Fragment Size
 4. ATM RFC 1483 (Tunneling)
 1. Configure Transmit CIR
 2. Configure Receive CIR
 3. Configure FRF.12 Fragmentation
 1. Enable/Disable End-To-End FRF.12
 2. Set Fragment Size

2. Modify Existing DLCI

1. Raw (No Encapsulation)

1. Configure Transmit CIR
2. Configure Receive CIR
3. Configure FRF.12 Fragmentation
 1. Enable/Disable End-To-End FRF.12
 2. Set Fragment Size

2. Proprietary Voice DLCI

1. Configure Transmit CIR
2. Configure Receive CIR
3. Configure FRF.12 Fragmentation
 1. Enable/Disable End-To-End FRF.12
 2. Set Fragment Size

3. RFC 1490

1. Configure Transmit CIR
2. Configure Receive CIR
3. Configure FRF.12 Fragmentation
 1. Enable/Disable End-To-End FRF.12
 2. Set Fragment Size

4. ATM RFC 1483 (Tunneling)

1. Configure Transmit CIR
2. Configure Receive CIR
3. Configure FRF.12 Fragmentation
 1. Enable/Disable End-To-End FRF.12
 2. Set Fragment Size

3. Delete DLCI

4. Show Current DLCIs

3. Configure PVCs (Datalink Protocol = ATM)

1. Add New PVC

1. AAL55 (None)

1. CBR
2. UBR

2. AAL0 (None)

1. CBR
2. UBR

3. Proprietary Voice
4. RFC 1483 (using VC Muxing)
 1. CBR
 2. UBR
5. RFC 1483 (with LLC Encapsulation)
 1. CBR
 2. UBR
6. RFC 2364 (PPPoATM With LLC Encapsulation)
 0. None
 1. PAP Client
 1. CBR
 2. UBR
 2. PAP Server
 1. CBR
 2. UBR
 3. CHAP Client
 1. CBR
 2. UBR
 4. CHAP Server
 1. CBR
 2. UBR
7. RFC 2364 (PPPoATM Using VC Muxing)
 0. None
 1. PAP Client
 1. CBR
 2. UBR
 2. PAP Server
 1. CBR
 2. UBR
 3. CHAP Client
 1. CBR
 2. UBR
 4. CHAP Server
 1. CBR
 2. UBR

2. Modify Existing PVC
 1. AAL55 (None)
 1. CBR
 2. UBR
 2. AAL0 (None)
 1. CBR
 2. UBR
 3. Proprietary Voice
 4. RFC 1483 (using VC Muxing)
 1. CBR
 2. UBR
 5. RFC 1483 (with LLC Encapsulation)
 1. CBR
 2. UBR
 6. RFC 2364 (PPPoATM With LLC Encapsulation)
 0. None
 1. PAP Client
 1. CBR
 2. UBR
 2. PAP Server
 1. CBR
 2. UBR
 3. CHAP Client
 1. CBR
 2. UBR
 4. CHAP Server
 1. CBR
 2. UBR
 7. RFC 2364 (PPPoATM Using VC Muxing)
 0. None
 1. PAP Client
 1. CBR
 2. UBR
 2. PAP Server
 1. CBR
 2. UBR

3. CHAP Client
 1. CBR
 2. UBR
4. CHAP Server
 1. CBR
 2. UBR
3. Delete PVC
4. Show Current PVCs

4. Configure FR Options (Datalink Protocol = Frame Relay)

1. Configure Fragmentation
 1. Configure FRF.12 Fragmentation
 1. Enable/Disable FRF.12
 2. Enable Automatic Fragment Sizing
 3. Set Manual Fragment Size
 2. Configure Copper Mountain Fragmentation
 1. Enable/Disable CuMtn Fragmentation
 2. Set Real-Time DLCI
2. Configure Maintenance Protocol
 0. None
 1. CCITT Q.933 Annex A Network
 2. CCITT Q.933 Annex A User
 3. CCITT Q.933 Annex A Both
 4. ANSI T1.617 Annex D Network
 5. ANSI T1.617 Annex D User
 6. ANSI T1.617 Annex D Both
 7. LMI Network (FRF.1.1)
 8. LMI User (FRF.1.1)
 9. LMI Both (FRF.1.1)
3. Configure Congestion Parameters
 1. Configure Transmit Congestion Parameters
 2. Configure Receive Congestion Parameters

4. Configure ATM Options (Datalink Protocol = ATM)

1. Configure Payload Scrambling
2. Configure F4 OAM VPI
3. Configure F4 OAM Type
4. Display F4 OAM Configuration
5. Send OAM Loopback
6. Configure Empty Cells

6. Configure LAN

F. Set/Clear Full Duplex

7. Configure SNMP

E. Enable/Disable SNMP

P. Configure System Contact

N. Configure System Name

L. Configure System Location

C. Configure SNMP Community

T. Configure SNMP Trap Host IP Address

8. Configure Login

1. Change User ID

2. Change User Password

3. Change NetMan Password

9. System Utilities

P. Ping Utility

T. Trace Route

Z. Configure Console Baud Rate

0. Unset (use Default)
1. 9600
2. 19200
3. 38400
4. 57600
5. 115200

V. Configure Console Timeout

R. Hard Reset or Reload ACOS from FLASH

D. Set System Defaults

W. Save System Settings as Defaults

X. File Transfer Menu

B. Load Boot ROM

1. Receive via TFTP
2. Receive via XMODEM

O. Update ACOS [acos.bin]

1. Receive via TFTP
2. Receive via XMODEM

X. Update Entire System

A. File Transfer Utilities

1. Receive via TFTP
2. Send or Receive via XMODEM

I. Interworking Connections

1. Add Interworking Connection

1. FRF5

0. Set FR-SSCS, ATM=0

A. Set FR-SSCS According To ATM

B. Use Both FR-SSCS And ATM

1. Set FR-SSCS, ATM=1

A. Set FR-SSCS According To ATM

B. Use Both FR-SSCS And ATM

B. Use Both FR-SSCS And ATM

A. Set FR-SSCS According To ATM

B. Use Both FR-SSCS And ATM

2. FRF8

T. True

0. Always 0

0. Always 0

1. Always 1

M. Map Fr FECN To ATM EFCI

1. Always 1

0. Always 0

1. Always 1

M. Map Fr FECN To ATM EFCI

M. Map Fr De To ATM CLPI

0. Always 0

1. Always 1

M. Map Fr FECN To ATM EFCI

F. False

0. Always 0

0. Always 0

1. Always 1

M. Map Fr FECN To ATM EFCI

- 1. Always 1
 - 0. Always 0
 - 1. Always 1
 - M. Map Fr FECN To ATM EFCI
- M. Map Fr De To ATM CLPI
 - 0. Always 0
 - 1. Always 1
 - M. Map Fr FECN To ATM EFCI

2. Delete Interworking Connection

3. Print Interworking Connections

4. Default Interworking Connections

**D. Configure
DHCP Server**

E. Enable/Disable DHCP

B. Enable/Disable DHCP Debug Messages

I. Configure DHCP Server Parameters

- 1. B-node
- 2. P-node
- 4. M-node
- 8. H-node

P. Configure DHCP Address Range Pool

C. Configure DHCP Client Entry

F. Display DHCP Configuration

S. Display DHCP Server Statistics

A. Display DHCP Server Assigned Addresses

U. Display DHCP Server Unassigned Addresses

D. Display DHCP Entry Details

X. Delete a DHCP Client Entry

Y. Delete a DHCP Assignment Entry

N. Configure NAT

- B. Enable/Disable NAT Debug Messages**
- P. Enable/Disable NAT Translation by Port**
- T. Configure NAT TCP Timeout**
- U. Configure NAT UDP Timeout**
- R. Configure NAT Port Range**
- N. Configure NAT Local Server Entry**
- S. Display NAT Statistics**
- C. Display NAT Connection Table**
- D. Display NAT Connection Details**
- O. Display NAT Local Server Table**
- X. Delete IP Address from NAT Tables**
- Y. Delete NAT Local Server Entry**

T. Derived Timing

- 1. Enable/Disable Derived Timing**
- 2. Enable/Disable Derived Timing Debug Messages**
 - 1. Enable/Disable ****All**** Derived Timing Debug Messages
 - 2. Enable/Disable ****PSTN ONLY**** Derived Timing Debug Messages
 - 3. Enable/Disable ****Local Clock ONLY**** Derived Timing Debug Messages

Z. Diagnostics Menu

- P. POTS Diagnostics**
 - H. Hotline Test
 - R. Ring Test

S. SDSL Diagnostics

P. Transmit Isolated Pulses

1. +3 level
2. +1 level
3. -1 level
4. -3 level

2. Continuous 2-level transmission

4. Continuous 4-level transmission

L. Digital Far Loopback

C. Command Line Interface

P. VoicePath Configure

V. Set Voice Gateway

0. No Voice Gateway
1. MGCP 0.1/NCS 1.0
2. CopperCom
3. JetStream
4. Tollbridge

J. Set Jitter Delay

D. Display Jitter Delay

T. Set SLIC Control Mode

- A. AUTO Control Mode
- M. MANUAL Control Mode

U. Set Compander Mode (U-Law, A-Law)

- U. u-Law Mode
- A. A-Law Mode

M. Set Debug Mode

- E. ENABLE Debug
- D. DISABLE Debug

E. Configure Echo Cancellation Default Settings

1. Set Echo Cancellation default setting for all ports
2. Display current Echo Cancellation default settings
3. Configure Echo Cancellation default setting per port

M. Manage MGCP/NCS Embedded Client

C. Configure MGCP/NCS parameters

S. Display MGCP/NCS statistics

D. Debug MGCP/NCS

1. Disable all msgs
2. Enable informational msgs
3. Enable Verbose msgs

R. Remove a connection

E. CopperCom Call Control

S. Statistics

- D. Display Statistics
- C. Clear Statistics

C. Configure

- D. Display Configuration
- C. Compression Format

D. Debug Control

- L. Display Line Status
- D. Display Debug State/Flags
- C. Control Debug (Enable/Disable)
- S. Set Debug Flags

E. Call Control Settings

A. Stats Display

R. Ring Test

- C. Configure Ring Test
- D. Display Parameters
- S. Start Ring Test
- T. Stop Ring Test

S. Display IAD State

T. Trace

- S. Set Trace Data
- D. Display Trace Data

V. Pick sound heard if insufficient WAN B/W to complete call

- 0. Play Silence
- 1. Play Fast Beeping

U. Configure Tollbridge Voice Client

0. Set client IP address

1. Set voice gateway IP address

2. Print current configuration

3. Debugging Options

- 0. Enable/Disable all messages
 - 1. Enable/Disable status/keep-alive messages
 - 2. Enable/Disable provisioning messages
 - 3. Enable/Disable state-transition messages
 - 4. Unhide/Hide voice client IP interface (requires reset)

B. PARTNER ACS 1600 DSL module specifications

Network Interfaces

10/100BaseT Ethernet

Shielded RJ-45

SDSL

2-Wire SDSL (Shielded RJ-11 Connector)

Symmetrical data rates from 144 Kbps to 2.3 Mbps in increments of 8 Kbps

Transmission range: loop length must be pre-qualified by your service provider

POTS

Up to 16-Port

Bridging and Routing

- ◆ Dynamic and static IP Routing and Bridging
- ◆ IEEE 802.1d Bridging
- ◆ Spanning Tree Protocol
- ◆ RIP1 and RIP2 Information Routing Protocol
- ◆ Internet Control Message Protocol (ICMP) for IP packet processing
- ◆ Network Address Translation (NAT) that allows you to share IP addresses
- ◆ DHCP for management of LAN addresses

WAN Protocols

ATM

- ◆ Eight Permanent Virtual Circuits (PVCs)
- ◆ Multiprotocol encapsulation over ATM (RFC 1483)
- ◆ PPP over ATM (RFC 2364)

Frame Relay

- ◆ Eight Data-Link Connection Identifiers (DLCI)
- ◆ Multiprotocol encapsulation over Frame Relay (RFC 1490)
- ◆ High-Level Data Link Control (HDLC)
- ◆ Cisco-compatible HDLC
- ◆ Point-to-Point (PPP)

Management and Configuration

- ◆ ASCII-based submenu Interface for system configuration and monitoring
- ◆ Telnet for remote access to submenu-based Interface
- ◆ SNMP for monitoring, controlling and managing configurations, statistics, performance and security
- ◆ Trivial File Transfer Protocol (TFTP) for software upgrade

Environmental

Operating Range: 0°C to 40°C

Non-condensing humidity: 15% to 90%

Physical Dimensions (W X L x H): 9.75" x 17.25" x 2.0"

C. Connector pinouts

Console

Pin	Signal
1	Ground
2	Tx Data
3	Rx Data

10BaseT Connector

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
4	NC
5	NC
6	Rx-
7	NC
8	NC

100BaseT Connector

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
4	NC
5	NC
6	Rx-
7	NC
8	NC

SDSL Connector

Pin	Signal
1	N/C
2	Tip
3	Ring
4	N/C

D. USI Cables

DTE or DCE?

A **Data Terminal Equipment (DTE)** device transmits data on the transmit pin and receives data on the receive pin, while a **Data Communication Equipment (DCE)** device transmits data on the receive pin and receives data on the transmit pin. Usually, the DCE device supplies the transmit clock timing for both the DTE and DCE devices.

You must use a straight through cable to connect a DTE to a DCE device. However, you must use a null modem cross over cable to connect two DTE devices or two DCE devices.

For example, the serial port on a PC is a DTE device, while most modems are DCE devices. To connect a PC to a modem, you use a straight through cable. To connect two PCs together, you use a null modem cross over cable.

Which Hardware Protocol?

You can configure the USI port on the PARTNER ACS 1600 DSL module for V.35 or RS-530. Each of these hardware interfaces uses different voltage levels, so they are not compatible electrically.

However, there are other hardware interface standards that use the same voltage levels, but with different connectors:

- ◆ RS-449 and V.36 are the same electrical interface as RS-530.

The DB25 connector, which must be shielded, is wired for RS-530, which is a superset of all the other hardware interfaces. Only RS-530 uses DB25 connectors - the other hardware interfaces use different types of connectors.

The following figure lists the conversion from the RS-530 DB25 connector to the RS-449 DB37 conversion cable.

Signal	RS-530	RS-449
Shield Ground	1	1
Transmit Data (A)	2	4
Receive Data (A)	3	6
Request to Send (A)	4	7
Clear to Send (A)	5	9
DCE Ready (A)	6	13
Signal Ground	7	19
Receive Line Signal (A)	8	11
Receive DCE Clock (B)	9	26
Receive Line Signal (B)	10	29
Transmit DTE Clock (B)	11	35
Transmit DCE Clock (B)	12	23
Clear to Send (B)	13	27
Transmit Data (B)	14	22
Transmit DCE Clock (A)	15	5
Receive Data (B)	16	24
Receive DCE Clock (A)	17	8
	18	
Request to Send (B)	19	25
DTE Ready (A)	20	12
	21	
DCE Ready (B)	22	31
DTE Ready (B)	23	30
Transmit DTE Clock (A)	24	17
	25	

It is your responsibility to obtain the appropriate converter cables from the DB25 RS-530 pin out to the configured hardware interface.

The most common RS-530 to V.35 converter cable is produced by Black Box (part # FA058)

The following figure lists the conversion from the RS-530 DB25 connector to the V.35 conversion cable.

Signal	RS-530	V.35
Shield Ground	1	A
Transmit Data (A)	2	P
Receive Data (A)	3	R
Request to Send (A)	4	C
Clear to Send (A)	5	D
DCE Ready (A)	6	E
Signal Ground	7	B
Receive Line Signal (A)	8	F
Receive DCE Clock (B)	9	X
Receive Line Signal (B)	10	
Transmit DTE Clock (B)	11	W
Transmit DCE Clock (B)	12	AA
Clear to Send (B)	13	
Transmit Data (B)	14	S
Transmit DCE Clock (A)	15	Y
Receive Data (B)	16	T
Receive DCE Clock (A)	17	V
	18	
Request to Send (B)	19	
DTE Ready (A)	20	H
	21	
DCE Ready (B)	22	
DTE Ready (B)	23	
Transmit DTE Clock (A)	24	U
	25	

E. IP Filtering

The following assumes that you have a working knowledge of IP protocols.

Filtering executes on the WAN port that you select. There are two different sets of filters and each filter maintains its own statistics:

- ◆ **Input** - Input packets are filtered after the network address translation.
- ◆ **Output** - Output packets are filtered before the network address translation.

The maximum total number of filters is 128.

Packets pass through the appropriate set of filters in the order in which the filters display in the list shown on the user interface (Configure IP Router > Configure IP Filtering > Display all filters of the chosen type). Each packet moves down the list of filters until it reaches the end or the attributes of an active filter match the packet.

When a "match" occurs, the packet is then processed according to the action field (Pass or Discard) of the first filter that matched the packet:

- ◆ **Pass** - packet passed to the next level.
- ◆ **Discard** - packet discarded. When output packets are dropped, RTCS_OK is returned from IP_route.

When you create a new filter, all fields are set to an inactive state. An inactive filter passes all IP packets - you must modify at least one field to narrow the range of packets to pass or change the action to discard all packets.

To create a set of filters to pass only certain types of packets, you need to create a default filter that discards all packets and then insert narrower filters before the default filter. For example, you need to add a filter to cover each range of packets.

If you want to select only the packet ranges to discard, then there is no default filter needed, because the default action is to pass all packets. You only have to add filters that set the range to discard and set the actions of those filters to discard.

The order of the filters matters if you are mixing filters with different actions or if you want the overlapping filters to display accurate statistics.

Glossary

10/100BaseT	10-Mbps baseband Ethernet specification that uses two pairs of twisted-pair cabling: one pair for transmitting data and the other for receiving data. 10/100BaseT has a distance limit of approximately 100 meters per segment.
100BaseT	100-Mbps baseband Fast Ethernet specification that uses UTP wiring. Like 10/100BaseT, 100BaseT sends link pulses over the network segment when no traffic is present. These link pulses contain more information than those used in 10/100BaseT.
ADSL	Asymmetric Digital Subscriber Line.
ARP	Address Resolution Protocol. Enables routers to obtain the Ethernet address for a known IP address. See also Inverse ARP .
ATM	Asynchronous Transfer Mode.
BOOTP	Bootstrap Protocol. Used during network booting by a network node to determine the IP address of its Ethernet interfaces.
DLCI	Data-Link Connection Identifier. Value that specifies a PVC or SVC in a Frame Relay network. In the basic Frame Relay specification, DLCIs are locally significant (connected devices might use different values to specify the same connection). In the LMI extended specification, DLCIs are globally significant (DLCIs specify individual end devices).
E1	Network connection with a capacity of 2.048, divided into 32 separate channels (or DS0s).
EEPROM	Electrically Erasable Programmable read only Memory. Nonvolatile memory chips that can be erased using electrical signals and reprogrammed.
Ethernet	Physical connection commonly used for LANs. Runs over a variety of cable types and provides bandwidth of 10 Mbps. Invented by Xerox Corporation and developed jointly by Xerox, Intel, and Digital Equipment Corporation.
Fast Ethernet	Any of a number of 100 Mbps Ethernet specifications.
Frame Relay	a network interface providing high-speed packet transmission with minimum delay. Uses variable-length packets called "frames." Contrast with "packet."

Full Duplex	Capable of handling simultaneous data transmission between a sending station and a receiving station.
ICMP	Internet Control Message Protocol. Internet protocol that reports errors and provides other information relevant to IP packet processing, such as routing information.
Inverse ARP	Inverse Address Resolution Protocol. Enables routers to obtain the IP address of a known Ethernet address of a device associated with a virtual circuit. Method of building dynamic routes in a network.
IP	Internet Protocol. Part of the TCP/IP protocol. IP networks are connectionless, packet switching networks.
IP address	32-bit address assigned to hosts using TCP/IP. An IP address contains four octets separated by periods, also known as a dotted quad address. Each address consists of a network number, an optional sub-network number, and a host number. The network and sub-network numbers together are used for routing, while the host number is used to address an individual host within the network or sub-network.
IP SNAP	Sub-network Access Protocol. Internet protocol that operates between a network entity in the sub-network and a network entity in the end system. SNAP specifies a standard method of encapsulating IP datagrams and ARP messages on IEEE networks. The SNAP entity in the end system makes use of the services of the sub-network and performs three essential functions: data transfer, connection management, and QOS selection.
LAN	Local Area Network. Privately owned network-connecting devices over a limited geographic area. May use TCP/IP or one of several other protocols.

LMI	<p>Local Management Interface. a set of the following enhancements to the basic Frame Relay specification. Called "LMT" in ANSI terminology.</p> <ul style="list-style-type: none"> a keep-alive mechanism that verifies that data is flowing. a multi-cast mechanism, which provides the network server with its local DLCI and the multi-cast DLCI. Global addressing; this gives DLCIs global rather than local significance in Frame Relay networks. a mechanism that provides an on-going status report on the DLCIs known to the switch.
MAC	Media Access Control. Lower of the two sub-layers of the data link layer defined by the IEEE.
MAC address	Standardized data link layer address that is required for every port or device that connects to a LAN. Other devices in the network use these addresses to locate specific ports in the network and to create and update routing tables and data structures. MAC addresses are six bytes long and are IEEE-controlled. Also known as a hardware address, a MAC-layer address, or a physical address.
MPEG	Moving Pictures Expert Group.
OSI Reference Model	<p>Network architectural model developed by ISO and ITU-T. The model consists of the following seven layers, each of which specifies particular network functions.</p> <p>The lowest layer is closest to the media technology, and the highest layer is closest to the user. The hardware and software implement the lower two layers, while only the software implements the upper five layers.</p> <p>Physical layer - the actual wires and connections in the network.</p> <p>Data link layer – responsible for physical addressing, network topology, error notification, and ordered delivery.</p> <p>Network layer – responsible for connectivity, path selection, and routing.</p> <p>Transport layer – responsible for network communication, virtual circuit management, fault detection, and flow control.</p> <p>Session layer - manages sessions between applications.</p>

Presentation layer – responsible for data structures used by networked applications.

Application layer - networked software applications such as e-mail, Telnet, and ftp.

Packet Logical grouping of information that includes a header containing control information and (usually) user data. Packets refer to network layer units of data, with messages divided into several packets. Some networks use fixed packet sizes; others use variable packet sizes. Packets typically have standard header information that identifies the packet. In contrast, frames contain only data; information about the frames transmits on the control plane.

The terms datagram, frame, message, and segment describe logical information groupings at various layers of the OSI reference model and in various technology circles.

PPP Point-to-Point Protocol. a successor to SLIP that provides router-to-router and host-to-network connections over synchronous and asynchronous circuits.

Poisoned Reverse RIP feature to sets routes learned on the same port as the transmitted RIP message an infinite distance. Prevents the propagation of routes from crashed routers through the network.

PVC Permanent Virtual Circuit. PVCs save bandwidth associated with circuit establishment and tear down in situations where certain virtual circuits must exist all the time.

RIP Routing Information Protocol. Internet protocol used to exchange routing information within a system. RIP uses hop count as a routing metric.

Router Network layer device that uses one or more metrics to determine the optimal path to forward network traffic. Routers forward packets from one network to another based on network layer information. a router may connect networks using various protocols by encapsulating data within another network's packet format or by removing layers of packet formatting.

SNMP Simple Network Management Protocol. Network management protocol used in TCP/IP networks. SNMP provides a way to monitor and control network devices, and to manage configurations, Statistics collection, performance, and security.

Subnet Mask 32-bit address mask that indicates the bits of an IP address used for the subnet address.

SVC	Switched Virtual Circuit. Virtual circuit that is dynamically established on demand and is torn down when transmission is complete.
T1	Network connection with a capacity of 1.544 Mbps, divided into 24 separate channels (or DS0s).
TCP/IP	Protocols used for IP networks, such as the Internet, intranets, and many LANs. IP networks are connectionless, packet switching networks.
TFTP	Trivial File Transfer Protocol. Simplified version of FTP that transfers files from one computer to another over a network.
WAN	Wide Area Network. Data communications network that serves users across a broad geographic area and often uses transmission devices provided by common carriers. Frame Relay is an example of a WAN.

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