HN System

Terrestrial Broadband Router Installation Guide

Model: HN7700S

1037753-0001
Revision A
May 19, 2008

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Revision record

Revision	Date of issue	Scope
A	May 19, 2008	Initial release

Important safety information

For your safety and protection, read this entire manual before you attempt to install the HN router. In particular, read this safety section carefully. Keep this safety information where you can refer to it if necessary.

Types of warnings used in this manual

This section introduces the various types of warnings used in this manual to alert you to possible safety hazards

⚠ WARNING

Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

CAUTION

Indicates a situation or practice that might result in property damage.

Note: A note provides additional information.

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Chapter 1
Introduction

This manual explains how to install, commission, and service the Hughes HN7700S as a Terrestrial Broadband Router (HN router). The manual also includes installation information for the DSL and T-1 transport methods used with the HN router. This chapter discusses the following topics:

The HN7700S has dual functions. This manual covers the HN7700S' function as a router. It is also used as a VSAT terminal.

Scope and audience

This manual is intended for use by the following audiences:

- Professional installers
- Installer trainers, who prepare separate instructions for the installers
- Call center operators, who respond to customers' calls
- Call center trainers, who train call center operators

This manual is intended for use in the United States and Canada. Certain information may vary depending on the customer's location. This manual identifies such differences where applicable.

In this guide, the term HN router refers to the *HN7700S* acting as a router. Transport devices refer to the *Siemens 4100/4101 SpeedStream Modem* or the *ADTRAN Total Access 660R T-1 line.*

HN router overview

The HN router, as shown in Figure 1 on page 2, is a standalone unit that provides an integrated broadband LAN solution to platforms running IP over Ethernet. The HN router provides two 10/100 LAN ports with one being used for local LAN connectivity and one being used for WAN connectivity. The Ethernet LAN port can be connected via a straight-through or

crossover Cat-5 cable to a single computer or to an Ethernet hub/switch port. It is completely self-contained requiring no external PC to host any functions or software. The software is automatically updated from the Network Operations Center. It also has an an internal modem (with telephone jack) to support the Virtual Private Network Automatic Dial Backup (VADB) feature.

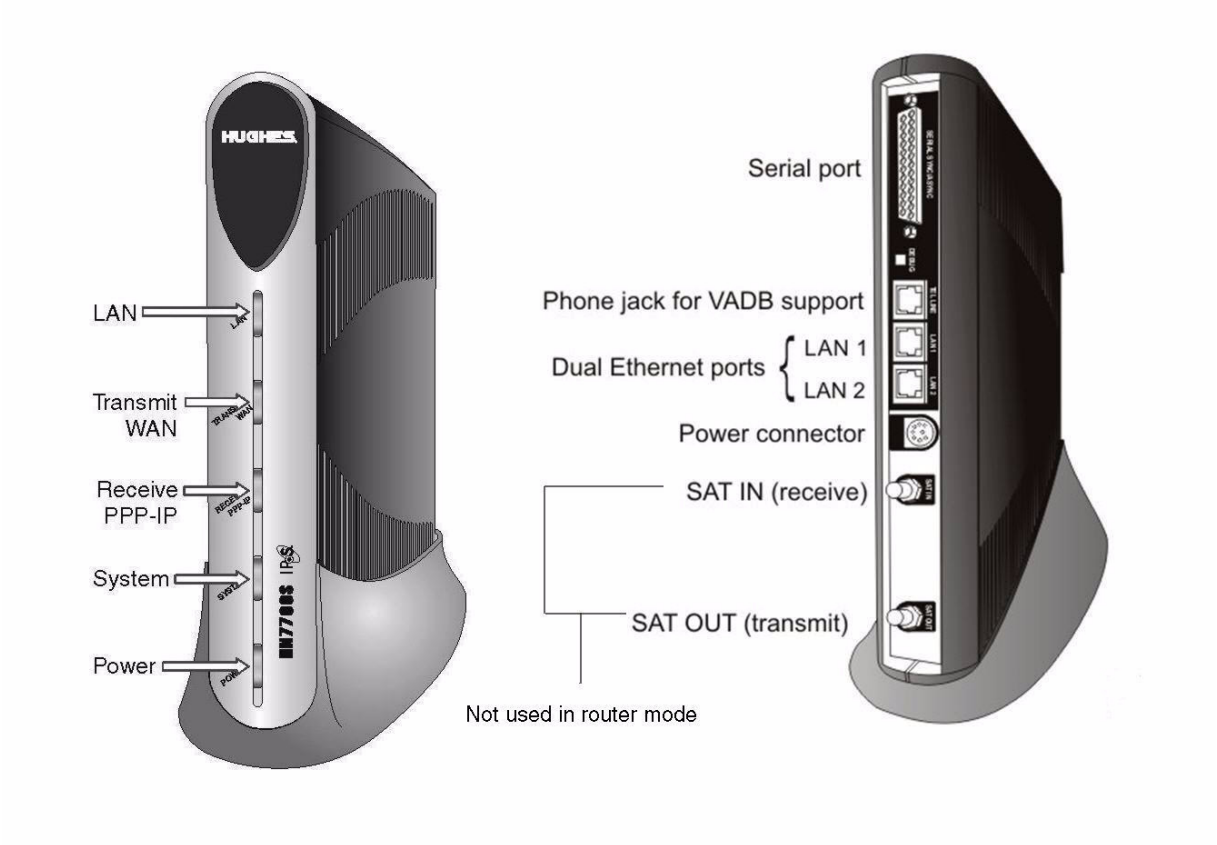


Figure 1: HN router

Router specifications

Table 1 lists the specifications for the HN router.

Table 1: Specifications for the HN router

Weight	2.4 lb (1.089 kg)
Width	1.7 inch (4.32 cm) 4.5 inch (11.43 cm) with pedestal base
Height	9.5 inch (24.13 cm) 9.75 inch (24.77 cm) with pedestal base
Depth	10.5 inch (26.67 cm)

Table 1: Specifications for the HN router

Safe operating temperature range	5 to 40°C (Above 5000 ft altitude, reduce maximum temperature by 1°C per 1000 ft)
Safe operating humidity range	5% to 95% non-condensing
Safe altitude	10,000 ft
Cooling method	Convection
Main processor	300 MHz
Main memory	64 Mbyte
Flash memory	16 Mbyte
Protocol support	TCP/IP (Transmission Control Protocol/Internet Protocol) protocol suite
Interfaces/ports	• Two Ethernet ports supporting 10BaseT or 100BaseT operation, RJ45-switched • Telephone line port • Serial port, DTE/DCE RS-232, which supports the following protocols: – VISA (Veriphone 3200 and 3300) (the asynchronous protocol of Vanguard International Service Association credit card) – X.25 International Telecommunication Union-Telecommunication Standardization Sector (ITU-T) protocol standard for WAN communications – XPAD (X.25 Packet Assembler/Disassembler) – SDLC (Synchronous Data Link Control) – LLC (Logical Link Control)
Power supplies and power requirements	*See Table 2 on page 11.*

Commissioning

Commissioning is the process of registering an HN router for service. During the commissioning process you may use auto selection or manual entry of parameters.

- Auto Selection - Allows you to choose the Network Access Provider (NAP) from a predetermined list of providers. Many of the commissioning parameters are automatically configured for the provider chosen.
- Manual Entry - This mode requires you to enter all parameters manually.

Associated transport devices

Installation and commissioning of the HN router requires configuring/commissioning tasks for the transport device. This version of the Installation Guide provides information on the following:

- ADTRAN Total Access 600R as described in Appendix E – *ADTRAN Total Access 600R,* on page 99.
- Siemens Model 4100/4101 as described in Appendix F – *Siemens 4100/4101 DSL Modem,* on page 117.

Installation and commissioning steps

The installation and commissioning of the HN router is a multi-step process involving two pieces of equipment—the HN router and the associated transport device. The workflow and chapter reference numbers for the process steps follow.

1. Preparing, installing, and commissioning the transport device
   a. ADTRAN Total Access 600R
   - *Installing the ADTRAN 600R* on page 100
   - *Connecting the ADTRAN* on page 106
   - *Configuring the ADTRAN* on page 107
   - *Confirming connectivity* on page 115

   b. Siemens 4100/4101 DSL Modem
   - *Installation overview* on page 118
   - *Installing the modem* on page 119
2. Preparing the router for installation
   Chapter 2 on page 5
3. Assembling the HN router
   Chapter 3 on page 9
4. Connecting the router to the transport device
   Chapter 4 on page 15
5. Commissioning the HN router
   Chapter 5 on page 19
6. Verifying the installation, commissioning, and connections
   Chapter 6 on page 37

Contact information

If you experience installation problems with the HN Router, first try the *Diagnostic Utilities* on page 51.

For warranty or repair support, the contact information varies depending on the location. If the customer needs service, warranty or repair support, they should contact their customer service representative in accordance with their service agreement.

Chapter 2

Preparing the HN router for installation

This chapter discusses preparations you must make prior to installing the HN router and information you should know before beginning the installation.

Note: Install your trasport device before installing the HN router. The appendices listed below give the installation instructions for the trasport devices.

- Appendix E – *ADTRAN Total Access 600R,* on page 99
- Appendix F – *Siemens 4100/4101 DSL Modem,* on page 117

This chapter discusses the following tasks:

- *Items required for installation* on page 5
- *Confirming installer PC and site requirements* on page 6
- *Customer site requirements* on page 7

Items required for installation

The HN router and the transport device shipping cartons contain the equipment necessary for installation. Before beginning the installation make sure you have all of the items shown in Figure 2 on page 6 and any other materials you may need.

Note: Customers who purchased their system from a Hughes retail channel receive an order confirmation e-mail.

Note: If the site has a DC power source, it will require a DC/DC power supply. See Table 2 on page 11. You must provide the wire required to assemble the DC input power cable.

Items required for installation

Ensure the HN router shipping carton contains the items shown in Figure 2.

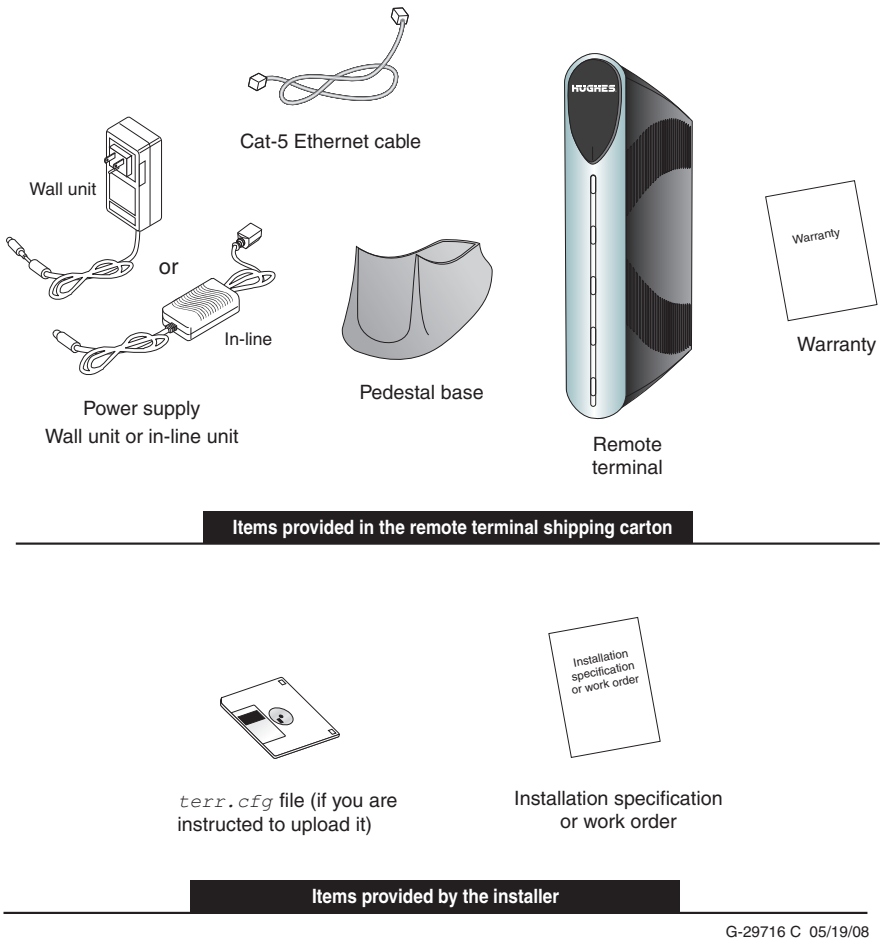


Figure 2: HN router components

Confirming installer PC and site requirements

You must confirm that your PC (the installer laptop) and the customer's computer meet specific requirements before you install the HN router or the transport device. The installer laptop PC must meet the following requirements:

- Ethernet enabled network interface card (NIC) and Ethernet cable.
- Windows Vista, Windows XP, or Windows 2000 operating system with DHCP configured to automatically obtain IP addresses. See Appendix A – *Configuring a computer to support DHCP,* on page 69.

- Internet Explorer 6.0 or later with proxy settings disabled. See Appendix C – *Disabling a Web browser's proxy connection,* on page 89.
- The latest version of the `terr.cfg` file if you are instructed to install it.
- All existing firewall software must be disabled.

Customer site requirements

The HN router can be used with any device that supports IP and has a 10/100 BaseT Ethernet port. Typically, the router is connected to a customer's computer. To run software that may be installed to support the router, the customer's computer must meet the following requirements:

- Operating system
  - PC: Windows Vista, Windows XP, Windows 2000
  - MAC: 10.1 and higher
- Processor
  - Vista PC: 800 Mhz or faster
  - All other PCs: Pentium II 333 Mhz or faster
  - MAC: 300 Mhz or faster
- Memory
  - Vista PC: 512MB or 1 GB RAM depending on version
  - All other PCs: 128MB RAM
  - MAC: 128MB
- Free hard drive space
  - PC: 100MB
  - MAC: 150MB
- A functioning 10/100 BaseT Ethernet interface installed on at least one computer.
- The customer must provide a power strip or surge protector (recommended). If one of these is not present, use a wall outlet or other power source.
- The customer must have a WAN transport, for example DSL, available at their site that is ready for connection to and compatible with the modem that is to be attached to the HN router.

Note: Confirm that the installer laptop PC is configured to support Dynamic Host Control Protocol (DHCP) prior to beginning the installation. See Appendix A – *Configuring a computer to support DHCP on page 69.*

⚠ CAUTION

Do not connect the power supply to the router, or connect the power supply to a power source until you are instructed to do so.

CAUTION

- **Do not block any ventilation openings. Do not install near heat sources such as radiators, heat registers, ovens, stoves, or other apparatus (including amplifiers) that produce heat.**
- **Recommended ventilation space around the top and sides of the router assembly is approximately 6 inches. Ventilation is necessary to avoid overheating.**

Chapter 3

Assembling and connecting the HN router hardware

This chapter explains how to assemble and make the connections to the HN router. It covers the following topics:

Note: Refer to the following appendices for assembly directions for transport devices:

- Appendix E – *ADTRAN Total Access 600R,* on page 99
- Appendix F – *Siemens 4100/4101 DSL Modem,* on page 117

The router and the transport device must be fully assembled to make all the hardware connections and continue with the commissioning process.

Note: The HN router has two LAN ports (one for connecting to customer devices and the other for connecting to the associated modems), a serial port for connecting a serial device, and a phone line connector to support VADB. To install the HN7700S for VADB, see Chapter 8 – *Configuring the HN router for VADB backup*.

Using the pedestal base

The HN router can be oriented in two ways: in a vertical position with the pedestal base or in a horizontal position without the pedestal base when mounted in a ventilated rack.

The pedestal base ensures that the HN router receives proper ventilation. Use it to mount the HN router in a vertical position.

Attaching the base To attach the base to the router:

1. Position the router and pedestal base Figure 3.

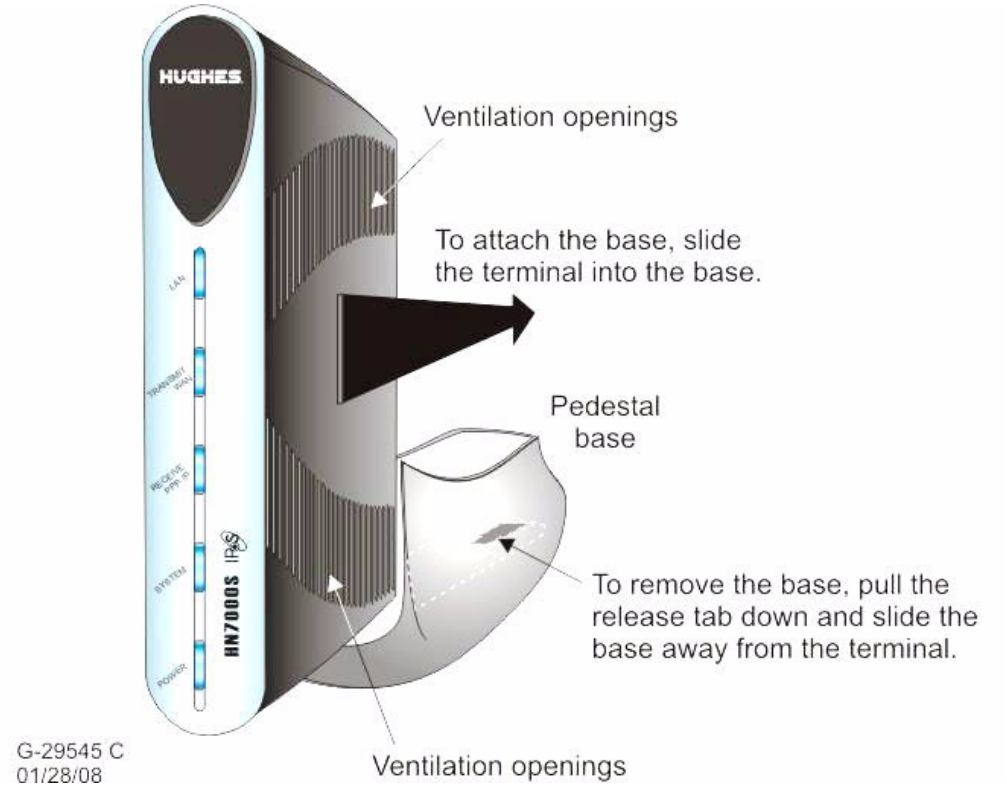


Figure 3: Attaching the router to the pedestal base

2. Starting with the router bottom about ½ inch from the bottom of the pedestal base, slide the router into the base until the router locks into position.

Removing the base If you need to remove the router from the pedestal base:

1. Pull the release tab on the bottom of the base down. (See Figure 3.)
2. Slide the base away from the router.

Selecting the router location

Select a location for the router that will accommodate all required cable connections, including the power source. Place the router in the desired location.

CAUTION

- **Do not block any ventilation openings. Do not place the router near heat sources such as radiators, heat registers, ovens, stoves, or other apparatus (including amplifiers) that produce heat.**
- **Leave 6 inches of space around the top and sides of the router to ensure ventilation and prevent overheating.**

Connecting the power supply

Begin installation of the router by connecting the correct power supply. Use the power supply shipped with the router. Refer to Table 2 and Figures 4 and 5 to ensure you have the correct power supply type (AC/DC or DC/DC) for the unit.

CAUTION

- **Always use the power supply provided with the system. The HN router's performance may suffer if the wrong power supply is used.**
- **If the HN router is installed outside the United States or Canada, observe the power standards and requirements of the country where it is installed.**

Table 2: Available power supplies for the HN router

Application	Power supply type	Part number	Electrical requirements	Power cord
HN router	AC/DC (64 W)	1500089-0001	Input line voltage: 100 – 240 V, 2 A max. Input line frequency: 50 – 60 Hz AC Rated power consumption: 64 W	Detachable, for 110 VAC outlet type
	DC/DC	1033554-0001	Input line voltage: 12.7 – 25 V, 10 A max. Rated power consumption: 64 W	Detachable power input cables and connector

Connecting an AC/DC power supply

Figure 4 shows the AC/DC power supply that is used with the HN router.

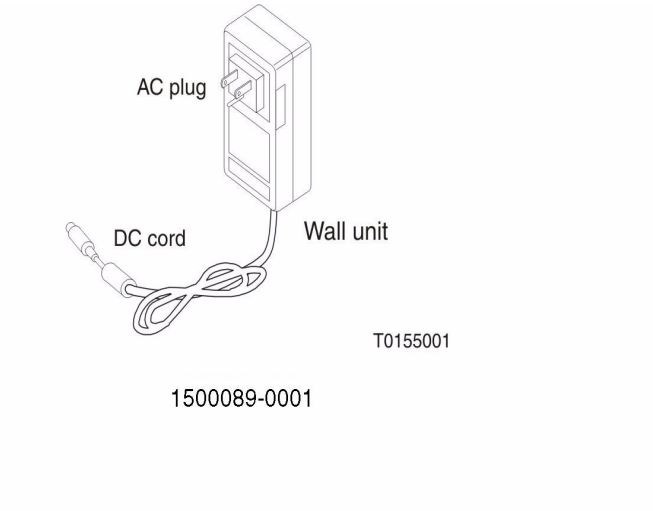


Figure 4: AC/DC power supply

CAUTION

The following apply if you use an AC/DC power supply:

- **The input must be 110/240-VAC.**
- **A surge protector is recommended, whether you use an in-line power supply or wall unit.**

In-line units

The following instructions apply to AC/DC power supply with part number 1500089-0001. Refer to Figures 4 and 5. Connect the power supply as follows:

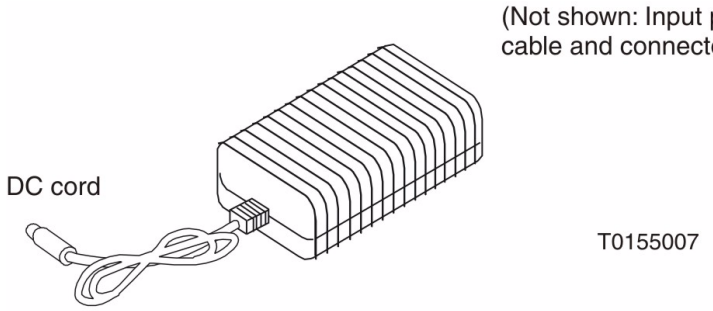
1. Connect the AC power cord to the power supply.
2. Connect the DC power cord to the DC IN port on the router, as shown in Figure 5 on page 13.
3. For an AC/DC power supply, make sure a suitable surge protector is available for the router.

Note: Protect the router with a suitable surge protector. Power surges are a common cause of failure for electronic devices.

Do not connect the AC power cord to the surge protector at this time. Wait until you are ready to observe the router's LEDs upon power-up.

Connecting a DC/DC power supply

Figure 5 shows the DC/DC power supply used with the HN router.



1033554-0001
(part of kit 1036088-0001)

Figure 5: DC/DC power supply

Connect the DC/DC power supply as follows:

1. Connect the DC power cord to the DC IN port on the HN router.
2. Assemble the input power cable according to the wiring diagram included in the cable kit.

Note: The input cable kit is included in the power supply kit. The cable kit contains an input power connector, connector pins, and a wiring diagram; it does not include wire.

Connect the input power cable to the DC power source, but do not connect the input power connector to the power supply at this time.

Chapter 4

Connecting the HN router to a transport device

This chapter explains how to connect the HN router to a transport device. It covers the following topics.

Connecting the cables to a modem transport device

To connect the modem transport device:

1. Connect the installer PC to LAN 1 with an Ethernet cable.
2. Connect the modem to LAN 2 of the router with an Ethernet cable.
3. Make sure that neither the router nor the customer's computer are connected to an Ethernet router or switch.
4. Connect the power cables.

Note: Do not connect any devices to the HN router at this time. Serial and Ethernet devices may only be connected to the remote terminal after it is installed and commissioned.

Figure 6 is a sample illustration of the connections using a modem transport device.

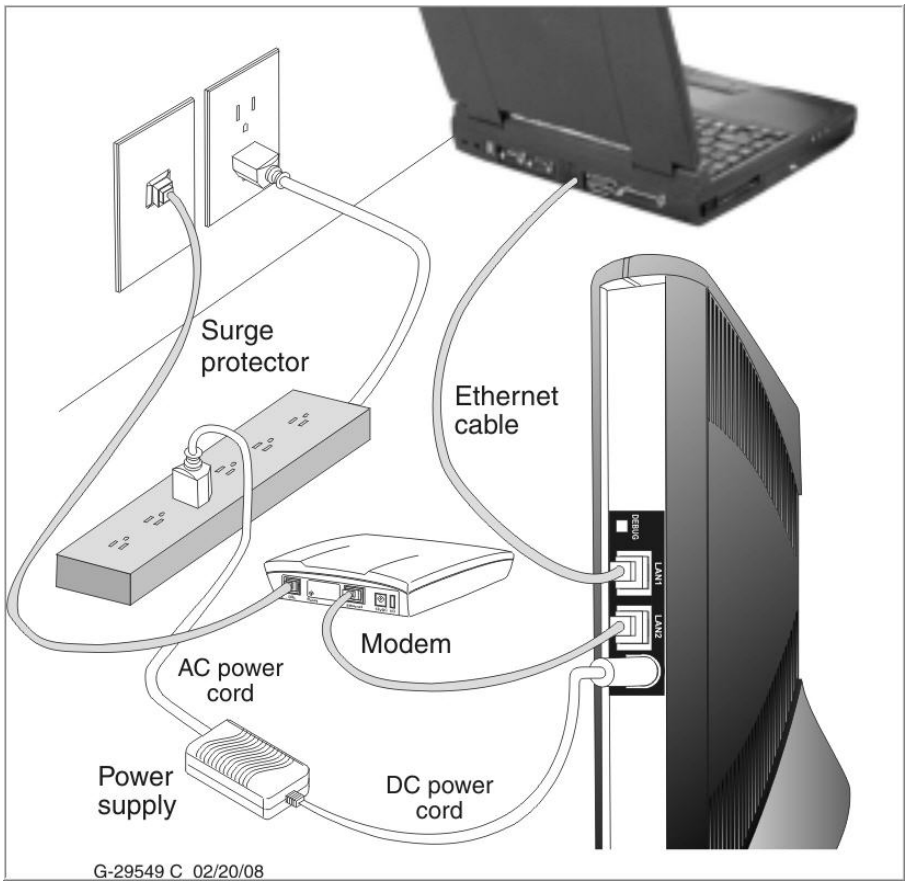


Figure 6: Connecting the cables

Note: Ensure the modem has been configured properly prior to connecting the cables.

Connecting the cables to a T-1 transport device

To connect the T-1 transport:

1. Connect the installer PC to LAN 1 with an Ethernet cable.
2. Use an Ethernet cable connected to the T-1's 10/100 Base T port to LAN 2 of the HN router.
3. Connect the power cables.

Powering up and observing the router LEDs

Power up the remote terminal and watch the LEDs for normal operation, as follows.

LEDs on power-up

As the HN router powers up, observe the LEDs as shown in Figure 7 to make sure that the HN router is working properly. When power is applied to the HN router or after the HN router is reset, the LEDs light up in the following order, indicating normal operation:

1. All LEDs light up for ½ sec.
2. The power LED lights up and remains on, indicating the remote terminal is powered up.
3. The LAN LED lights up within 30 sec., indicating that LAN connectivity is detected.
4. The power LED blinks, indicating that the router is not commissioned.

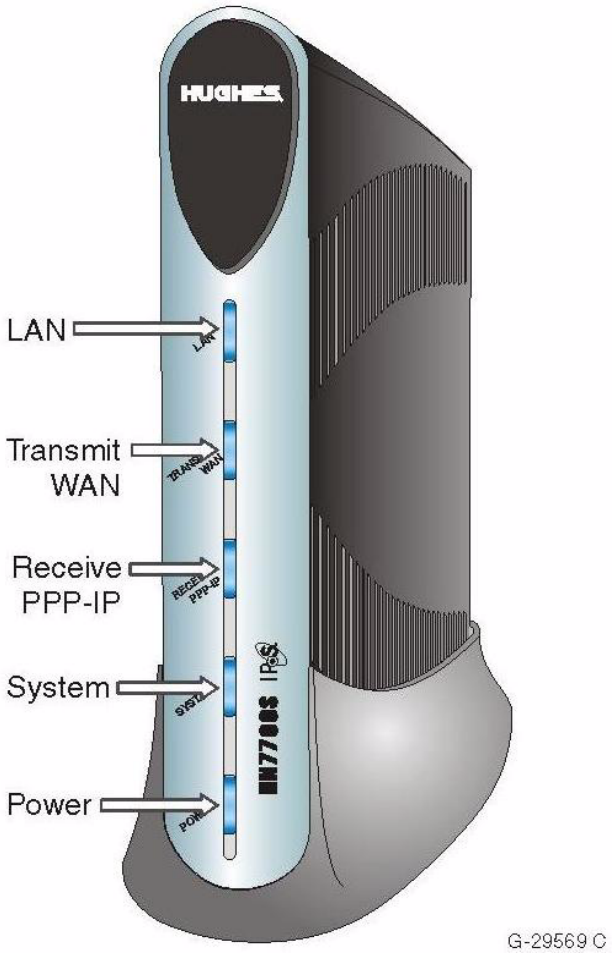


Figure 7: Router LEDS

The following table explains other LED light patterns and their meanings.

LED	Pattern	Description
LAN	Solid blue	Operating normally
	Off	Cable between HN router and the LAN port is not connected
	Flashing	Operating normally
Transmit WAN	Solid blue	Operating normally
	Off	No physical connectivity to the WAN port
	Flashing	Receiving data
	Intermittent flashing	Indicates a problem
Receive PPP-IP	Solid blue	Operating normally
	Off	PPP connectivity failed or unable to reach default gateway
	Flashing	Data is received or transmitted
System	Solid Blue	Operating normally
	Off	System is unavailable

Chapter 5

Commissioning the HN router

This chapter explains how to commission the HN router. It includes the following topics.

Router connections

Make sure you have made all the proper connections before you begin.

- Verify the installer laptop is connected to the HN router's LAN1 port.
- Verify the transport device is connected to the HN router's LAN2 port.

The appendices contain instructions for connecting the HN router to the various transport devices.

- Refer to *Connecting the cables to a modem transport device* on page 15 or *Connecting the cables to a T-1 transport device* on page 16 for instructions on how to connect the cables.

If the HN router does not assign the IP address **192.168.0.1** to the installer PC, restart the installer PC to obtain the IP address.

Commissioning procedures

Commissioning the router consists of the following tasks:

- Accessing the System Control Center page to use the **Advanced Commissioning Options** link to display the Setup link.
- Accessing the mode change link to change the mode from VSAT to router mode.
- Selecting the **Configuration File Upload** link.
- Selecting the **Registration Installer** link.

- Choosing auto selection or manual entry to enter service parameters.
- Selecting the service provider.
- Selecting and verifying the service parameters.
- Entering configuration parameters.
- Restarting the router.

Changing from VSAT to router mode

When you received the HN router in the installation package, it is in the default VSAT mode. To use it as a router, you must change the mode from VSAT mode to router mode.

To change the mode use the **Advance Commissioning Options** link on the System Control Center page.

To access the System Control Center page:

1. Start a Web browser on your laptop. Type
   `http://192.168.0.1/fs/advanced/advanced.html`
   in the browser's address bar.
2. Press **Enter.**
3. The System Control Center home page displays.

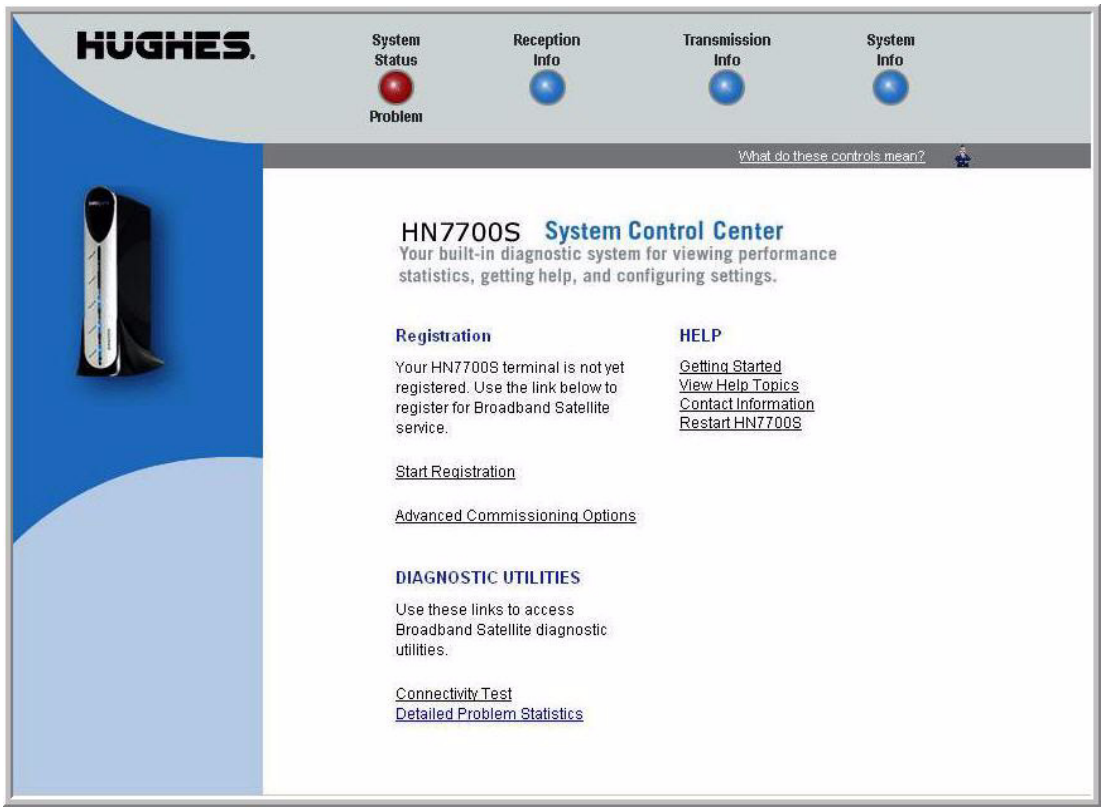


Figure 8: Advanced Commissioning Options link

4. Click **Advanced Commissioning Options** as shown in Figure 8.
5. The Broadband Satellite Setup screen displays as shown in Figure 9.

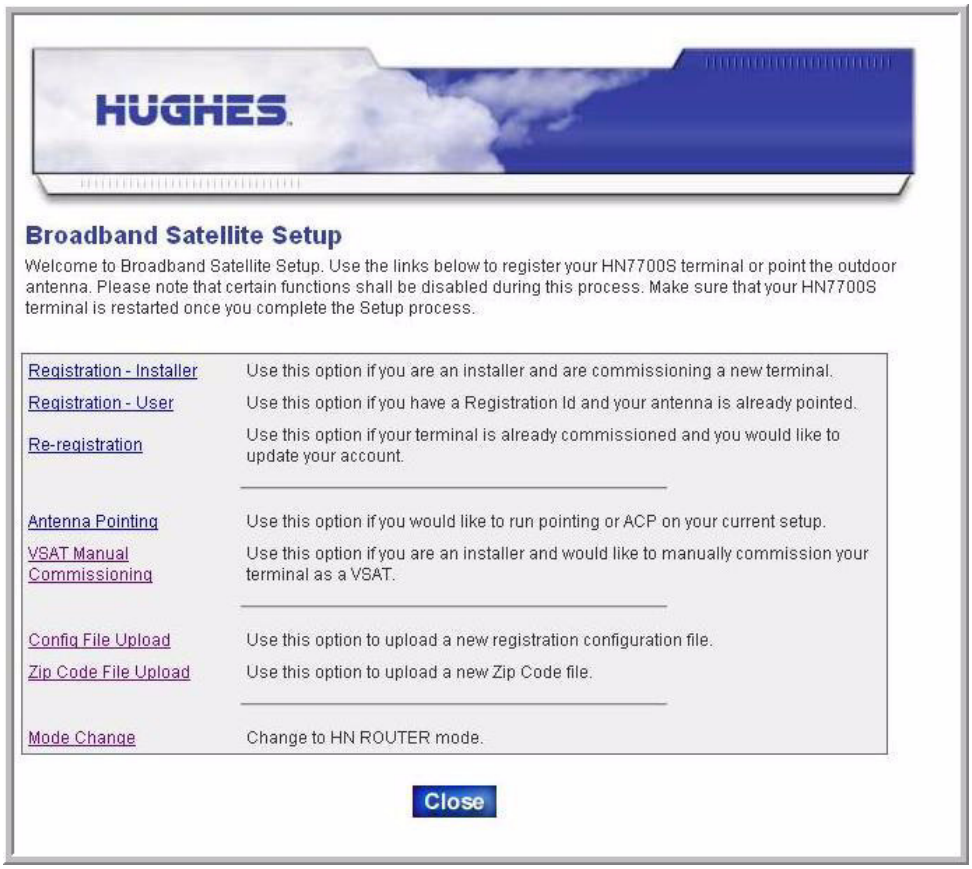


Figure 9: Setup screen

6. Click the **Mode Change** link. This initiates the process to change the mode from VSAT to router.

7. The Mode Change Confirmation page displays as shown in Figure 10.

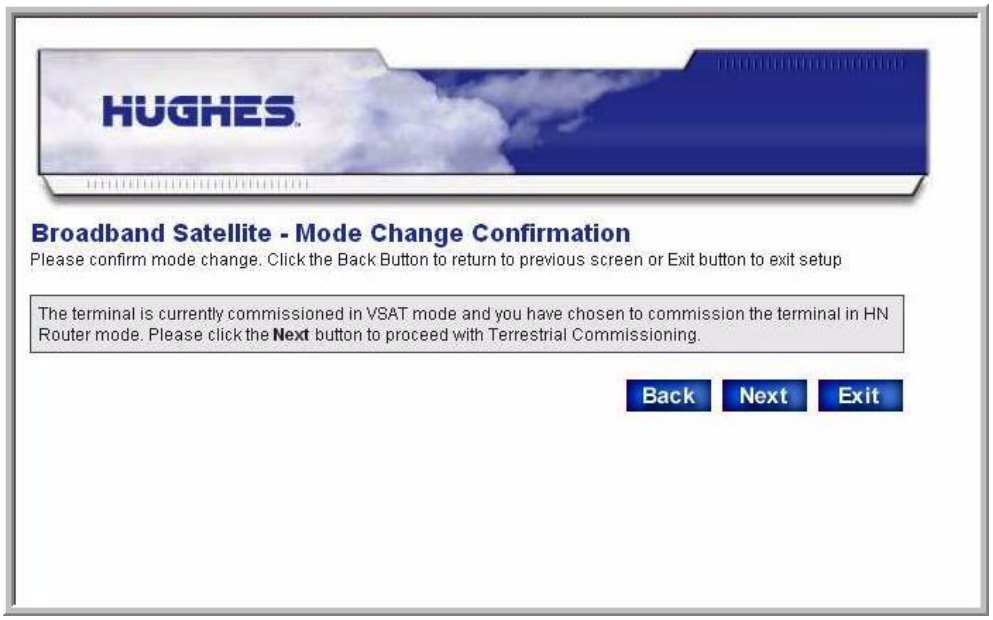


Figure 10: Mode Change confirmation

8. Click **Next** to continue with the commissioning process.
9. The Terrestrial Broadband Setup screen displays as shown in Figure 11 on page 23.

Terrestrial Broadband Setup page

The Terrestrial Broadband Setup screen is the Terrestrial Broadband Commissioning start page. It is your entry point to commissioning the HN router and uploading the configuration file. It contains three links:

- **Registration - Installer**
- **Config File Upload**
- **Mode Change**

You will not use the **Mode Change** link since you have already changed the mode to router mode. Using the **Mode Change** link at this time will change the mode from router to back to VSAT mode.

Figure 11 shows the Terrestrial Broadband Setup page.

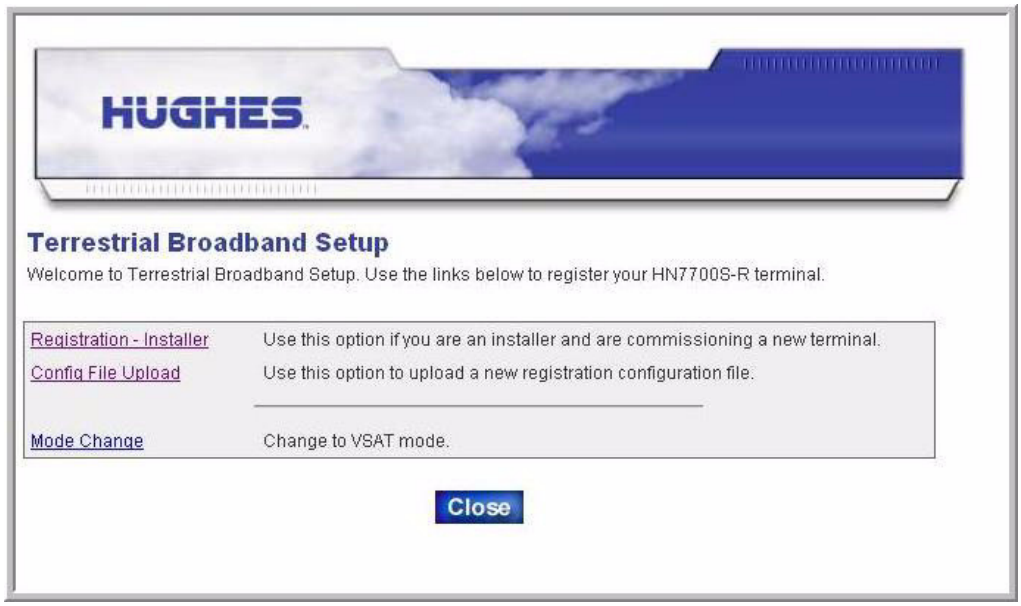


Figure 11: Terrestrial Broadband Setup page

1. Click the **Config File Upload** link. The Configuration File Upload screen displays as shown in Figure 12.

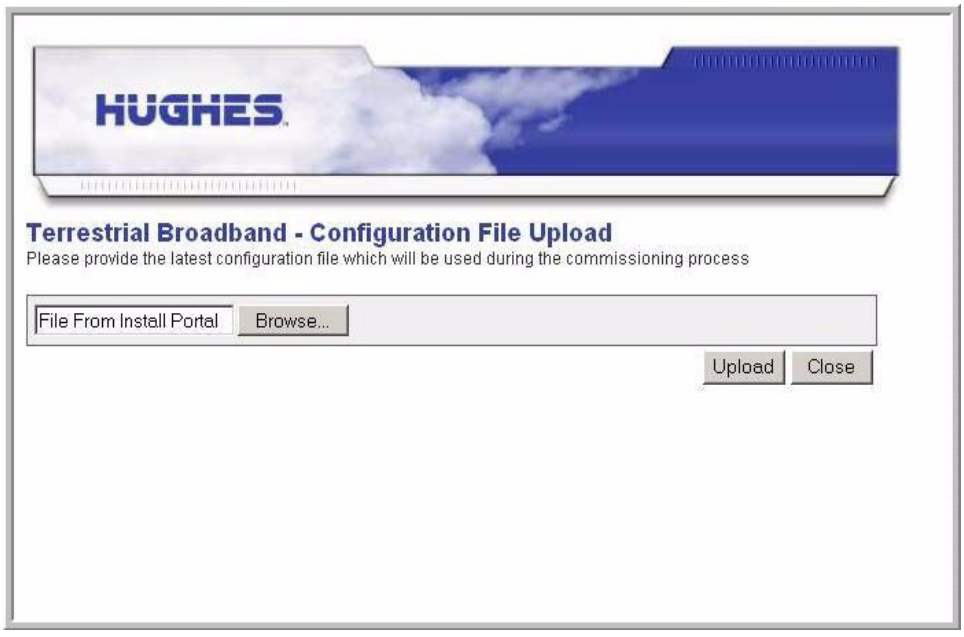


Figure 12: Configuration File Upload screen

2. Click the **Browse** button to locate the *terr.cfg* file on the installer laptop.

3. Select the appropriate file.
4. Click the **Upload** button.
5. The system displays a confirmation screen as shown in Figure 13 indicating the the file was successfully transferred.
6. Click the **Close** button.

Figure 13: Configuration file confirmation

7. The system returns to the SCC home page.

Commissioning by auto selection

Commissioning by auto selection is the preferred method of commissioning the HN router. By selecting this option the commissioning parameters are automatically configured based on the network access provider (NAP) chosen.

Selecting and verifying the NAP

To select the network access provider:

1. At the Terrestrial Broadband Setup screen as shown in Figure 14, click the **Registration - Installer** link.

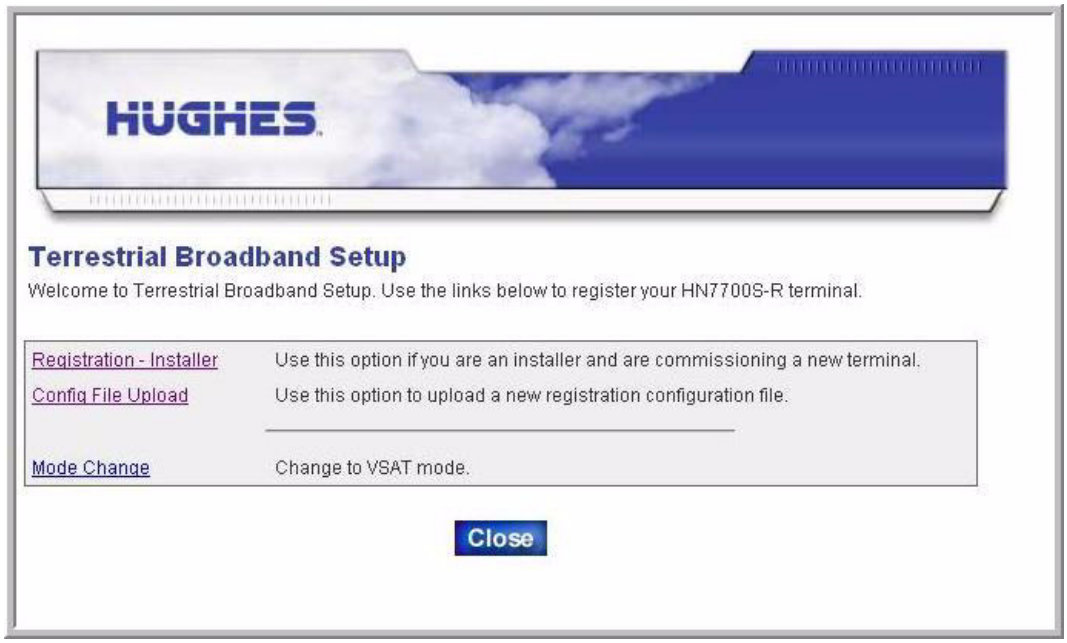


Figure 14: Terrestrial Broadband Setup screen

2. The NAP Service Parameters screen displays as shown in Figure 15.

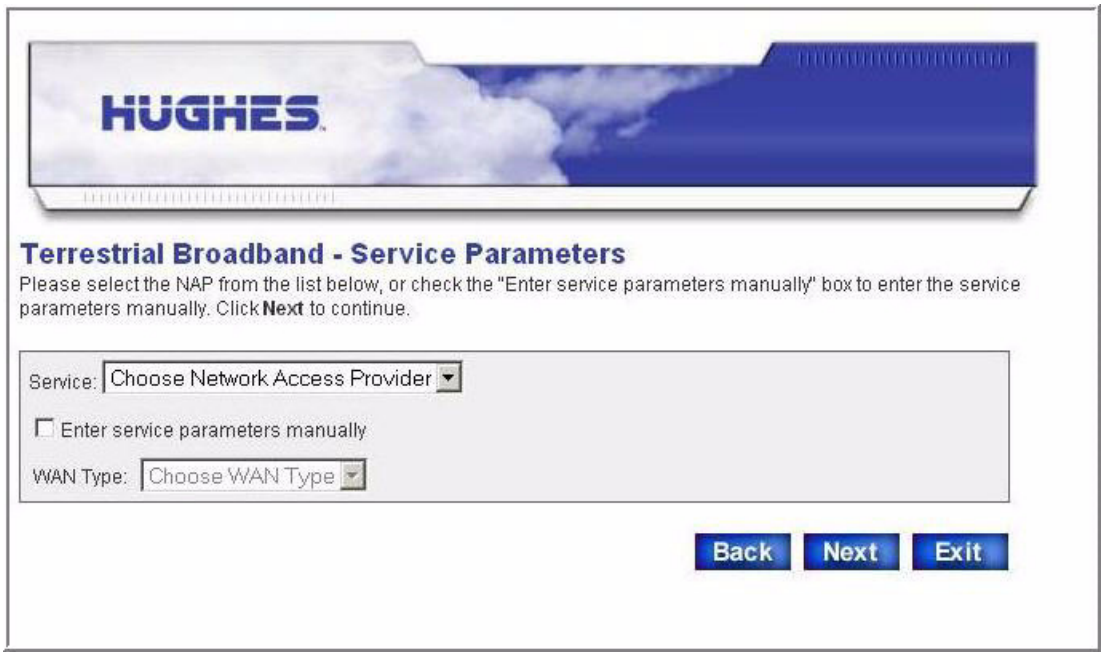


Figure 15: Auto selection - Service Parameters

3. Click the down arrow for the **Service** field. A list of service providers appears.
4. Select the appropriate service provider from the list. Refer to your work order for the correct service provider.
5. Figure 16 shows the drop-down list with the ADSL provider highlighted for selection. Figure 17 on page 27 shows a T1 provider selected.

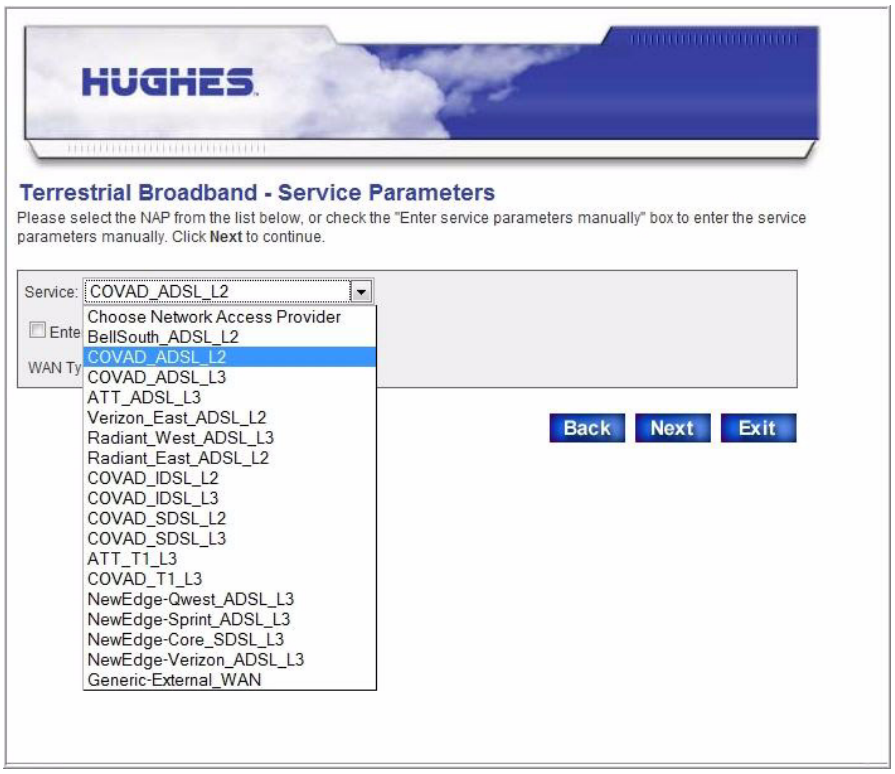


Figure 16: Auto selection - Service Parameters selecting the NAP

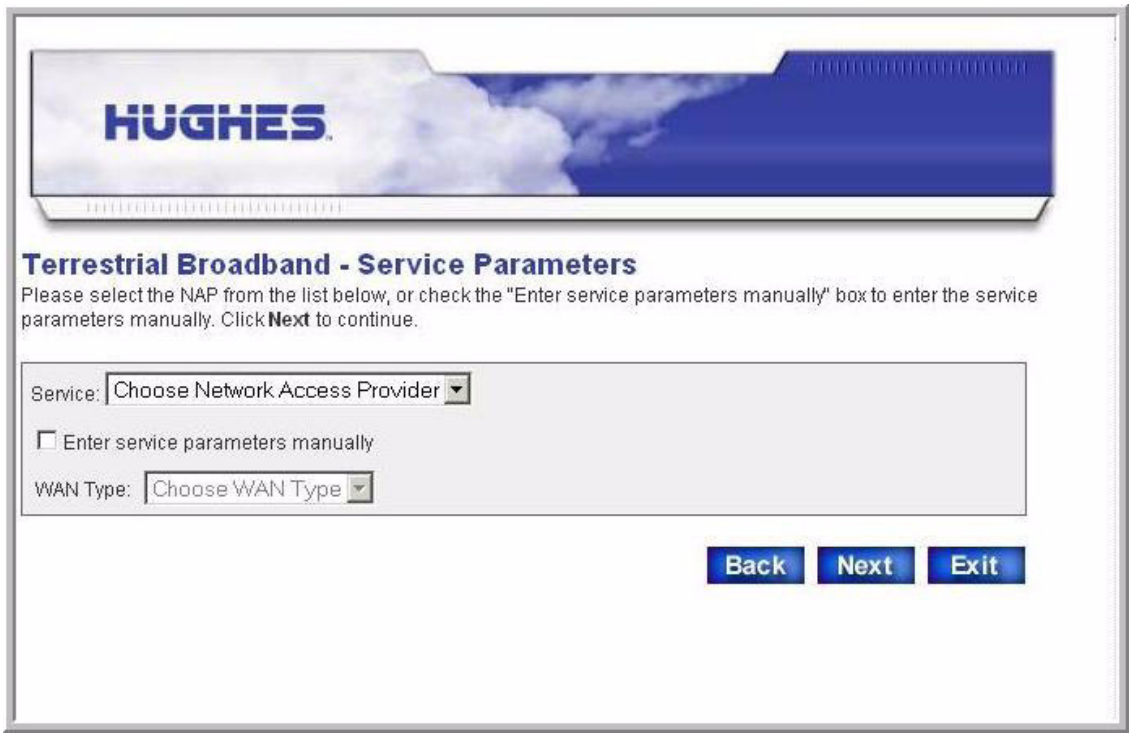


Figure 17: Select Service Parameters for T-1

6. Click **Next.**
7. The Verification of Service Parameters screen displays as shown in Figure 18.

Note: If you are instructed to commission by manual entry, click the check box for **Enter service parameter manually**. Refer to *Commissioning by manual entry* on page 33 for the manual entry work flow.

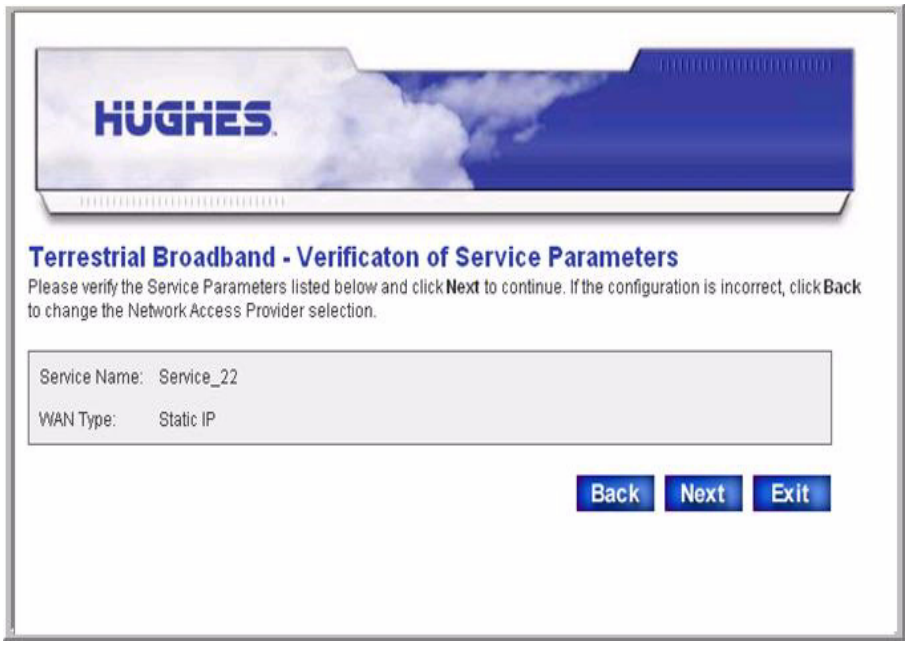


Figure 18: Auto selection - T-1 NAP verification screen

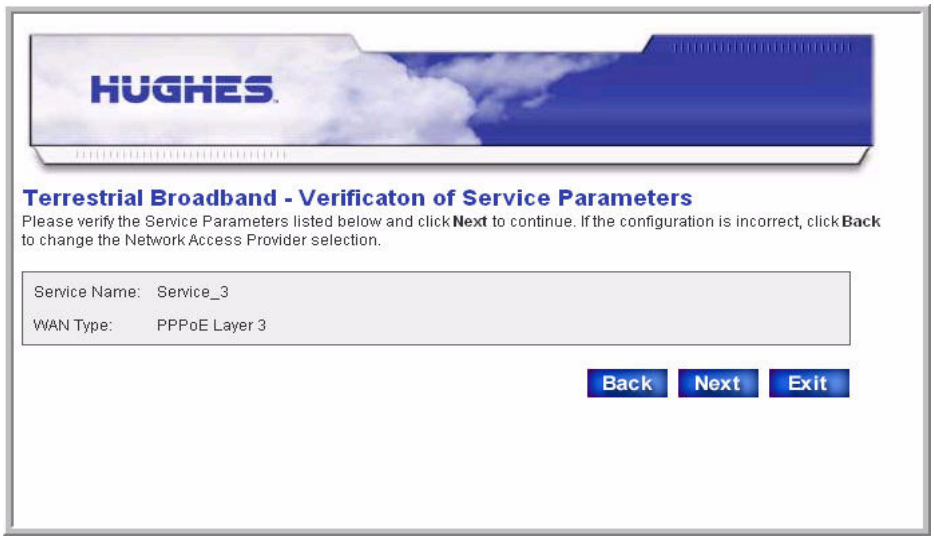


Figure 19: DSL NAP verification

8. Verify the service parameters are correct.
9. Click **Next.**

Entering and verifying configuration parameters

Figure 20 shows a sample Configuration Parameters screen for a DSL NAP. Figure 21 on page 29 illustrates the parameters for a

T1 provider. Your screen may differ depending on the NAP selected.

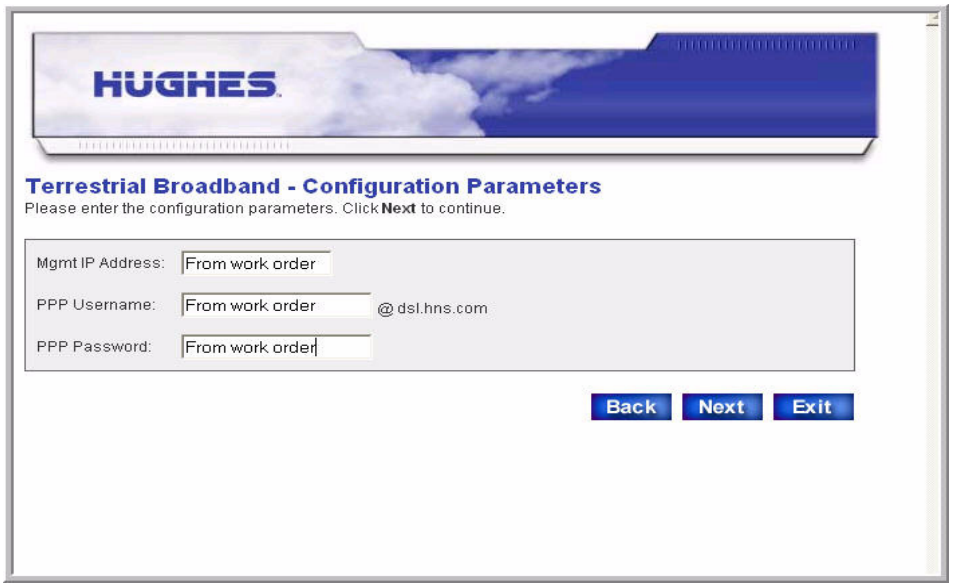


Figure 20: Auto selection - DSL Configuration Parameters

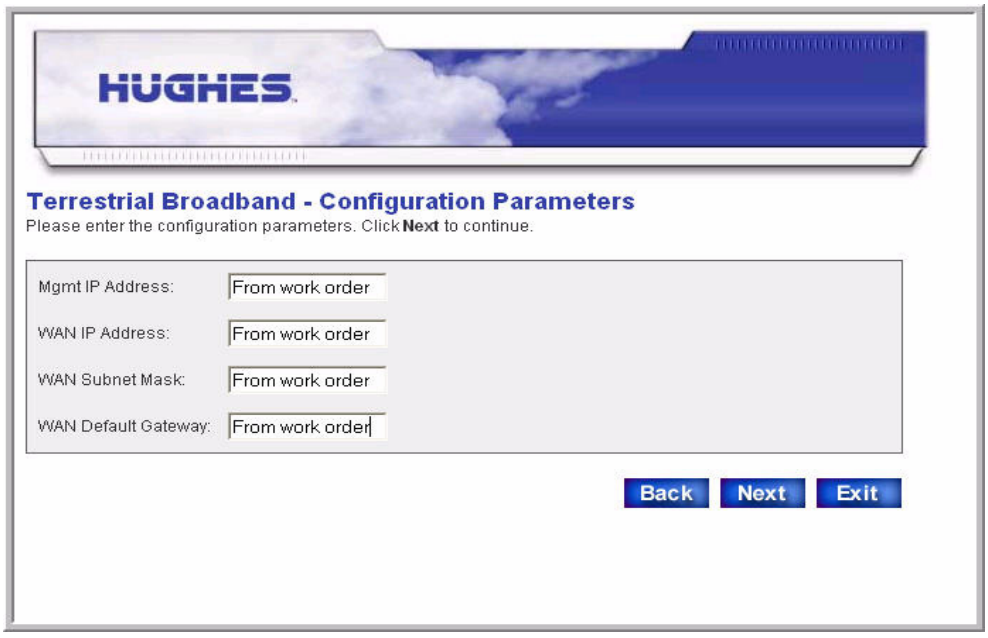


Figure 21: T-1 Configuration Parameters

1. Use your work order to enter the appropriate values for the fields displayed. Click **Next**.

2. The Verification of Configuration Parameters screen displays as shown in Figure 22.

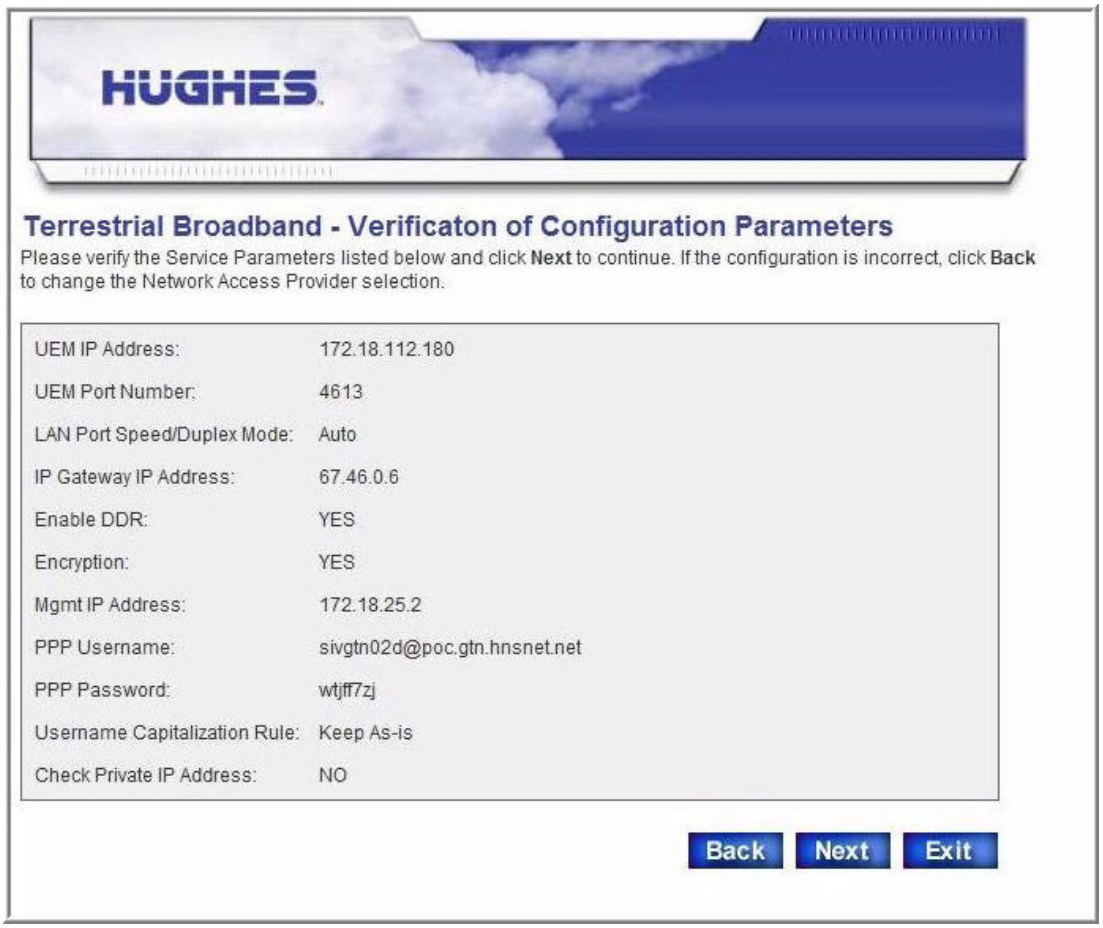


Figure 22: Sample Configurations Parameters verification screen

3. Verify the information is correct.
4. Click **Next.**

Completing the commissioning process

The system displays a confirmation message on the Terrestrial Broadband - Confirmation screen as shown in Figure 23.

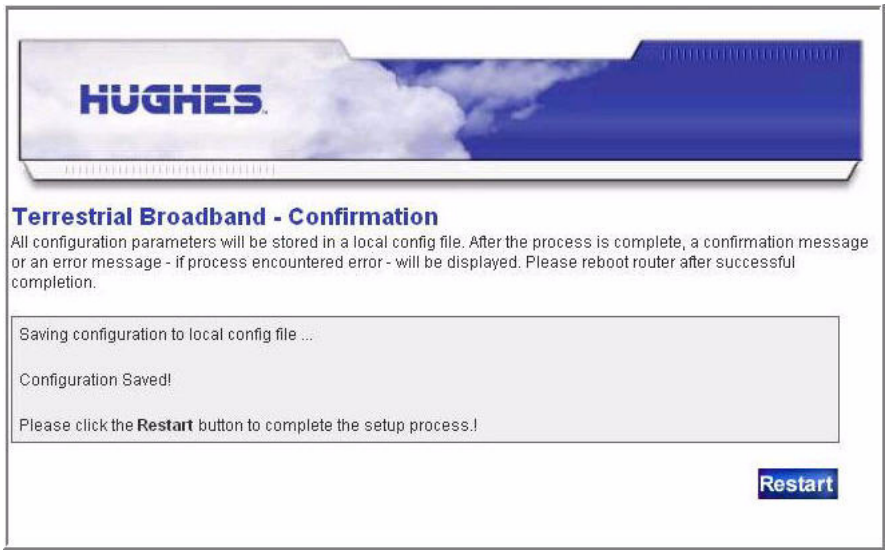


Figure 23: Auto selection - Confirmation screen

During the commissioning process the screen displays the progress of saving the configuration to the local configuration file and indicates when processing is finished.

Connecting the HN router

To complete the setup process, connect the broadband transport device to the HN router and the NAP.

- Connect the yellow cable from the transport device to the LAN2 port on the HN router.
- Connect the laptop to the LAN1 port on the HN router.
- Click the **Restart** button.

Once the HN router comes back up, it is operating in Router Mode.

The SCC Home page IP address changes from **192.168.0.1** to **192.168.5.1.**

Access the SCC Home Page by opening your Web browser and typing **192.168.5.1** in the address bar. The system displays the HN router home page as shown in Figure 24 on page 32.

Note: When commissioned as a router, HN7700S-R is used to identify this functionality on all user interface screens.

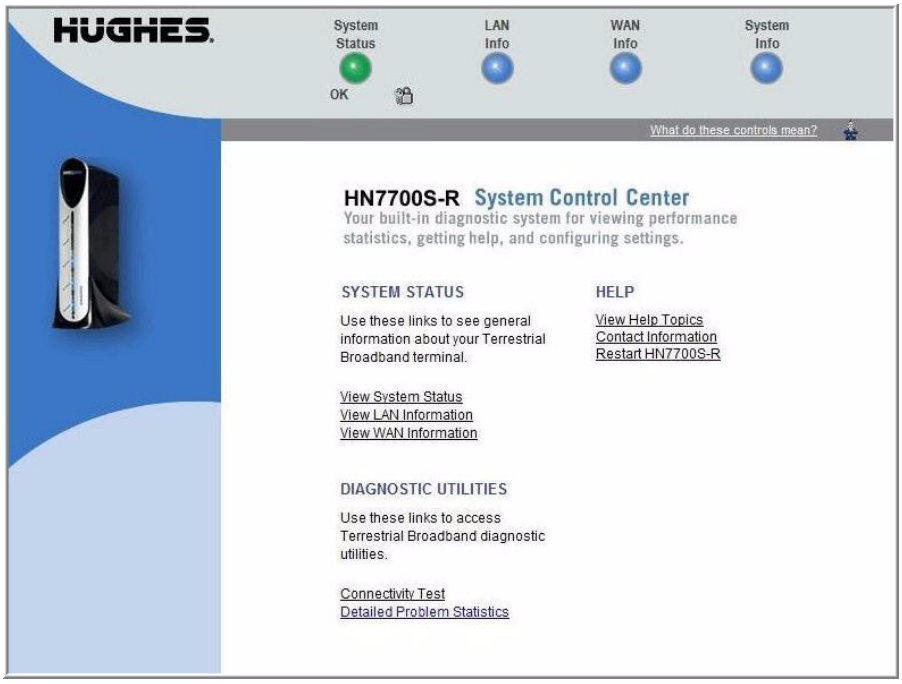


Figure 24: Router System Control Center home page

If the SCC home page does not renew:

1. Open a command prompt or window on the installer PC. Type **`ipconfig /renew.`**
2. Press **Enter**. The system displays the following message:

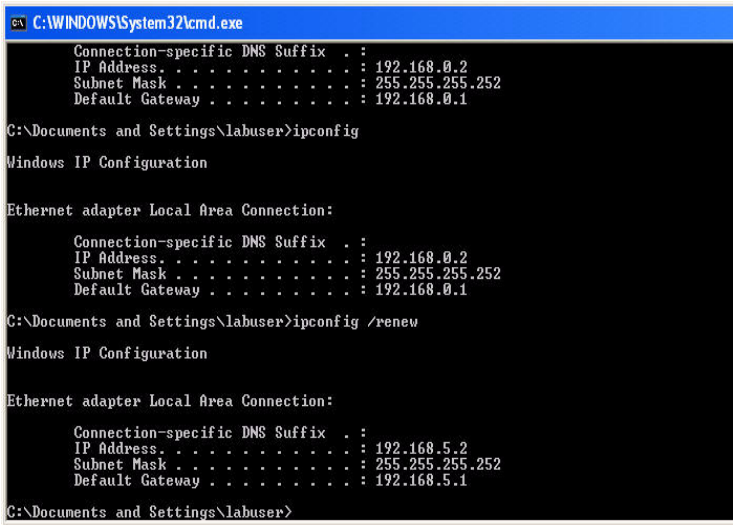


Figure 25: IP address assigned

Commissioning by manual entry

Hughes recommends using the auto selection process. If you are instructed to commission by manual entry, you must have required information to complete this process. See *Entering and verifying the configuration parameters* on page 34 for this information.

Follow the procedures from the beginning of this chapter until you are requested to select the NAP as illustrated in Figure 26.

Selecting and verifying the NAP

On the Service Parameters screen, enter data as follows.

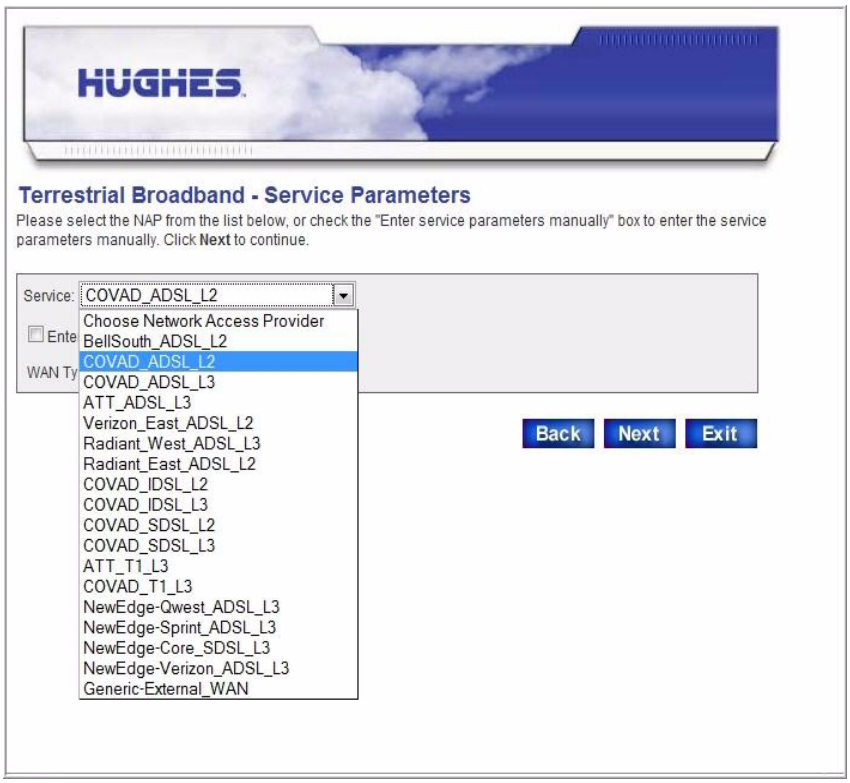


Figure 26: Manual entry - Service Parameters

1. Click the down arrow for the **Service:** box.
2. Click to select the NAP from the list.
3. Click the checkbox to select **Enter service parameter manually** field.
4. Click the down arrow for the **WAN Type** field.
5. Click to select the WAN Type from the list.
6. Click **Next**.

7. The Verification of Service Parameters screen displays as shown in Figure 27.

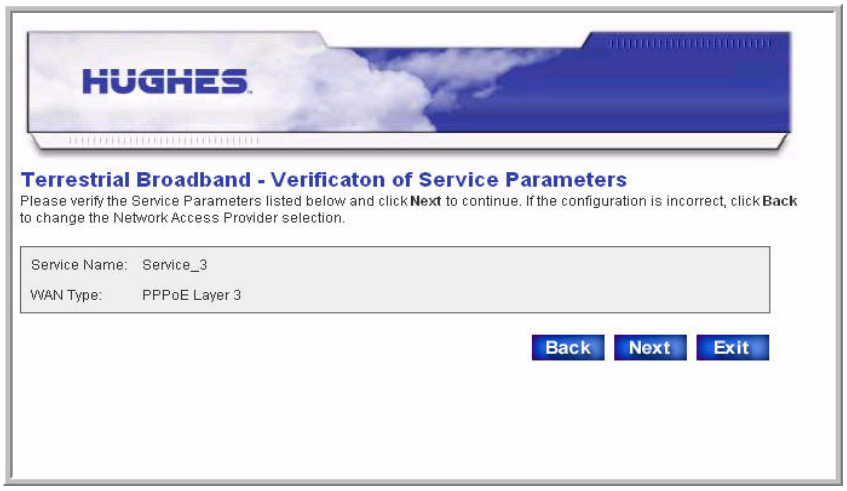


Figure 27: Manual entry - Verification of Service Parameters

8. Verify the NAP information is correct.
9. Click **Next**.

Entering and verifying the configuration parameters

A sample Manual Configuration screen displays as shown in Figure 28.

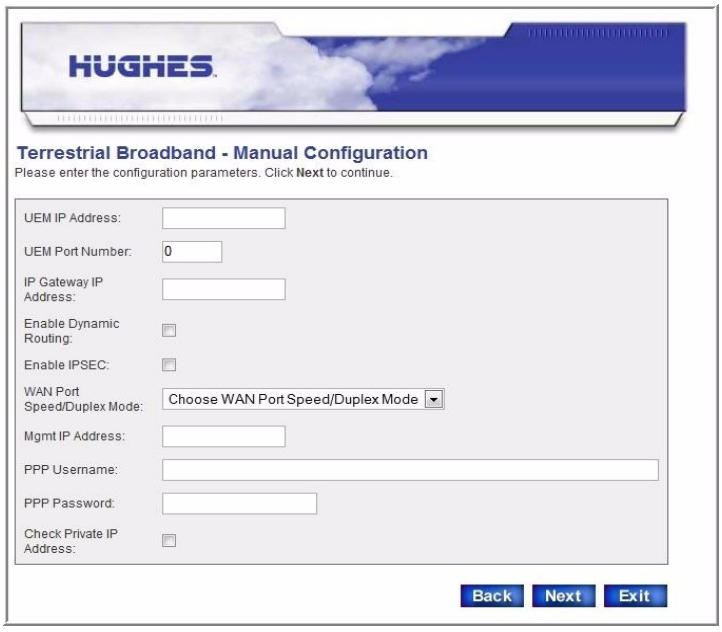


Figure 28: Manual entry - Manual Configuration screen

10. Enter the information for the fields as instructed.

11. Click **Nex**t.
12. A Verification of Configuration Parameters screen displays.
13. Verify the information is correct and click **Next**.

Refer to *Completing the commissioning process* on page 30 to complete the procedure.

Chapter 6

Verifying the installation and commissioning

This chapter discusses the final steps of the commissioning process. It covers the following topics:

Verifying the terrestrial link

Use the System Control Center and the Advanced pages to verify commissioning.

To verify that the Terrestrial Link is successful, use the following steps to access the Advance Page.

1. Navigate to the Advance Page.
2. Click the General link in the left frame to expand it.
3. Click the Summary link.

The system displays the Terrestrial Statistics Summary page as shown in Figure 30 which shows the Terrestrial Link with a status of *established*.

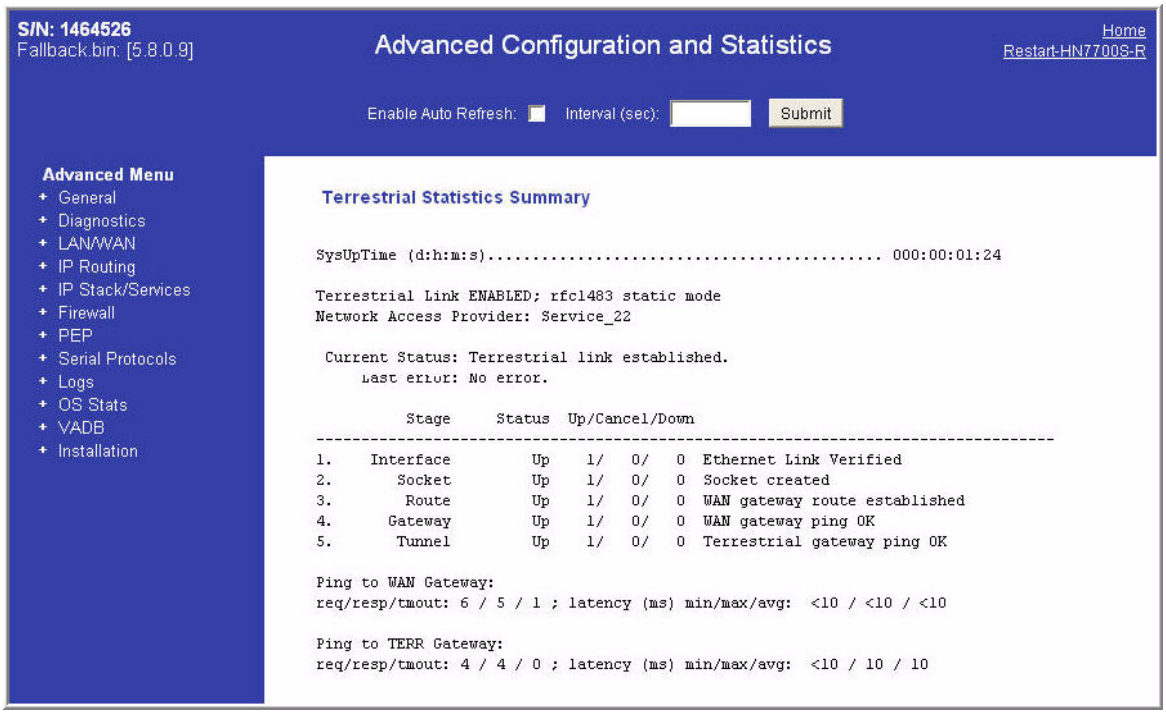


Figure 29: Summary page

Verifying the download status

Once the terrestrial connection comes up, the HN router proceeds to download the latest software and parameters. Use the following procedure to view the download progress.

1. Navigate to the Advanced Page.
2. Click the **Installation** link in the left frame to expand it.
3. Click the **SDL Monitor** link.

The system displays the SDL Monitor page as shown in Figure 30. Use the State column to view the progress of the download.

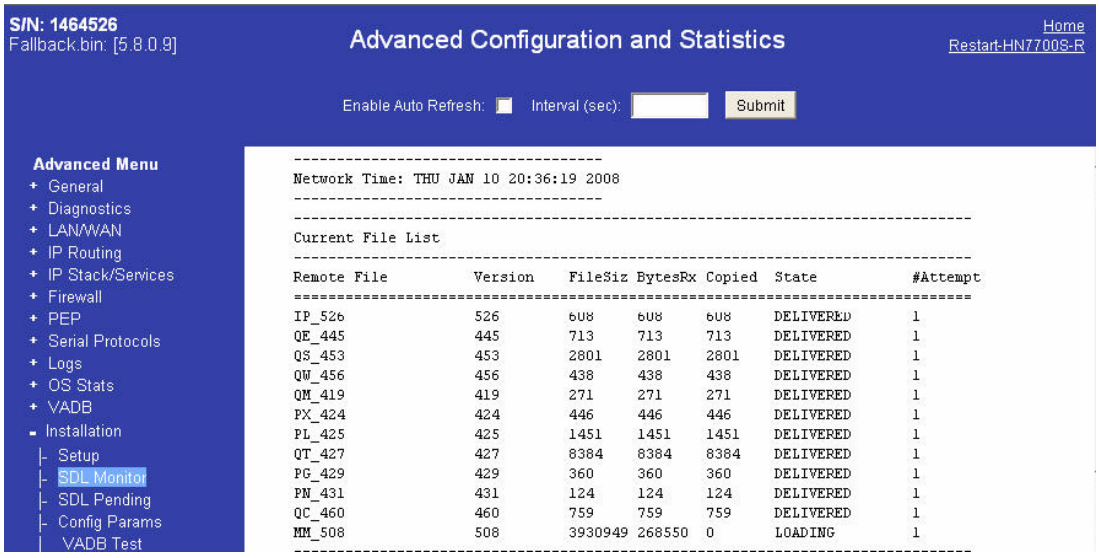


Figure 30: SDL Monitor page

The HN router restarts and loads the new parameters and software when all the files are delivered. To verify the status:

1. Navigate to the SCC home page at 192.168.5.1
2. Click the System Status button.
3. The **Software Download Status** on the System Status page is set to *Download Complete* as shown in Figure 31.

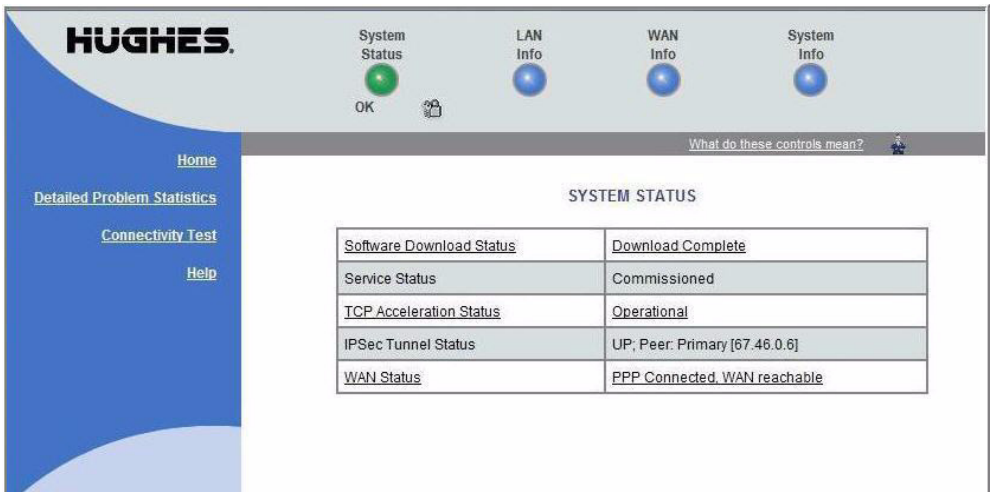


Figure 31: System Status page

Completing the process

When you have verified the download is complete and commissioning of the HN router is successful:

- Perform site sign-off tests.
- Disconnect your laptop from the HN router.
- Connect the customer's equipment to the router.

Chapter 7

System Control Center

The System Control Center is an interface that enables users to access router configuration, statistics, and status information using a web browser from any computer that has TCP/IP connectivity to the terminal.

This chapter discusses:

Internet browser settings

It is important that your Internet browser displays the most current system information for the system Control Center. To ensure the browser does not display old or outdated pages, set your browser options as follows.

Note: This procedure applies only to Internet Explorer. If you are using another Web browser, consult your operating system manual.

1. From your browser toolbar select **Tools.**
2. From the drop-down list select **Internet options**.
3. Click the **General Tab Setting** on the Internet Options screen.

4. In the Temporary Internet Files box, click **Settings** as shown in Figure 32.

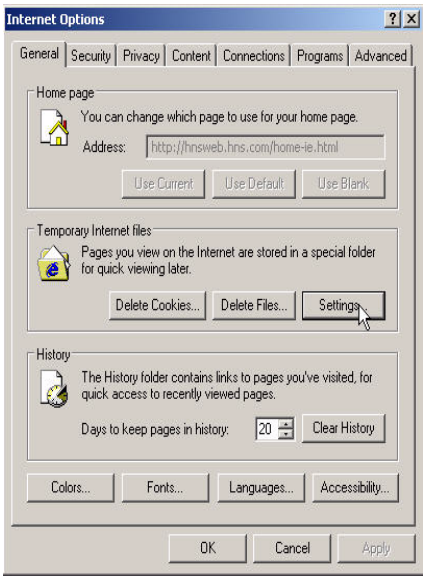


Figure 32: Selecting settings option

5. The Settings screen displays.
6. Click the **Every visit to the page** box as shown in Figure 33.

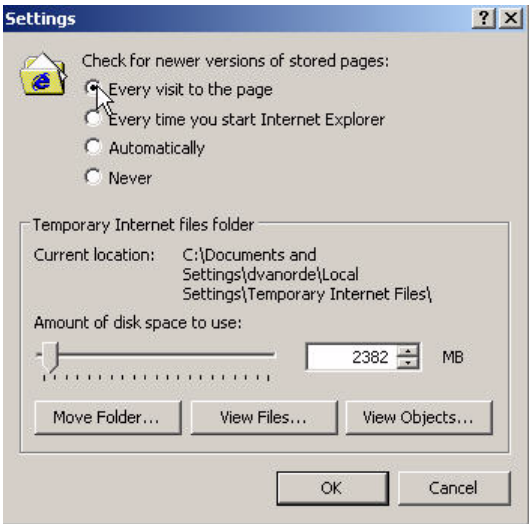


Figure 33: Settings screen

7. Click **OK** to store your settings and close the screen.

Accessing the System Control Center

You can access the System Control Center through a Web browser installed on a computer connected to the HN router. To access the System Control Center use the following steps:

1. Open a Web browser such as Internet Explorer or Netscape.
2. In the browser's address bar, type
   `www.systemcontrolcenter.com`
   or
   `192.168.5.1`
   and press **ENTER**.
   A sample of the System Control Center home page appears as shown in Figure 34.

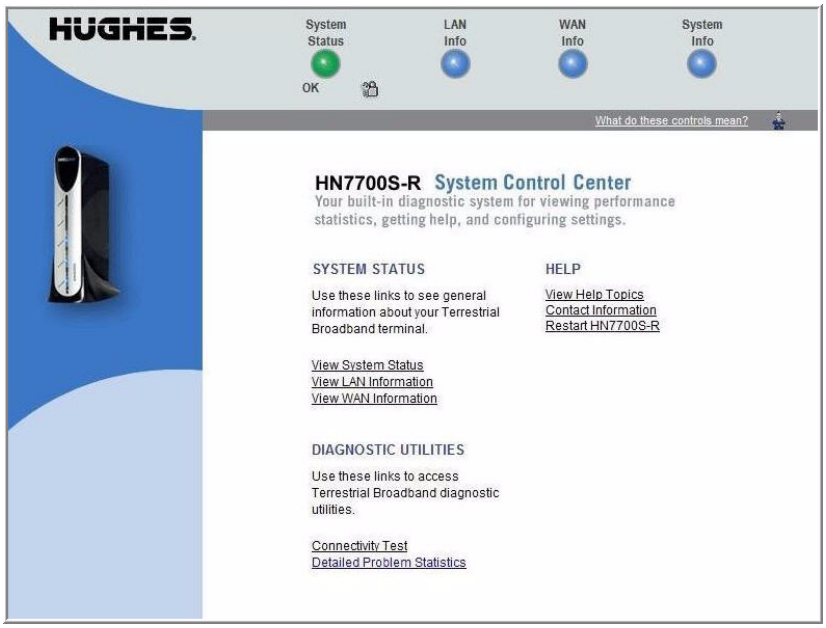


Figure 34: System Control Center home page

Note: When commissioned as a router, *HN7700S-R* is used to identify this functionality on user interface screens.

The System Control Center home page

The System Control Center also referred to as the Home page or the Main page is the central portal to all other pages. The HN router's System Control Center contains links to groups of configuration and statistical information.

The HN router Web interface is divided into two sections—Main pages and Advanced pages. The format of these pages remains the same even though the information presented changes.

System Control Center buttons and indicators

The top frame of all System Control Center page and associated pages consists of four round buttons with labels above them, as shown in Figure 35. These buttons are links to other pages and appear at the top of every page, except the Advance pages:

- System Status
- LAN Info
- WAN Info
- System Info

If you click any of these buttons, the page associated with that button opens. For example, click the LAN Info button to see the LAN Info page.

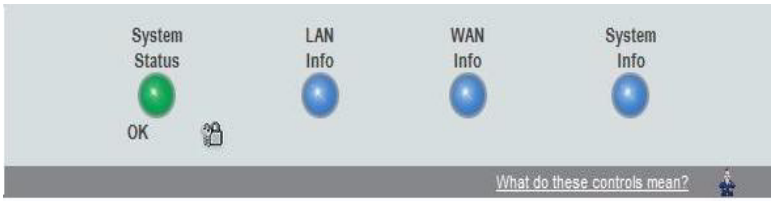


Figure 35: Web page top frame

Below the top frame is the link **What do these controls mean?** as shown in **Figure 36.**

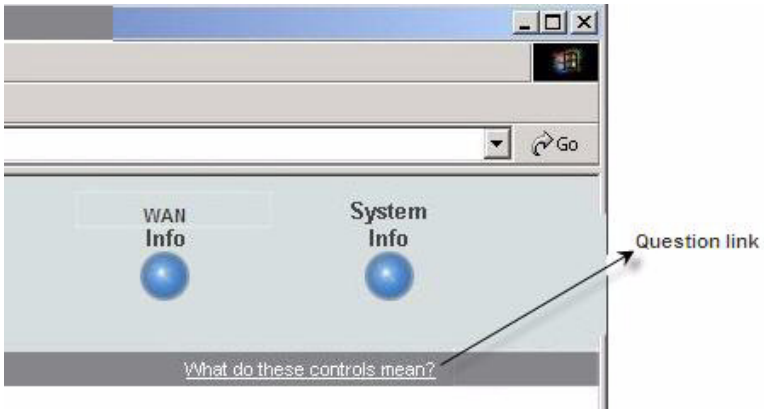


Figure 36: Question link

Click the link to open a pop-up window that gives an explanation of the button links in the top frame. See Figure 37.

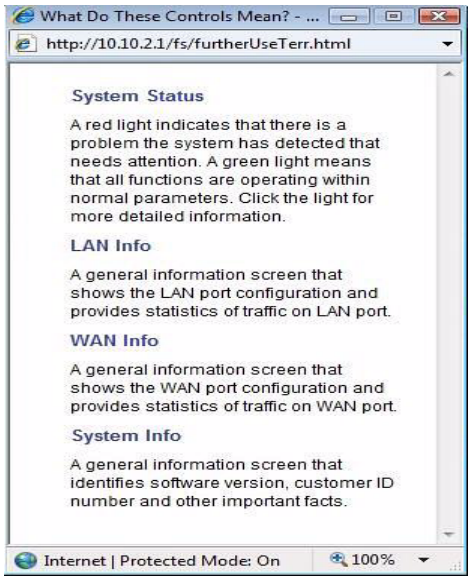


Figure 37: Link explanation

System Status button

The System Status button is an indicator button which changes color to indicate the current system status. The different colors indicate the following:

- Green - no problem detected, OK
- Red - problem detected
- Yellow - may be a problem with Web Acceleration.

Note: The System Status button may be green, red, or yellow, while other buttons are always blue.

Below is a description of the colors of the System Status button.

- **System Status** provides access to the System Status page, which displays general status information.
  - If the System Status indicator button is green and **OK** appears below it, as shown in Figure 35, the the router is operating properly.
  - If the indicator button is yellow as shown in Figure 38, the system status is Degraded. This could indicate that the Web Acceleration feature is not functioning, or that the router is in VADB mode, using the BACKUP configuration. Click the indicator button to access the System Status page to

view status details and restore previous operating parameters.

Figure 38: System Status indicator reporting Web Acceleration feature down

– If the indicator button is red and **Problem** appears below it, as shown in Figure 39, there is a problem. Click the indicator to access the System Status page to view problem details.

Figure 39: System Status indicator reporting a problem

Other System Control Center buttons

LAN Info shows the configuration of the LAN (LAN1) port. It also displays the statistics about the traffic through the LAN port.

WAN Info shows the configuration of the WAN (LAN2) port. It also displays the statistics about the traffic through the WAN port.

System Info provides basic system configuration information about the HN router.

The System Status page

Figure 40 shows the System Status page. A description of the fields on the page follows the figure.

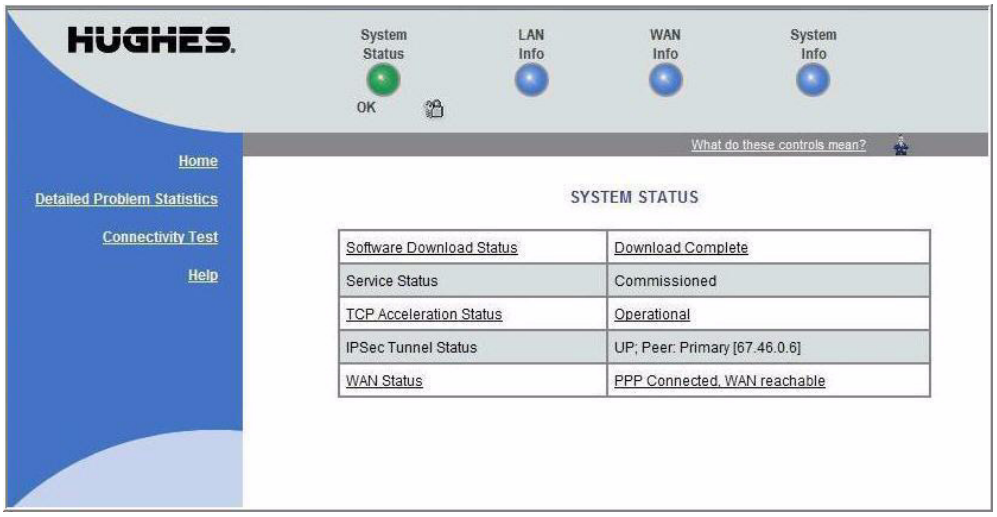


Figure 40: System Status page

Note: The available system status options will vary, depending on how HN router is configured. Therefore, some of the options listed below may not appear on the screen.

- Software Download Status - Indicates whether router software and configuration are up to date.
- Service Status - Indicates whether the router has been commissioned (registered with the system). From here, you can also access the service history for the router to determine if it has been de-commissioned at any time.
- TCP Acceleration Status - Indicates whether TCP Acceleration is operational. TCP acceleration provides the expected performance on the router.
- IPSec Tunnel Status
- WAN Status - Indicates the current status of the Wan interface.

Other possible statuses that may display include Web Acceleration and Virus Detection.

LAN Info page

Figure 41 shows the LAN Info Page. The LAN Info page gives information about the configuration of the LAN (LAN1) port and maintains the statistics about the traffic through the LAN port. Click the **Clear LAN Statistics** button to refresh the screen with the most current statistics.

Figure 41: LAN Info page

WAN Info page

Figure 42 shows the WAN Info page. WAN Info shows the configuration of the WAN port and maintains statistics about the traffic through the WAN port. Click the **Clear WAN Statistics** button to refresh the screen and populate with the most current statistics.

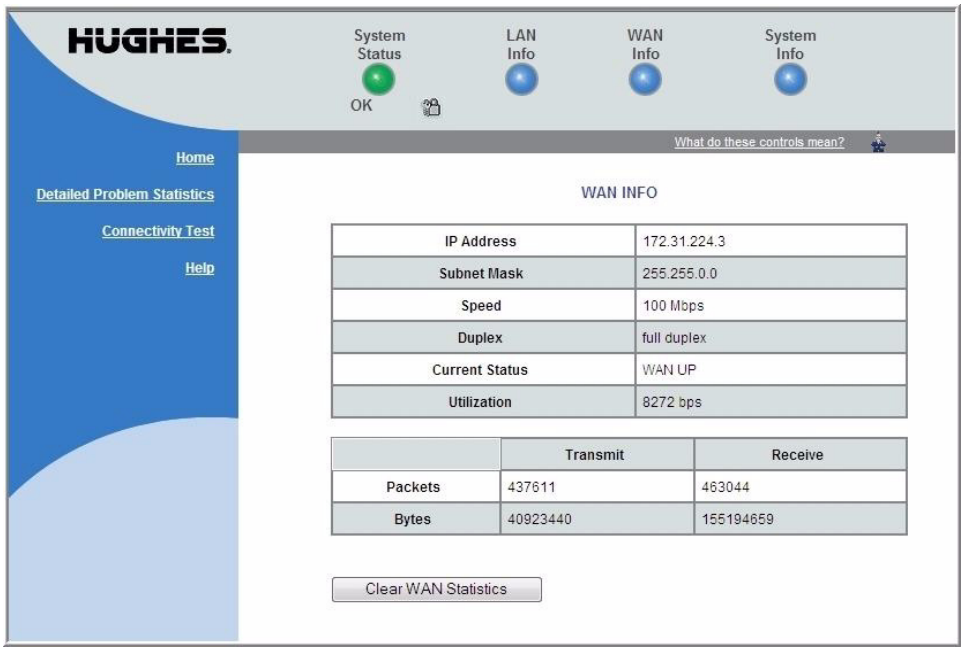


Figure 42: WAN Info page

System Info page

The System Info page, as shown in Figure 43 on page 50 provides basic system configuration information for the HN router. The page is divided into two sections. The HN router Info section contains identifying information for the router such as the Site ID and Serial Number. The Software Configuration section displays NAT, DHCP, and Firewall information if these options are enabled.

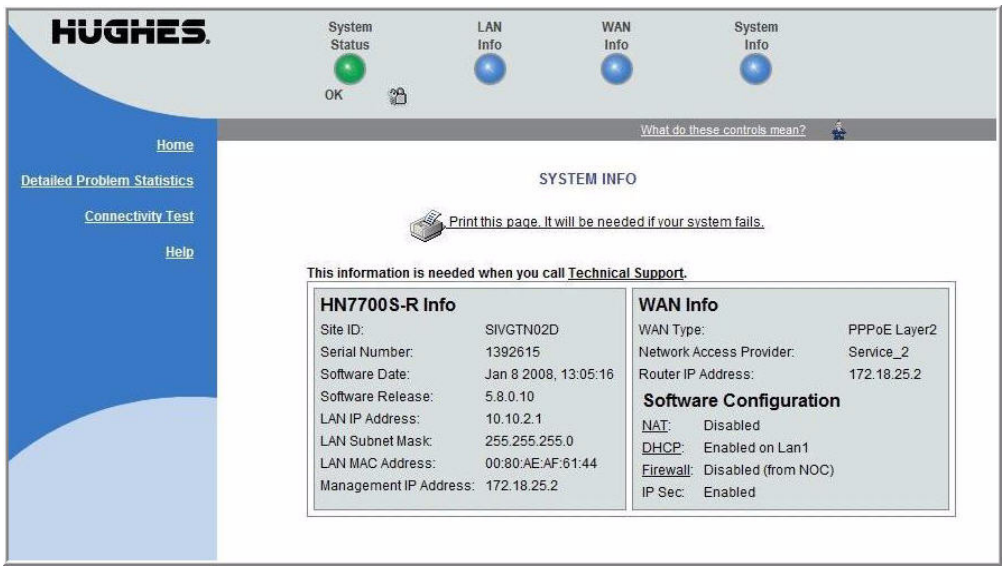


Figure 43: System Info page

Additional Home Page links

The center frame of the the Home page has additional links as illustrated in Figure 44.

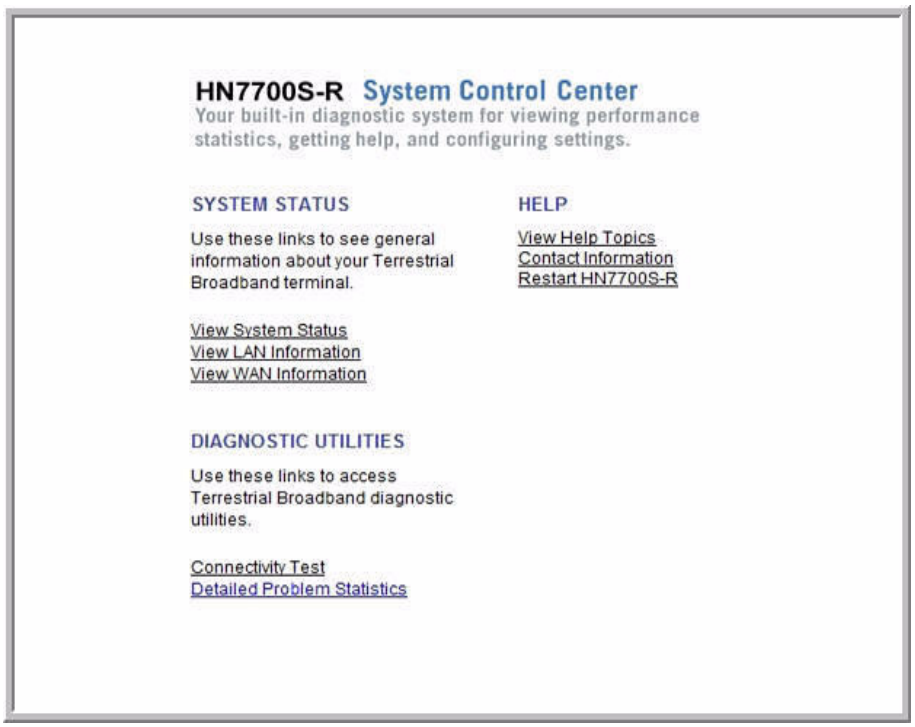


Figure 44: Additional Home Page links

The links are organized by the following categories:

- System Status
- Diagnostic Utilities
- Help

System Status

This category provides access to system status information.

- **View System Status** provides access to the System Status page which gives general status information. See System Status on *The System Status page* on page 46.
- **View LAN Info** provides LAN information. Refer to the *LAN Info page* on page 47 for details.
- **View WAN Info** provides WAN information. Refer to the *WAN Info page* on page 49.

Diagnostic Utilities

The Diagnostic Utilities provides access to testing and problem diagnostic links.

- Connectivity Test
- Detailed Problem Statistics

Connectivity Test

The Connectivity Test link provides access to the Connectivity Test page. It is used to test the connection between the router and the Network Operations Center (NOC).

Detailed Problem Statistics

The Detailed Problem Statistics link allows the user to generate and view statistics for a selected problem for a specific hourly time frame. The user selects the problem and time frame from drop-down lists to view the statistics needed as shown in Figure 45.

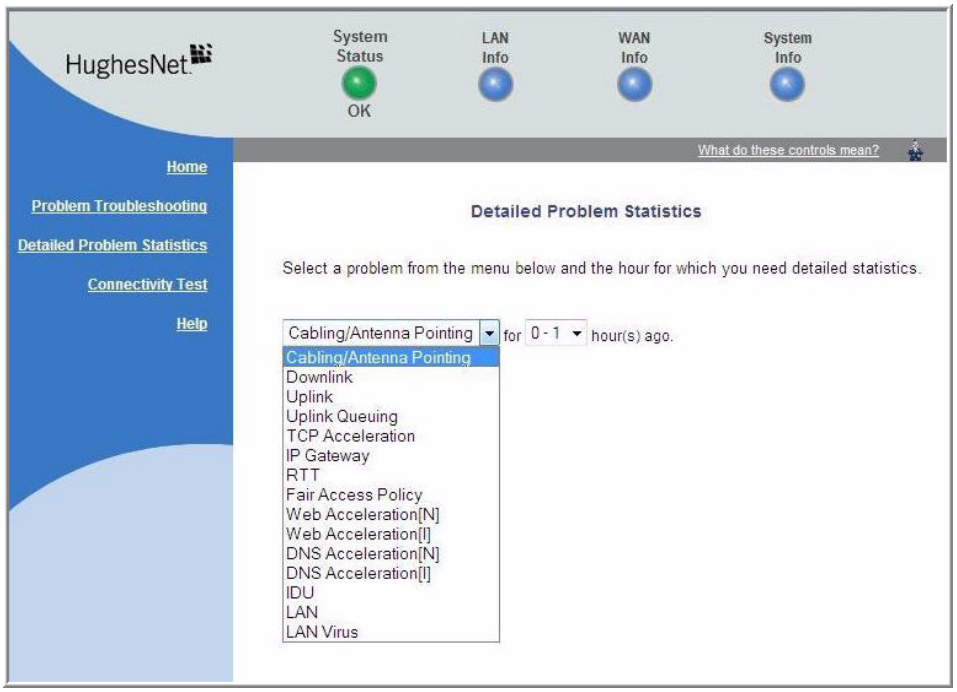


Figure 45: Detailed Problem Statistics selection

Help page

The System Control Center's Help Welcome page (Figure 46) contains information to help the user get started in using the HN router, how to configure and optimize Terrestrial Broadband Services, contact information if the user needs assistance, and other helpful information. Review the Help page information to become familiar with router help.

To display the Help page:

- Click View Help Topics on the System Control Center home page

or

- Click **Help** on the left side of any System Control Center page.

Help page links

The Help Welcome page as shown in Figure 46 contains links to assist the user in learning more about the Terrestrial Broadband services and how to troubleshoot problems is they occur.

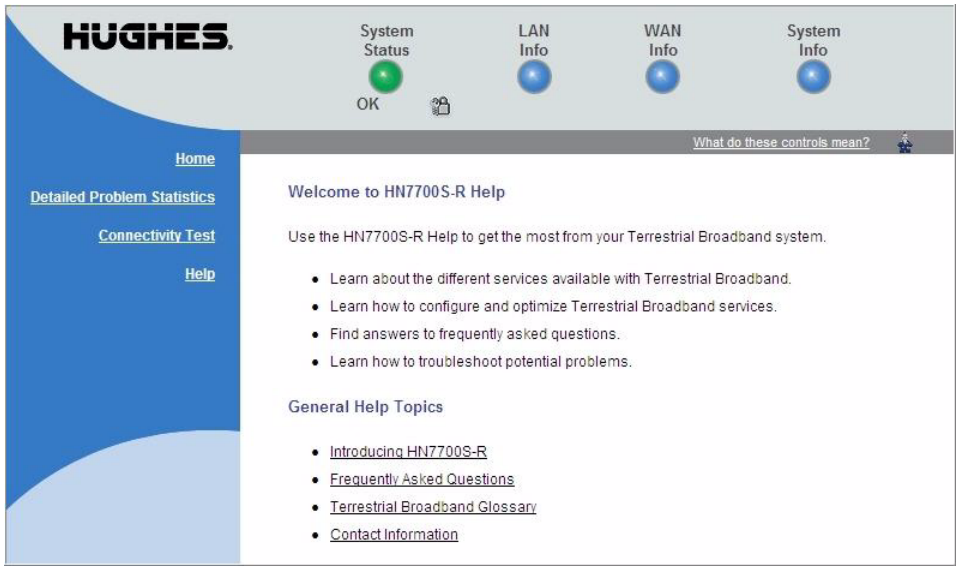


Figure 46: Help welcome page

The links on this page are:

- **Introducing the HN7700S-R**
- **Frequently Asked Questions**
- **Terrestrial Broadband Glossary**
- **Contact Information**

Figure 47 and Figure 48 show the Help introduction page and Frequently Asked Questions pages, respectively.

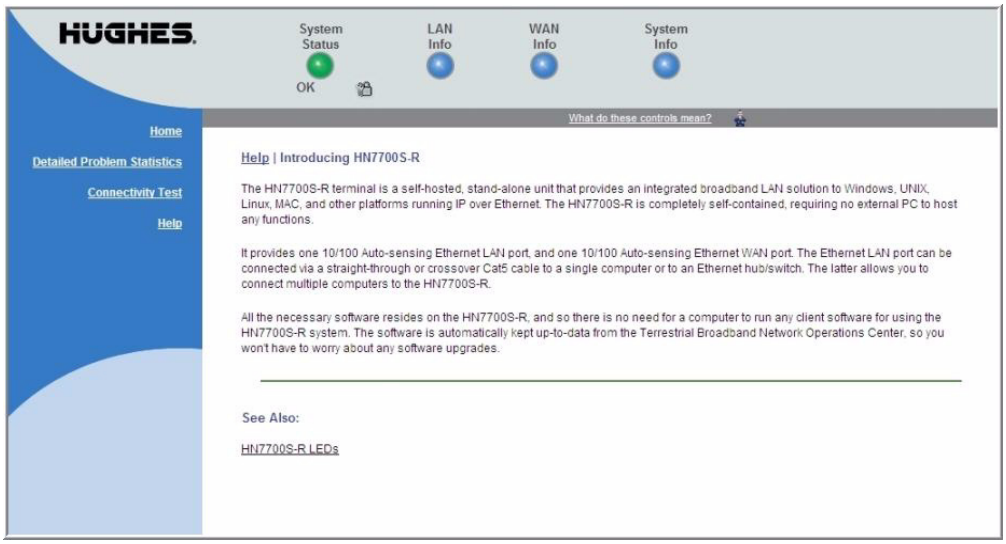


Figure 47: Help Introduction page

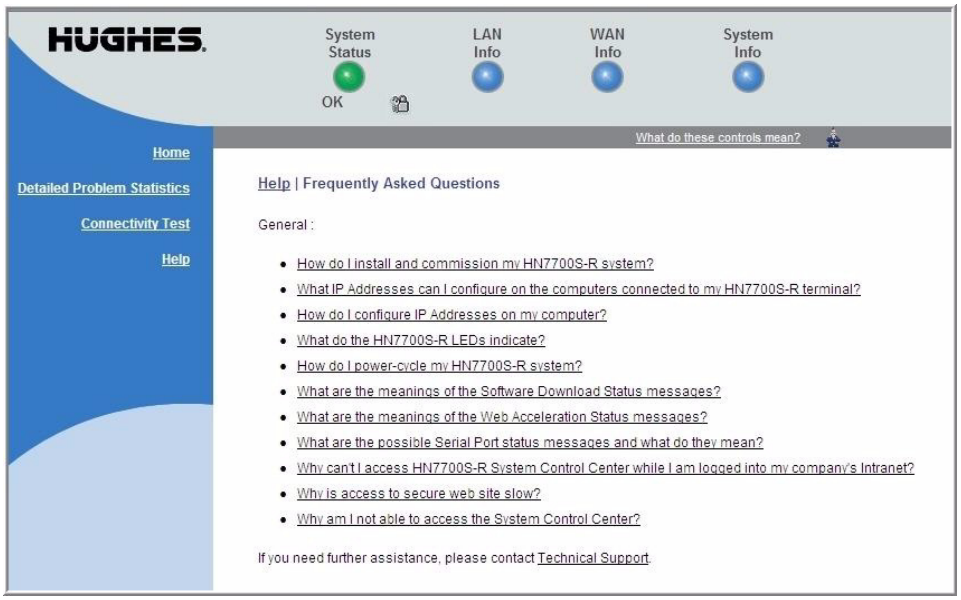


Figure 48: Frequently Asked Questions page

Advanced Pages

The Advanced Configuration and Statistics pages, also known as the *Advanced Pages*, contain detailed information about the HN router—such as statistics, logs, status, and operating parameters.

Figure 49 is a sample showing one of the many available Advanced Pages. You may need to access the Advanced Pages to communicate with Installer Support or to configure special features, such as Virtual Private Network Automatic Dial Backup (VADB).

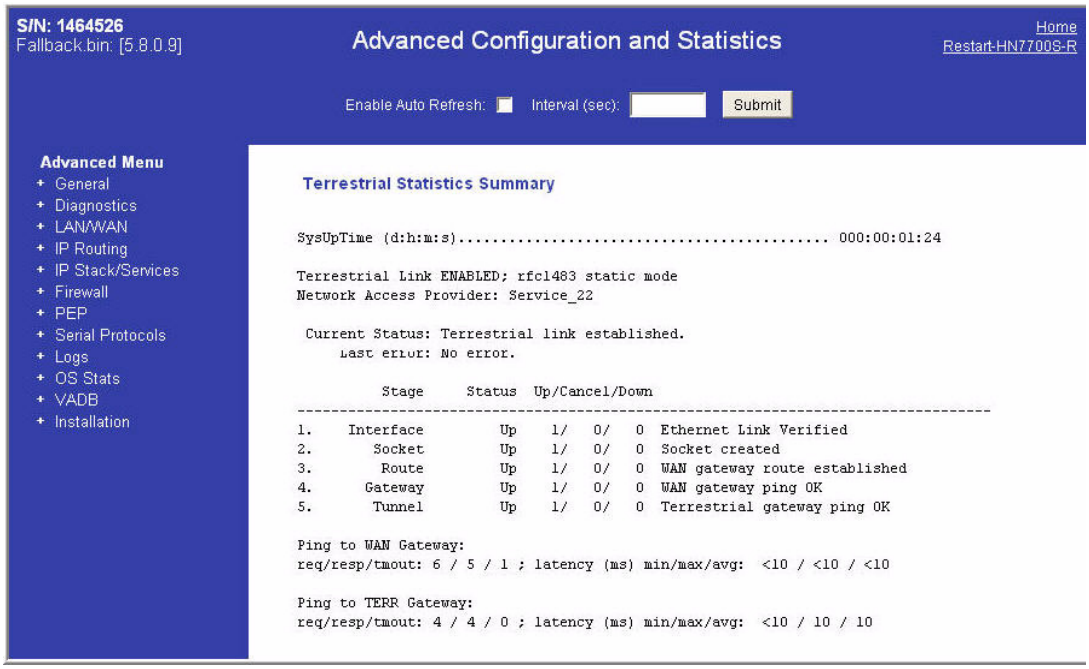


Figure 49: Advanced page

Note: The Advanced Pages provide access to critical configuration parameters and other functions. Do not use these pages unless you are a qualified technician who thoroughly understands how the terminal operates or unless an Installer Support representative instructs you to access the Advanced Pages for troubleshooting purposes.

Accessing the Advanced Pages

You can access the Advanced Pages using either of the following methods:

- On the System Control Center home page, click the small icon shown in Figure 50. (The icon looks like a small cartoon-character man. It is a link to the Advanced Pages.)
- Type **`192.168.5.1/fs/advanced/advanced.html`** in the browser's address bar and press **ENTER**.

Figure 50: Icon link to Advanced Pages

Expanding and collapsing menus

To expand the Advanced Menu on the left side of the screen to show additional selections, click the **+** sign next to a menu item. To collapse menu entries, click the **–** sign next to a menu item..

Figure 51: Advanced page showing sub-menu

Chapter 8

Configuring the HN router for VADB backup

This chapter explains how to configure the HN router for Virtual Private Network Automatic Dial Backup (VADB) operation. The following topics are discussed:

VADB overview

The VADB feature provides a phone-line backup capability to the HN router in case the DSL line fails or degrades below an acceptable threshold.

The HN router contains an internal modem to support VADB functionality. The HN router connects to a national network of dial access numbers, which are known as a Point of Presence (POP). Each POP acts as a Virtual Private Network (VPN) entry point into the customer's network or the Internet. The HN router sends packets through the POP to the Network Operations Center (NOC), which forwards the packets to the destination server.

VADB automatically switches the HN router to a terrestrial dialup telephone network with minimal interruption and loss of customer traffic. VADB introduces no additional load on the HN router and does not affect any existing HN router features, but it does cause the HN router to send and receive traffic at a slower rate.

Requirements for VADB

The following requirements must be fulfilled before VADB can be used:

- The HN router must be configured for VADB operation before the system is installed and commissioned.

Note: The HN router can be upgraded to support VADB operation after it is installed.

- The site must have an analog telephone line to support VADB operation. A dedicated telephone line is preferred but not required. The HN router can share the telephone line with other devices when it is connected to a splitter.

The following tasks must be completed for VADB to work properly:

- Before testing VADB functionality, you must use a phone handset to dial the VADB access phone number. For details, refer to *Testing the telephone line* on page 60.
- The telephone cable must be plugged into the TEL LINE port on the HN router and a telephone jack or splitter. (In some countries, a converter may be required to connect the cable to the phone jack.)

Installing VADB

Installing VADB consists of the following tasks:

- Verifying that the VADB profile is loaded
- Testing the telephone line
- Testing VADB functionality

Before beginning the installation, check the telephone line local dialing rules. If it does not match the sequence in the installation specification, or as shown in the Advanced Pages, (see *VADB troubleshooting* on page 66), contact Installer Support.

Verifying that the VADB profile is loaded

The VADB profile is a downloaded configuration file that sets up the HN router to support VADB. After the HN router is installed and commissioned, follow these steps to verify that the VADB profile is loaded:

1. Access the Advanced Configuration and Statistics pages shown in Figure 52 by typing **`192.168.0.1/fs/advanced/advanced.html`** in the browser address bar and pressing **ENTER**.
2. From the Advanced Menu, VADB section, click *Config Show* as shown in the figure below.

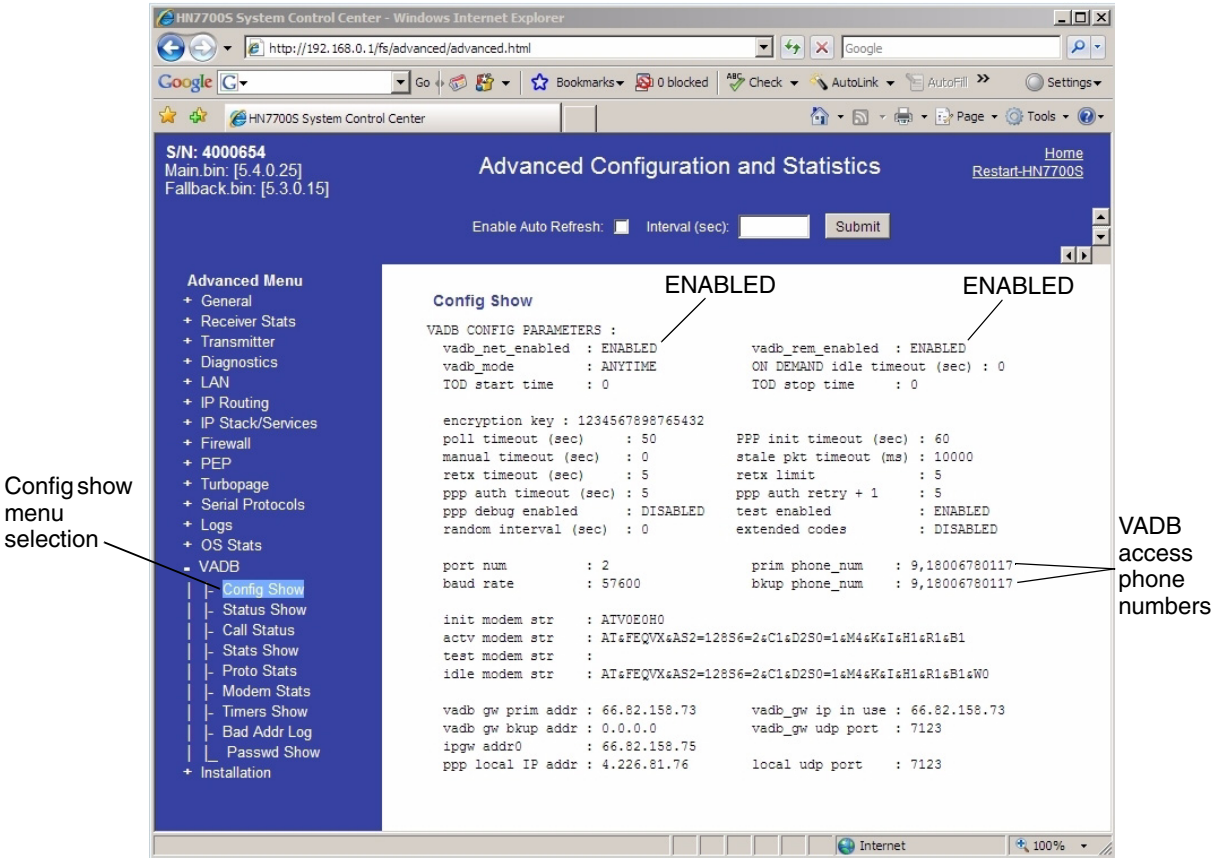


Figure 52: Verifying that the VADB profile is loaded

3. Verify that ENABLED appears in the vadb_net_enabled and vadb_rem_enabled fields. If ENABLED does not appear in both fields, contact Installer Support and request that these options be enabled.
4. Verify that the VADB access phone numbers appear in the prim phone_num and bkup phone_num fields.
5. Make a note of the VADB gateway address. You will need this address to test VADB functionality.

A user name and password are automatically generated and downloaded with the VADB profile. The VADB feature uses this user name and password to automatically connect to the Internet if necessary.

Testing the telephone line

Follow these steps to test the telephone line to which the HN router will be connected:

1. Connect a telephone handset to the telephone jack or splitter.
2. Dial the VADB access phone number listed in the prim phone_num field.
3. Listen for modem tones, which indicate the connection is being established between the access number and the handset.

   If you do not hear modem tones, you may need to modify the VADB access phone number to account for site-specific dialing rules. For example, if dialing an 8 or 9 is required to access an outside line at the site, you must add the required number to the VADB access phone number. Ask a site contact for site-specific dialing rules and then refer to the installation specification for instructions on how to modify the VADB access phone number.

Connecting the HN router to the telephone line

The HN router contains an internal modem; therefore, it is not necessary to connect an external modem to enable VADB functionality.

To connect the HN router to a telephone line, refer to Figure 53 and follow these steps:

1. Connect one end of the modem cable to the TEL LINE port on the HN router.
2. Connect the other end of the modem cable to a telephone jack or to a splitter if other devices share the telephone line. (In some countries, a converter may be required to connect the cable to the phone jack.)
3. If you use a splitter, connect the splitter to a telephone jack (with a converter, if required).

The final configuration for VADB is shown in Figure 53.

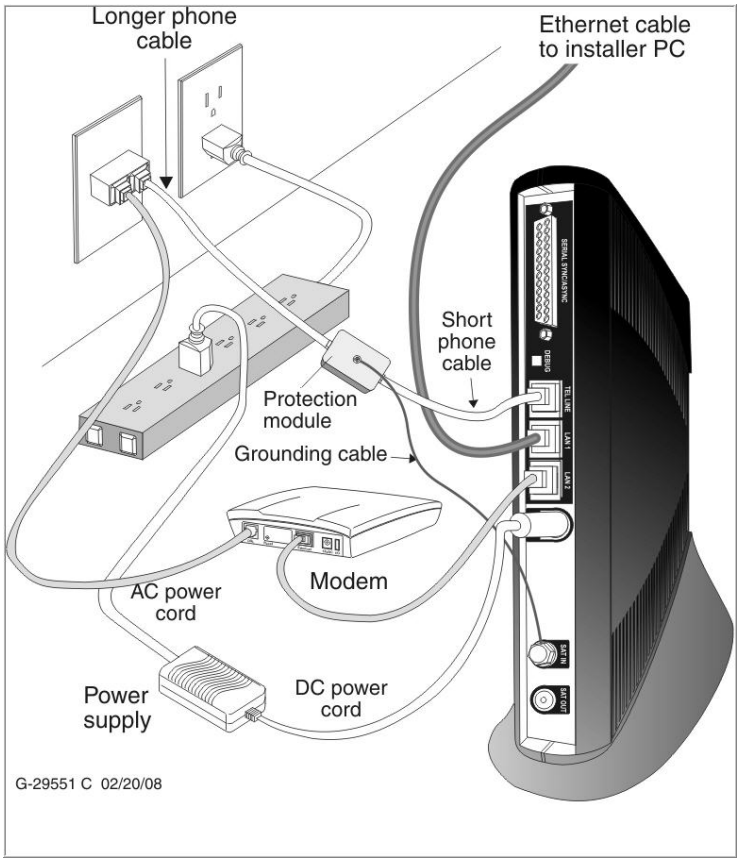


Figure 53: VADB cable connections

Optional protection module

Some countries may require that a protection module is installed between the HN router router and the public switched telephone network (PSTN) telephone line.

The protection module is a high-speed electronic circuit protector that provides both over-voltage and over-current protection. The module includes a short telephone cable that connects to the telephone line port on the HN router and a grounding cable with a ring terminal that connects to the HN router backplane, as shown in Figure 54.

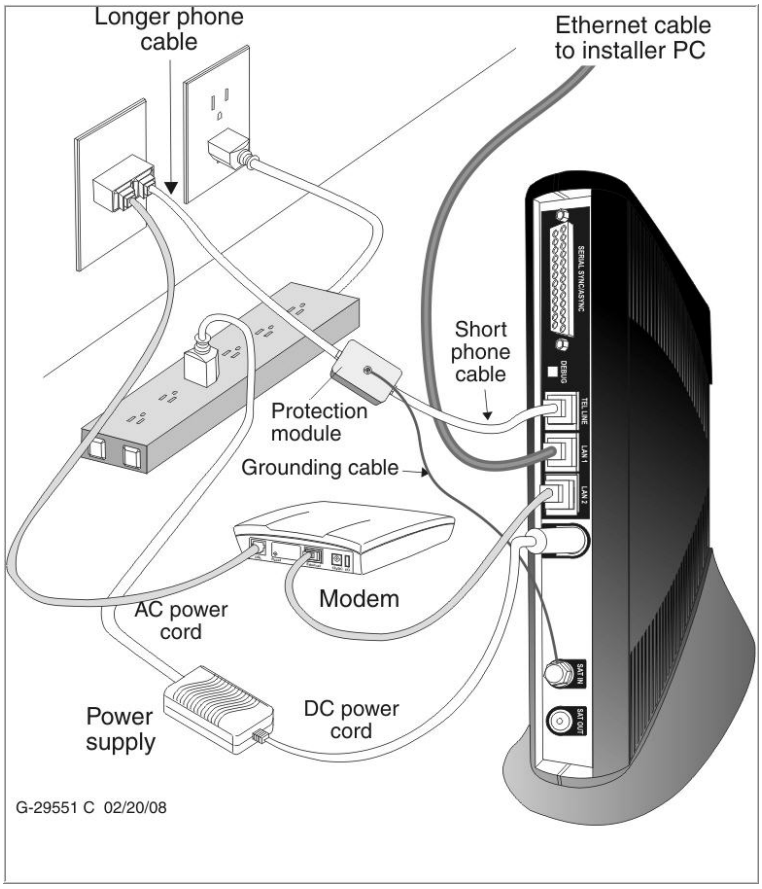


Figure 54: VADB connections with protection module

Installing the protection module

To install a protection module, refer to Figures 54 through 56 and follow these instructions:

1. Connect the short telephone cable from the protection module MODEM port to the HN router TEL LINE port, as shown in Figure 55.

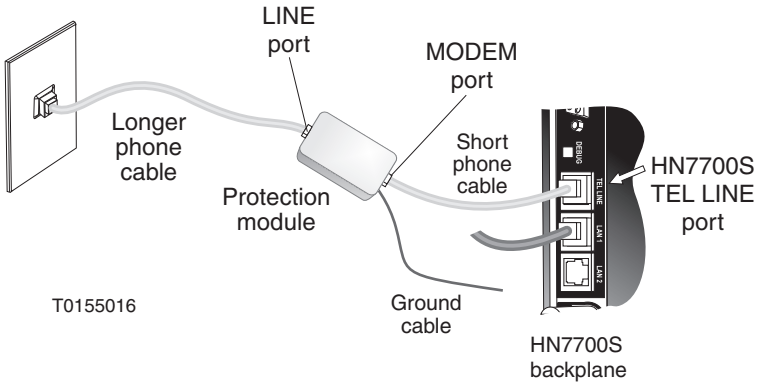


Figure 55: Connecting the protection module to the terminal

2. Remove the coaxial cable from the HN router SAT IN port. See Figure 56.

CAUTION

Do not remove or loosen the factory-installed hex nut on the HN router SAT IN port. Use the hex nut supplied with the protection module kit to secure the ring terminal attached to the protection module ground cable.

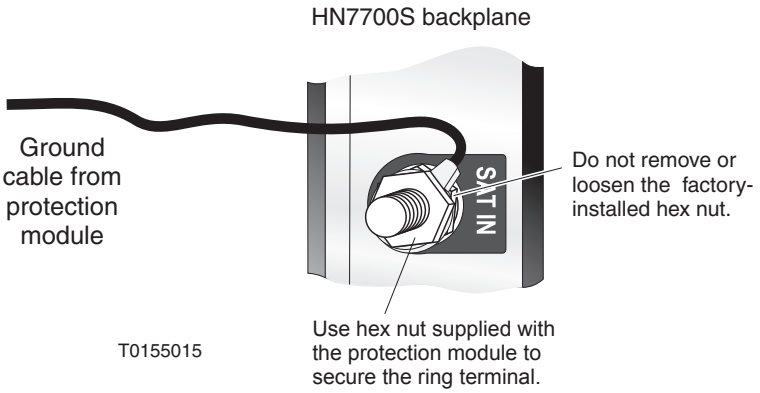


Figure 56: Connecting the protection module ground cable

3. Slip the ring terminal at the end of the protection module grounding cable over the SAT IN terminal post.

4. Install the hex nut provided with the protection module on the SAT IN terminal post and tighten it.
5. Reconnect the coaxial cable to the SAT IN terminal post. Make sure the cable is securely tightened. (See the Caution statement that follows Figure 9 on page 16.)
6. Connect the longer phone cable from the LINE port on the protection module to the telephone jack (or to a splitter if other devices share the telephone line). See Figure 55.
7. If you use a splitter, connect the splitter to a telephone jack.

Verifying VADB functionality

Follow these steps to verify VADB functionality:

1. Open a web browser on the installer PC.
2. Access the System Control Center Advanced Pages by typing **`192.168.0.1/fs/advanced/advanced.html`** in the browser address bar and pressing **ENTER**.
3. Verify that the VADB link is in use:
   a. From the Advanced Menu, VADB section, click *Call status*.
   b. Verify that `VADBLINK` appears in the Link in use field as shown in Figure 57.

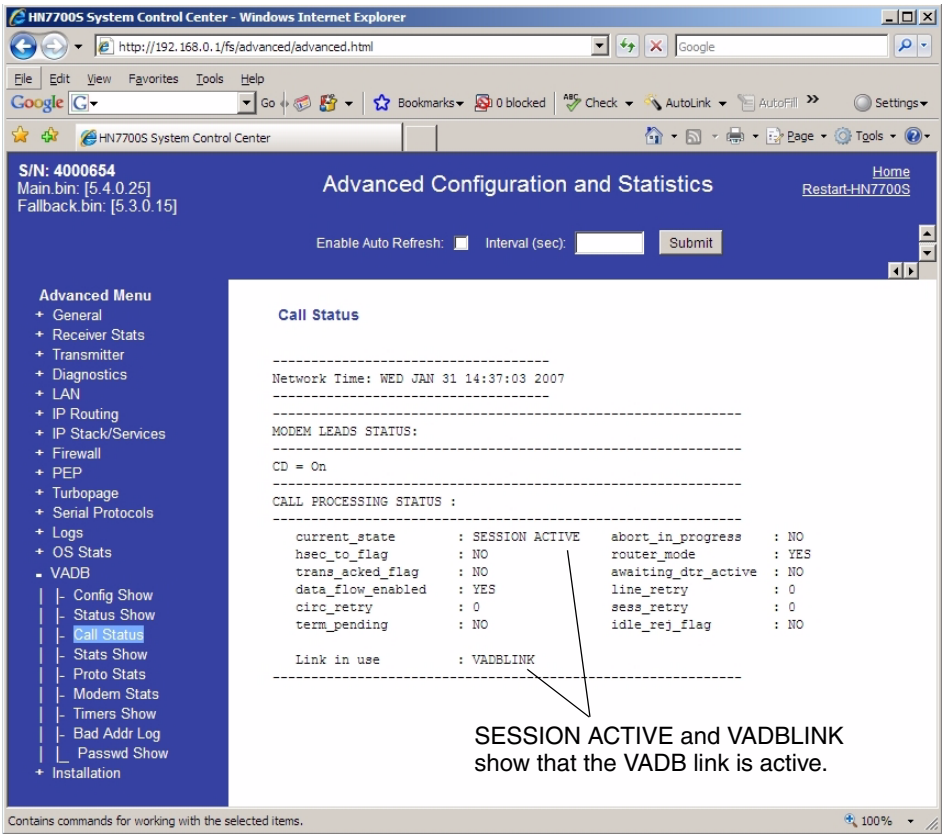


Figure 57: Verifying the VADB link

If the current_state field changes to *SESSION INACTIVE* and there is no connection to the satellite (you can't browse), troubleshoot by verifying that the HN router can ping the VADB gateway:

1. Open the **Run** dialog box by selecting **Start** → *Run*.
2. Type **`Command`**.
3. Click **OK**.
4. Type **`ping <VADB gateway address>`** and press **ENTER**.

   The VADB gateway address appears on the VADB Config Show page (Figure 52 on page 59).

   If the client fails to ping the host, the computer reports no packets received. This indicates a problem with either the network hardware or configuration. Check the LAN connections and refer to the instructions that were provided with the network hardware, then retry the ping test.

LED appearance during VADB operation

The System LED steadily flashes when VADB is enabled. The System LED is on when the satellite link is enabled. The HN router LEDs are shown in Figure 58. Table 3 describes the appearance of the LEDs during VADB operation.

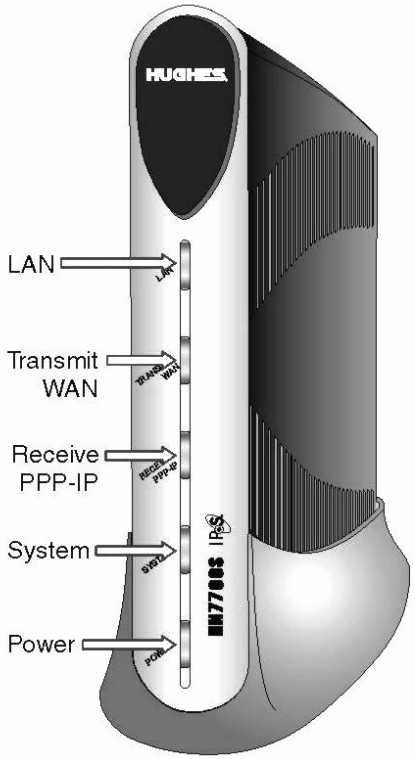


Figure 58: HN router LEDs

Table 3: HN router LED appearance during VADB operation

LED	Appearance	Description
LAN	On (solid)	LAN is connected and usable
	Blinking	There is transmit or receive activity on the LAN
Transmit/ LAN	On	OK
	Blinking	Transmitting frames
	Off	Condition preventing transmission
Receive/ PPP-IP	On	OK
	Blinking	Receiving frames
	Off	Condition preventing acquisition of outroute (preventing receipt)
System	Blinking	System is operating normally and VADB mode is enabled (LED on steady indicates the satellite link is active and VADB is inactive)
	Off	Condition preventing full operation
Power	On	Power is on and terminal is functioning normally
	Blinking	Terminal is operating with the `fallback.bin` (backup) version of software
	Off	No power
	Off with other LED flashing	Fatal error

VADB troubleshooting

If the HN router is unable to connect through VADB, or to authenticate with the server, use the troubleshooting procedure described below.

Note: Before starting this procedure, verify that the HN router is commissioned.

1. Verify that the telephone cable is securely attached to the TEL LINE port on the HN router and the telephone jack or splitter.
2. Complete the instructions in *Verifying that the VADB profile is loaded* on page 59 to confirm that the VADB profile is loaded on the HN router.
3. Connect a telephone handset to the telephone jack or splitter and dial the VADB access phone number listed in the prim phone_num field. (See Figure 52 on page 59.)

4. Make sure the access phone number is accessible from the site.

   If necessary, refer to the installation specification for instructions explaining how to change the access code required to obtain an outside telephone line or to change the area code.

5. Complete the instructions in *Verifying VADB functionality* on page 64 to test VADB functionality.
6. Contact Installer Support if the VADB issue is not resolved after completing steps 1 through 5.

Appendix A

Configuring a computer to support DHCP

This appendix explains how to configure a computer to support Dynamic Host Configuration Protocol (DHCP). All HN routers come from the factory with DHCP enabled. Therefore, the computer must have DHCP enabled and set to obtain IP addresses automatically.

This appendix covers the following topics:

Windows Vista

1. From the Windows desktop, select **Start** → *Settings* → *Network Connections*.
   A list of network adapters appears as shown in Figure 62. The Local Area Connection-NIC Card must appear under the LAN

or High-Speed Internet heading. If it does not, the network is not installed correctly.

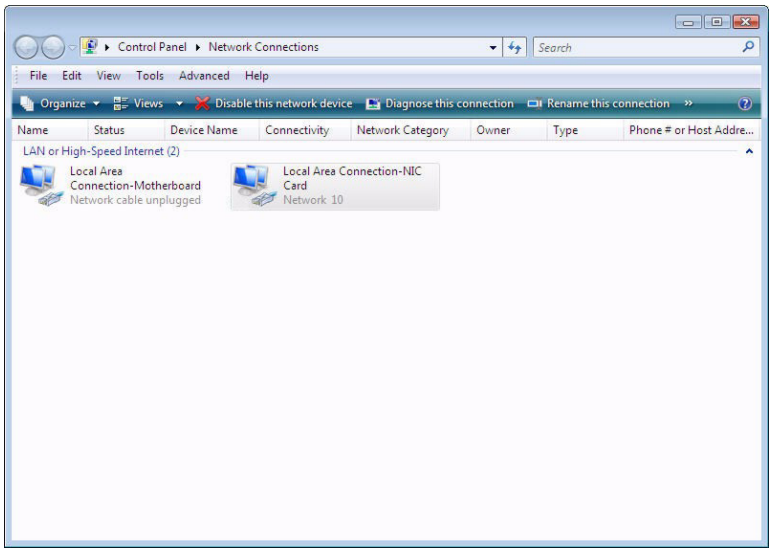


Figure 59: Network Connections - Windows Vista

Note: If a red X appears next to the Local Area Connection icon, check your connections. You cannot successfully configure your system if the red X is present.

2. Right-click the Local Area Connection-NIC Card icon that represents the terminal network connection, then click **Properties**. The Local Area Connection-NIC Card Properties dialog appears as shown in Figure 60.

Note: Depending on your security settings, a popup User Account Control message may appear, requesting that you confirm the action before proceeding. Click **Continue** to proceed.

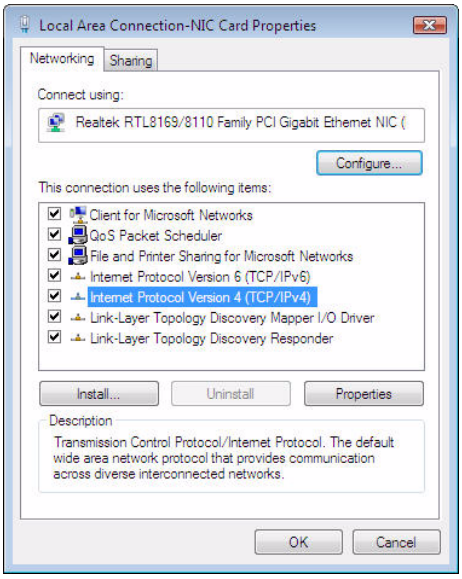


Figure 60: Local Area Connection Properties - Windows Vista

3. Ensure that Client for Microsoft Networks and Internet Protocol (TCP/IP) are installed and checked as shown in the figure. If NetBEUI is installed, uninstall it.
4. Highlight the appropriate Internet Protocol (TCP/IP) connection. Be careful not to uncheck the checkbox
5. Click **Properties**. The Internet Protocol Properties dialog appears as shown in Figure 61.

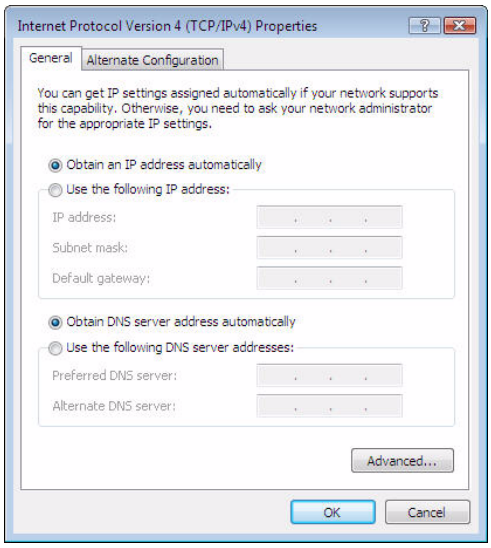


Figure 61: Internet Protocol Properties - Windows Vista

6. Ensure that both the Obtain an IP address automatically and Obtain DNS server address automatically options are selected. If not, select them.
7. Click **OK** to close the dialog boxes and finish the configuration.
8. Restart the computer even if Windows does not require you to do so. This ensures that the network settings are automatically reset.

Windows XP

1. From the Windows desktop, select **Start** → *Settings* → *Control Panel*. Double-click the Network and Dialup Connections icon.

Note: If Control Panel is in category view, select *Network and Internet Connections* then select *Network Connections*.

A list of network adapters appears as shown in Figure 62. The Local Area Connection icon must appear under the LAN or High-Speed Internet heading. If it does not, the network is not installed correctly.

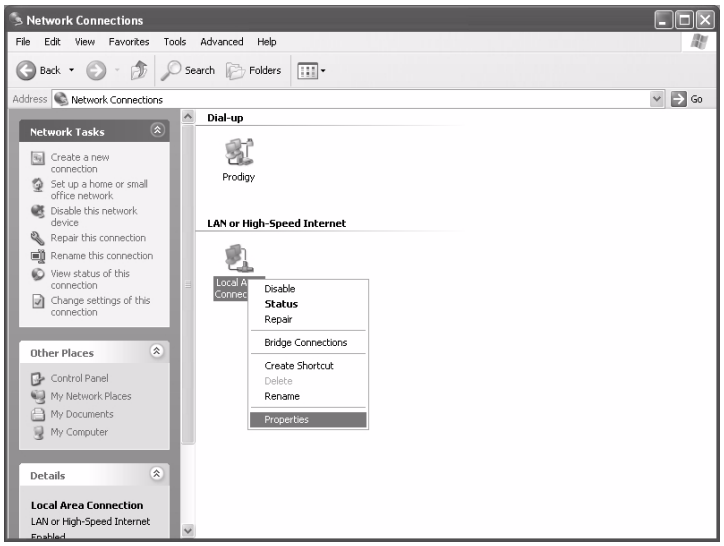


Figure 62: Network Connections - Windows XP

2. Right-click the Local Area Connection icon that represents the Network adapter connecting the computer to the Satellite Gateway, and select **Properties**.

Note: If a red X appears next to the Local Area Connection icon, check your connections. You cannot successfully configure your system if the red X is present.

3. Ensure that Client for Microsoft Networks and Internet Protocol (TCP/IP) are installed and checked as shown in Figure 63. If NetBEUI is installed, uninstall it

.

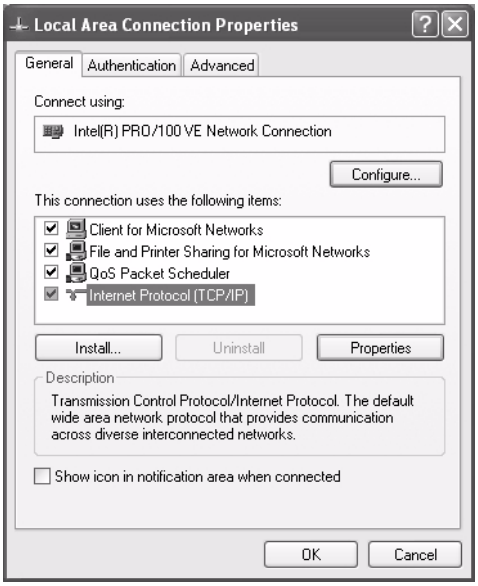


Figure 63: Local Area Connection Properties - Windows XP

4. Highlight Internet Protocol (TCP/IP). Be careful not to uncheck the check box

5. Click **Properties**. The Internet Protocol Properties dialog appears as shown in Figure 64.

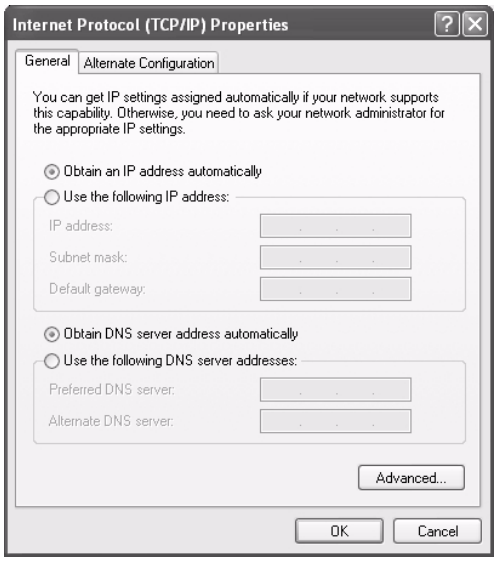


Figure 64: Internet Protocol Properties - Windows XP

6. Ensure that both the Obtain an IP address automatically and Obtain DNS server address automatically options are selected. If not, select them.
7. Click **OK** to close the dialog boxes and finish the configuration.
8. Restart the computer even if Windows does not require you to do so. This ensures that the network settings are automatically reset.

Windows 2000

1. From the Windows desktop, select **Start** → *Settings* → *Control Panel* and double-click Network and Dial-up Connections.
   A list of network connections appears as shown in Figure 65. The Local Area Connection icon must appear on the page. If it does not, the network is not installed correctly.

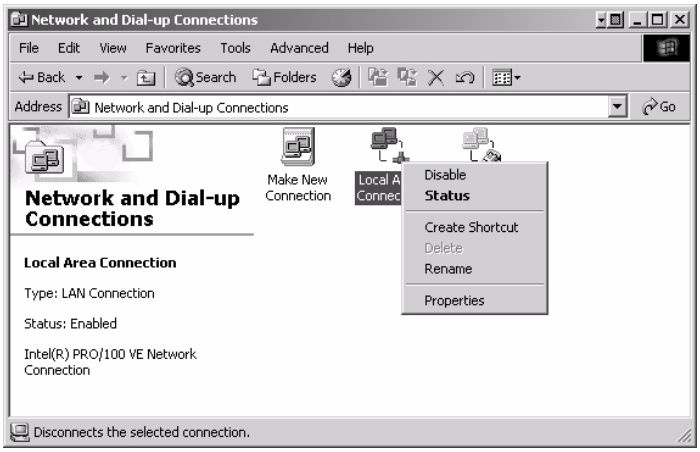


Figure 65: Network and Dial-up Connections - Windows 2000

2. Right-click the Local Area Connection icon that represents the terminal network connection and select Properties from the popup menus. The Local Area Connections Properties window appears as shown in Figure 66.

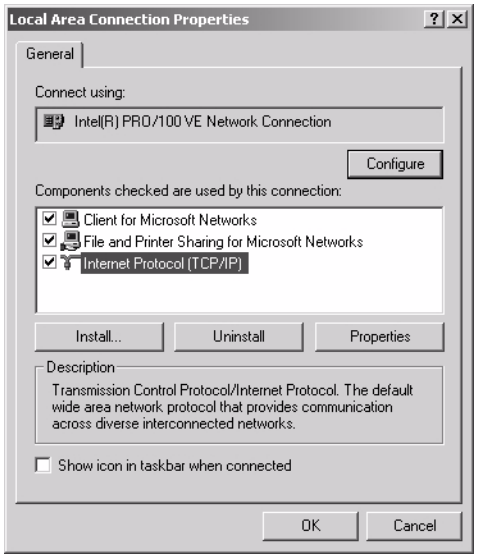


Figure 66: Local Area Connection Properties - Windows 2000

3. Ensure that Client for Microsoft Networks and Internet Protocol (TCP/IP) are installed and checked. If NetBEUI is installed, uninstall it.
4. Select Internet Protocol (TCP/IP). Be careful not to uncheck the check box.
5. Click Properties. The Internet Protocol Properties window appears as shown in Figure 67.

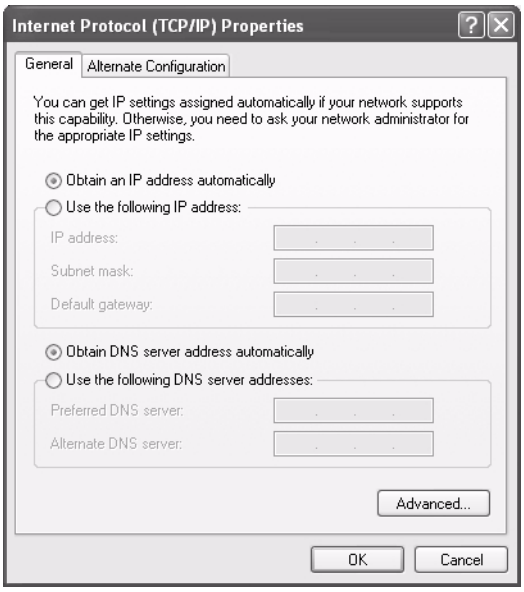


Figure 67: Internet Protocol Properties - Windows 2000

6. Ensure that both Obtain an IP Address Automatically and Obtain DNS Server Address Automatically are selected. If not, select them.
7. Click **OK** to close the dialog boxes and finish the configuration.
8. Restart the computer even if Windows does not require you to do so. This ensures that the network settings are automatically reset.

Appendix B

Updating the router software

This appendix explains how to use the Fallback Updater utility to update the router `fallback.bin` file with the current software release. Use the procedures in this appendix only when instructed to do so by Hughes.

Before updating the `fallback.bin` file and installing the router, you must first copy the Fallback Updater utility to the installer laptop. The utility is distributed to installers in an e-mail message and is also available for download from the Hughes installation support Web site. Contact Installer Support for the Web site address, if necessary.

This appendix covers the following topics:

Saving the utility on the installer laptop

Follow these steps to save the Fallback Updater utility on your (the installer) laptop:

1. Obtain the self-extracting file containing the utility and its supporting files from either the e-mail message or the installation support web site.
2. Copy the self-extracting file to the laptop.

3. Open the self-extracting file. The Self Extractor dialog appears as shown in Figure 68.

Figure 68: Saving the Fallback Updater utility

4. Use the **Browse** button to select a location in which to unzip and save the utility and its supporting files.

Note: Make a note of the location in which the utility and its supporting files are saved. You will need to know the location of these files to use the utility.

5. Click **Unzip**.

Configuring TCP/IP properties on the installer laptop

Before using the Fallback Updater utility, you must first manually configure the TCP/IP properties on your laptop. This section explains how to configure TCP/IP properties for Windows Vista, Windows XP, and Windows 2000 operating systems.

Note: You must connect your installer laptop to the router with an Ethernet cable before configuring TCP/IP properties.

Windows Vista

1. Connect the installer laptop to the router with an Ethernet cable.
2. From the Windows desktop on the installer laptop, select **Start** → *Settings* → *Network Connections*.
   A list of network adapters appears as shown in Figure 69. The Local Area Connection-NIC Card icon must appear under the

LAN or High-Speed Internet heading. If it does not, the network is not installed correctly.

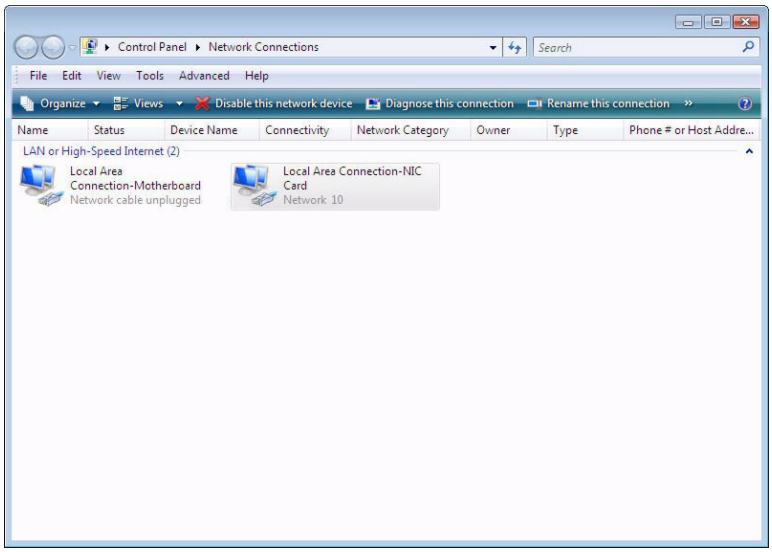


Figure 69: Network Connections - Windows Vista

Note: If a red X appears next to the Local Area Connection icon, check your connections. You cannot successfully configure TCP/IP properties if the red X is present.

3. Right-click the Local Area Connection-NIC Card icon that represents the terminal network connection and select Properties. The Local Area Connection-NIC Card Properties dialog appears as shown in Figure 70.

Note: Depending on your security settings, a popup User Account Control message may appear, requesting that you confirm the action before proceeding. Click **Continue** to proceed.

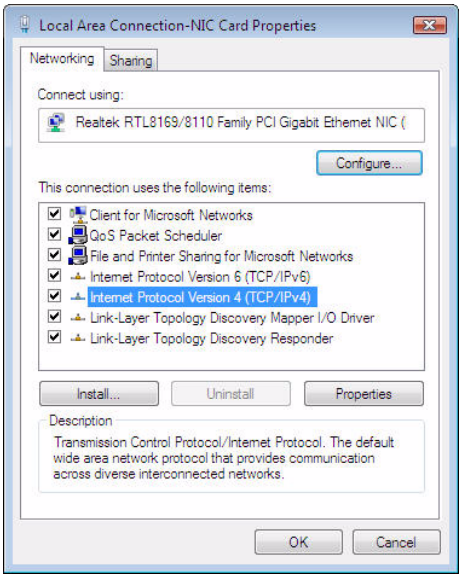


Figure 70: Local Area Connection Properties - Windows Vista

4. Ensure that Client for Microsoft Networks and Internet Protocol (TCP/IP) are installed and checked as shown in the figure. If NetBEUI is installed, uninstall it.
5. Highlight the appropriate Internet Protocol (TCP/IP) connection. Be careful not to uncheck the check box.
6. Click **Properties**. The Internet Protocol Properties dialog appears as shown in Figure 71.

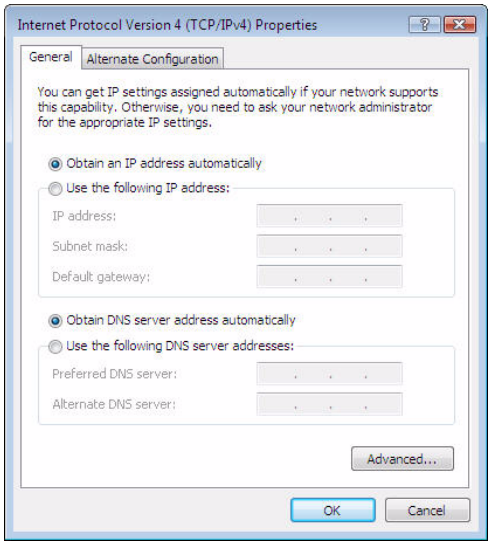


Figure 71: Internet Protocol Properties - Windows Vista

7. Select Use the following IP address.

8. Type **192.168.0.2** in the IP address field.
9. Type **255.255.255.252** in the Subnet mask field.

Note: You do not need to enter information in the Default gateway, Preferred DNS server, or Alternate DNS server fields.

10. Click **OK**.
11. Restart the computer even if Windows does not require you to do so. This ensures that the network settings are automatically reset.

Windows XP

1. Connect the installer laptop to the router with an Ethernet cable.
2. From the Windows desktop on the installer laptop, select **Start** → *Settings* → *Control Panel*, then double-click the Network and Dialup Connections icon.

Note: If Control Panel is in category view, select *Network and Internet Connections* then select *Network Connections*.

A list of network adapters appears as shown in Figure 72. The Local Area Connection icon must appear under the LAN or

High-Speed Internet heading. If it does not, the network is not installed correctly.

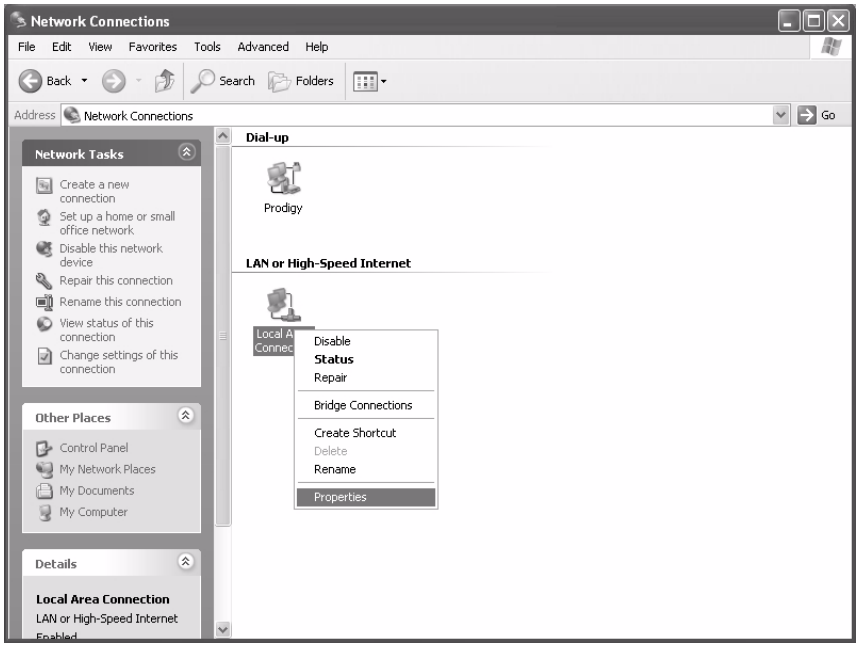


Figure 72: Network Connections - Windows XP

3. Right-click the Local Area Connection icon that represents the Network adapter connecting the computer to the router and select Properties.

Note: If a red X appears next to the Local Area Connection icon, check your connections. You cannot successfully configure TCP/IP properties if the red X is present.

4. Ensure that Client for Microsoft Networks and Internet Protocol (TCP/IP) are installed and checked as shown in Figure 73. If NetBEUI is installed, uninstall it.

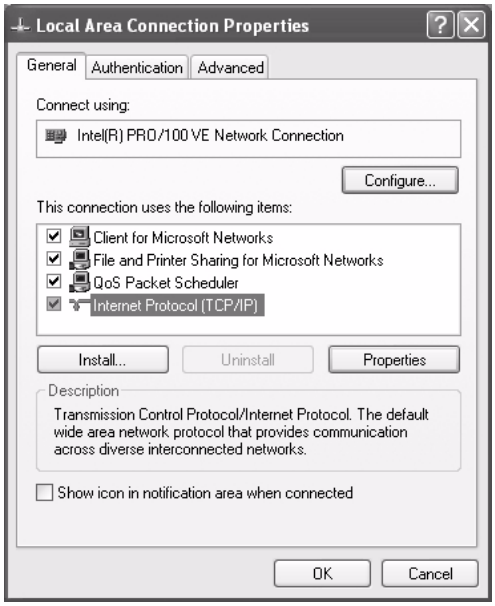


Figure 73: Local Area Connection Properties - Windows XP

5. Select Internet Protocol (TCP/IP). Be careful not to uncheck the check box.
6. Click **Properties**. The Internet Protocol Properties dialog appears as shown in Figure 74.

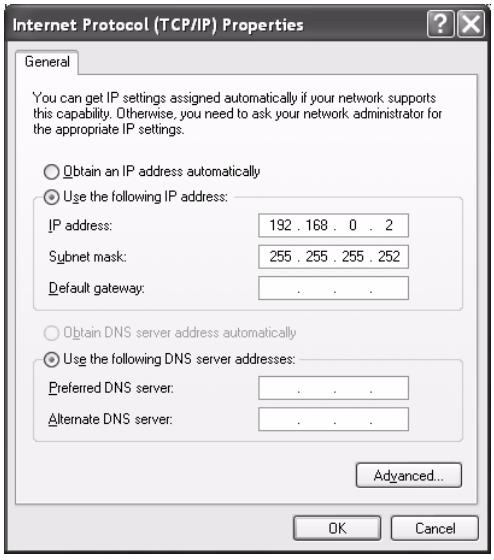


Figure 74: Internet Protocol Properties - Windows XP

7. Select Use the following IP address.
8. Type **192.168.0.2** in the IP address field.
9. Type **255.255.255.252** in the Subnet mask field.

Note: You do not need to enter information in the Default gateway, Preferred DNS server, or Alternate DNS server fields.

10. Click **OK**.
11. Restart the computer even if Windows does not require you to do so. This ensures that the network settings are automatically reset.

Windows 2000

1. Connect the laptop to the router with an Ethernet cable.
2. From the Windows desktop on the installer laptop, select **Start** → *Settings* → *Control Panel*, then double-click the Network and Dial-up Connections icon.
   A list of network adapters appears as shown in Figure 75. A Local Area Connection icon must appear on the page. If it does not, the network is not installed correctly.

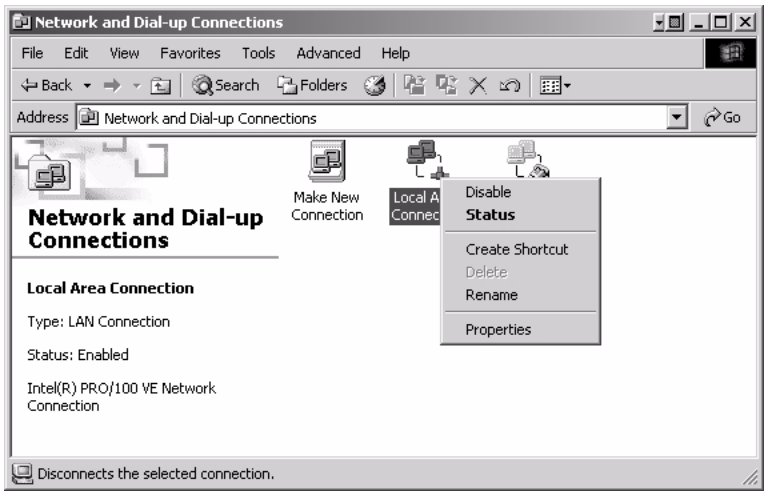


Figure 75: Network and Dial-up Connections - Windows 2000

3. Right-click the Local Area Connection icon that represents the network adapter connecting the computer to the router and select Properties. The Local Area Connections Properties window appears as shown in Figure 76.

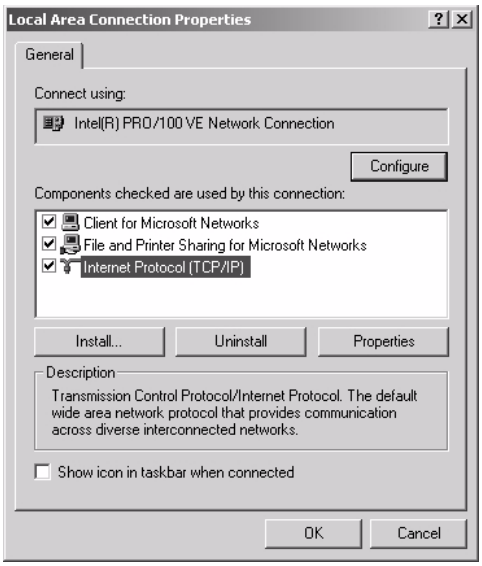


Figure 76: Local Area Connection Properties - Windows 2000

4. Ensure that Client for Microsoft Networks and Internet Protocol (TCP/IP) are installed and checked. If NetBEUI is installed, uninstall it.
5. Select Internet Protocol (TCP/IP). Be careful not to uncheck the checkbox.
6. Click **Properties**. The Internet Protocol Properties window appears as shown in Figure 77.

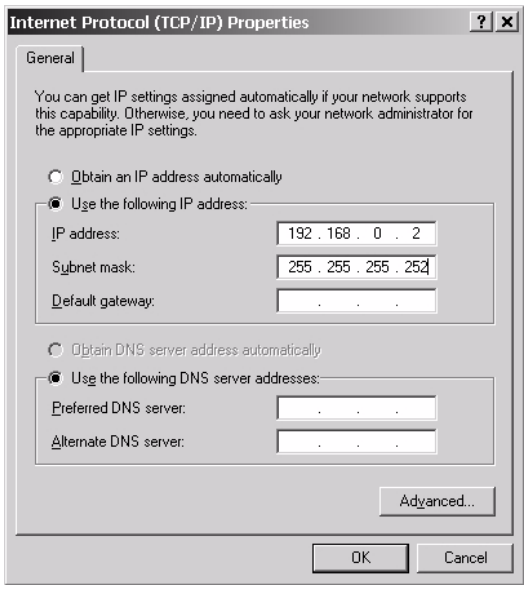


Figure 77: Internet Protocol Properties - Windows 2000

7. Select Use the following IP address.
8. Type **192.168.0.2** in the IP address field.
9. Type **255.255.255.252** in the Subnet mask field.

Note: You do not need to enter information in the Default gateway, Preferred DNS server, or Alternate DNS server fields.

10. Click **OK**.
11. Restart the computer even if Windows does not require you to do so. This ensures that the network settings are automatically reset.

Updating the fallback.bin file

Follow the steps below to update the *fallback.bin* file. During this process, the files containing the current software release are transferred to the router, overwriting the older files.

1. Confirm that your laptop Ethernet cable is connected to the router by performing a ping test:
   a. Open a DOS command window on the installer laptop PC.
   b. Type **ping 192.168.0.1**.
   c. Press **ENTER**.

   If the ping test is successful, continue with step 2. If the ping test fails, refer to *Troubleshooting* on page 87.
2. Navigate to the location on the laptop where you previously saved the Fallback Updater utility and its supporting files in Step 4 of *Saving the utility on the installer laptop* on page 77.
3. Launch the Fallback Updater utility by opening the *hughes_updater.exe* file.
4. Type **192.168.0.1** in the IP address field on the Fallback Updater window as shown in Figure 78. This is the router's IP address.

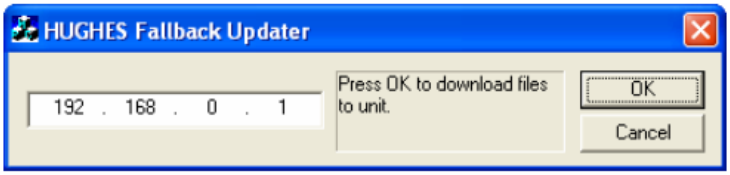


Figure 78: Entering the router's IP address

5. Click **OK**.

During the update process, status messages will appear in the message window between the address field and the **OK** button.

When the update is complete, the utility automatically closes and the router reboots.

Refer to *Troubleshooting* if the utility does not automatically close or the router fails to reboot.

Troubleshooting

Perform these troubleshooting procedures if you are unable to update the *fallback.bin* file using the Fallback Updater utility:

1. Observe the message in the Fallback Updater window. Continue with step 2 if one of the following messages appears in the message window:
   ```
   Waiting for remote to come up...
   Unable to get login prompt
   ```
2. Test LAN connectivity between the installer laptop and router by performing a ping test:
   a. Open a DOS command window on the installer laptop.
   b. Type **`ping 192.168.0.1`**.
   c. Press **ENTER**.
   If the ping test fails, verify that the Ethernet cable is securely attached to the installer laptop and router. If the test still fails, continue with step step 3.
3. Verify that the installer laptop has an IP address of 192.168.0.2.
   If the address is incorrect or blank, refer to *Configuring TCP/IP properties on the installer laptop* on page 78 for instructions on how to assign an IP address.
4. After verifying that the installer laptop is connected to the router and its TCP/IP properties are properly configured, restart the router:
   a. Navigate to the System Control Center home page.
   b. In the Help section, click **Restart HN Router**.
5. If this does not correct the problem, power cycle the router:

⚠ CAUTION

Do not power cycle the terminal by unplugging the power cord from the back of the terminal. This could shock you and/or damage the terminal.

   a. Unplug the power cord from the power source.
   b. Wait 30 sec.

c. Plug the power cord back into the power source.

6. Restart the Fallback Updater utility and repeat the instructions in *Updating the fallback.bin file* on page 86.
7. If you are unable to update the `fallback.bin` file on the router after completing steps 1 though 6, contact Installer Support.

Appendix C

Disabling a Web browser's proxy connection

This appendix explains how to configure Internet Explorer and Netscape web browsers not to connect to the Internet through a proxy server. The procedures may be used to configure the browser on your installer laptop PC or the customer's computer.

Users should be aware that it is rare to enable a proxy server. Most users disable proxy servers.

This appendix covers the following topics:

Internet Explorer

To disable the proxy connection if you are using Internet Explorer:

1. Turn the computer on.
2. Open Internet Explorer.
3. Select **Tools** → *Internet Options*.

4. Select the Connections tab as shown in Figure 79.

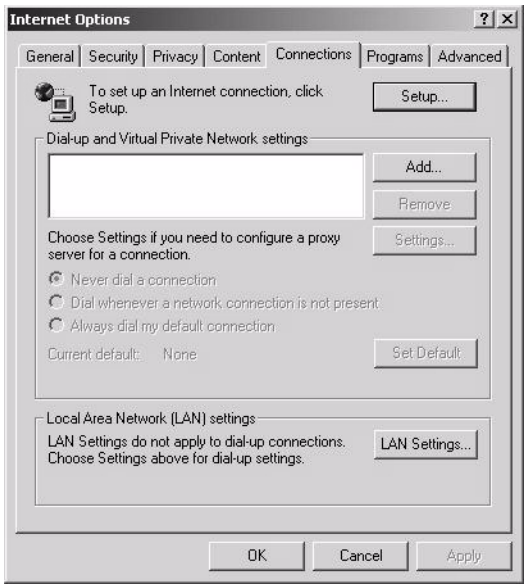


Figure 79: Selecting the Connections tab

5. Click **LAN Settings** to access the dialog box shown in Figure 80.

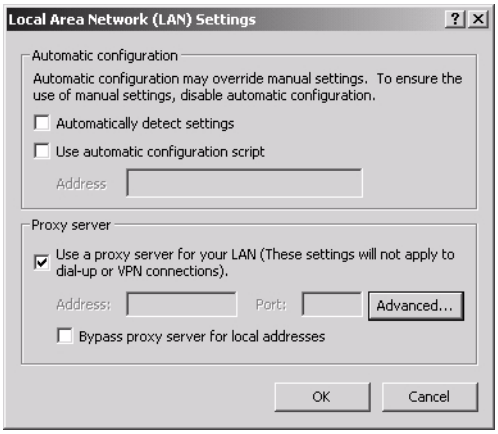


Figure 80: Accessing LAN settings

6. Click to remove the check mark from the box next to Use a proxy server for your LAN.
7. Click **OK**.
8. Close Internet Explorer.
9. Relaunch Internet Explorer to enable the changes.

Netscape

To disable the proxy connection if you are using Netscape:

1. Turn the computer on.
2. Open Netscape.
3. Select **Edit** → *Preferences* to access the Preferences window shown in Figure 81.

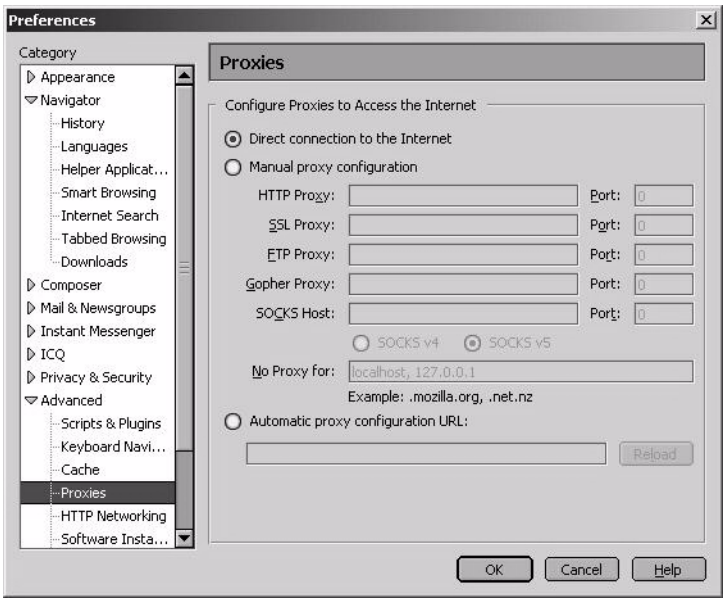


Figure 81: Accessing proxy settings: Netscape

4. In the Category window, select *Advanced* → *Proxies*.
5. Select Direct connection to the Internet.
6. Click **OK**.
7. Close Netscape.
8. Relaunch Netscape to enable the changes.

Appendix D

Conformance with standards and directives

The HN7700S has been certified to conform to the standards shown in Table 4. Additional information follows the table.

Table 4: HN7700S standards compliance

Category	Standard	HN7700S
Safety standards	UL60950-1 for the United States	✓
	CAN/CSA-C22.2 No. 60950-1 for Canada (See additional information below.)	✓
	EN60950-1 for the European Union	✓
Electromagnetic Interference (EMI) standards	FCC Part 15 for the United States (See additional information below.)	✓
	ICES-003 for Canada	✓
Electromagnetic compatibility (EMC) standards	EN301-489-12 for the European Union	✓
Telecommunications standards	TIA IPoS (See additional information below.)	✓
	FCC Part 68 for the United States (See additional information below.)	✓
	CS-03 standard for Canada	✓
	TBR-21 and CTR-21 standards for the European Union	✓

Safety – operating conditions for Canada

In addition to the warnings and safety guidelines listed in this document, the following operating conditions apply to the HN7700S used in Canada:

The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective operational and safety requirements. The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installing the equipment, users should make sure they are permitted connect to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs in Canada

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

⚠ CAUTION

Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Electromagnetic compatibility (EMI)

This product conforms to EMI standards of the U.S. FCC, Canadian CSA, and European Union (EU), as detailed in the following sections. The installation and maintenance procedures in the installation and configuration guide must be followed to ensure compliance with these standards.

⚠ CAUTION

This is a class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Part 15

This section applies to the HN router.

Standards to which Conformity is declared: FCC Part 15

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party's name: Hughes Network Systems, LLC

Address: 11717 Exploration Lane, Germantown, MD 20876

Telephone: 1-866-347-3292

Trade Name: HUGHES

Type of Equipment: Two-Way Hughes System

Model Numbers:

HN7700S (1500139-xxxx)

The Two-Way Hughes System (HN router) complies with the Canadian ICES-003, Class B standard.

Canada Class B warning

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme á la norme NMB-003 du Canada.

R&TTE (EU)

This product is within the scope of the EU Radio Equipment and Telecommunications Terminal Equipment (R&TTE) Directive.

Telecommunications standards

This section explains compliance with the IP over Satellite standard (IPoS) and FCC Part 68.

IPoS

The Hughes system is compliant with IPoS, ratified by the Telecommunications Industry Association (TIA-1008), first published in October 2003 and issued as Revision A in May 2006.

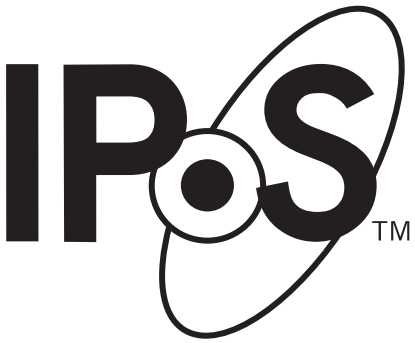


Figure 82: IPoS symbol

FCC Part 68

This section applies to the HN7700S only.

Standards to which Conformity is declared: FCC Part 68

Part 68 Compliance -- This equipment (Two-Way Hughes System: Model Number: HN router) complies with Part 68 of the FCC rules and requirements adopted by the ACTA. On the rear panel of this equipment is a label that contains, among other information, the product part number (P/N) in the format XXXXXXX-XXXX and an eight digit Electronic Serial Number (ESN). If requested, this information must be provided to the Telephone Company.

The Two-Way Hughes system needs to be installed according to the instructions. Coaxial cables (Rx and Tx) need to be grounded at the point of entry. A plug and jack used to connect this equipment to the premises wiring and telephone network must

comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant **26 Gauge** telephone cord and modular plug is provided with this product. It is required to be terminated with a plug type 605 or a FCC plug type 6 position for Australia.

⚠ CAUTION

To reduce the risk of fire, use only No. 26 AWG or larger UL Listed or CSA Certified Telecommunication Line Cord.

Ringer equivalence number (REN)

This section applies to the HN7700S only.

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the local Telephone Company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US:5L4DT##B1032021.

The digits represented by the ## are the REN without the decimal point (e.g., 00 is a REN of 0.0). For earlier products, the REN is separately shown on the label.

Discontinuance of service

This section applies to the HN7700S only.

If the Two-Way Hughes System causes harm to the telephone network, the Telephone Company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the Telephone Company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

If phone service is discontinued and you believe it is due to the HN7700S terminal, please contact Hughes Customer Care or your service provider.

Telephone Company changes

This section applies to the HN7700S only.

The Telephone Company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the Telephone

Company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

Repairs in the United States

If trouble is experienced with the Two-Way Hughes System equipment, for repair or warranty information, contact your service provider.

If the equipment is causing harm to the telephone network, the Telephone Company may request that you disconnect the equipment until the problem is resolved.

Hughes must make any necessary repairs to the modem portion of this equipment in order to maintain valid FCC registration. Do not attempt to repair or service your router. Return it to Hughes.

No repairs can be made by customers. All repairs must be done by a Hughes authorized service center. This equipment cannot be used on public coin service provided by the Telephone Company. Connection to Party Line Service is subject to state tariffs. Contact the state public utility commission, public service commission or corporate commission for information.

Canada – equipment attachment limitations

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirement Documents. The Department does not guarantee the equipment will operate to the user's satisfaction.

Note: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation IC before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Before installing this equipment, users should make sure they are permitted to connect to the facilities of the local Telecommunications Company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations.

Appendix E

ADTRAN Total Access 600R

This appendix discusses how to install and configure the ADTRAN Total Access 600R router as a T-1 transport device. It covers the following topics:

Minimum system requirements

At a minimum, your laptop must be equipped with the following to successfully install the ADTRAN 600R:

- 32 MB RAM
- Pentium-compatible 166 MHz (or) faster
- 12 MB of hard disk space
- Windows 98 or later operating system

ADTRAN shipping carton

The ADTRAN shipment includes the items listed below. Make sure you have all the items before you install the unit.

- The Total Access 600R unit with attached wallmount brackets
- The Total Access 600 Series System CD – ADTRAN P/N 3253052
- Hardware revision notice card – ADTRAN P/N 61200624L1-17
- Mounting instructions – ADTRAN P/N 61200624L1-19
- RJ-45 to RJ-45 8-pin cable (6 ft) –ADTRAN P/N 3127004
- Cable tie (for securing attached cables) – ADTRAN P/N 3292032
- Four rubber feet (for table top installations) – ADTRAN P/N 3270BF003
- 3-prong, detachable power cord – ADTRAN P/N 3127009

Figure 83 and Figure 84 show front and back views of the ADTRAN 600R.

Figure 83: ADTRAN 600R front

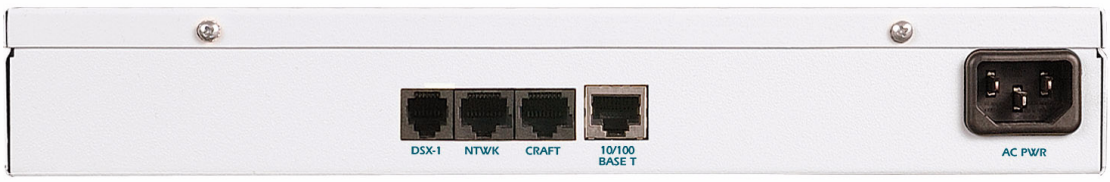


Figure 84: ADTRAN 600R back

Installing the ADTRAN 600R

The ADTRAN 600R may be wallmounted or used in a table-top position.

The tools required for wallmount installation of the unit are:

- Four #8 x 3/4 inch pan-head wood screws
- Drill and drill bit set
- Flat head screwdriver (medium)
- Two Phillips head screwdrivers (small/medium)
- Wire-wrap gun (optional)
- 25-pair male amphenol cable (customer connection)
- Selected punch-down block and tool

Wallmount installation

Decide on a location for the unit. The unit needs to be mounted at or below eye-level so that the LEDs are viewable.

Note: Mount the chassis with LEDs facing to the side or down as shown in Figure 85. Do not place them facing up.

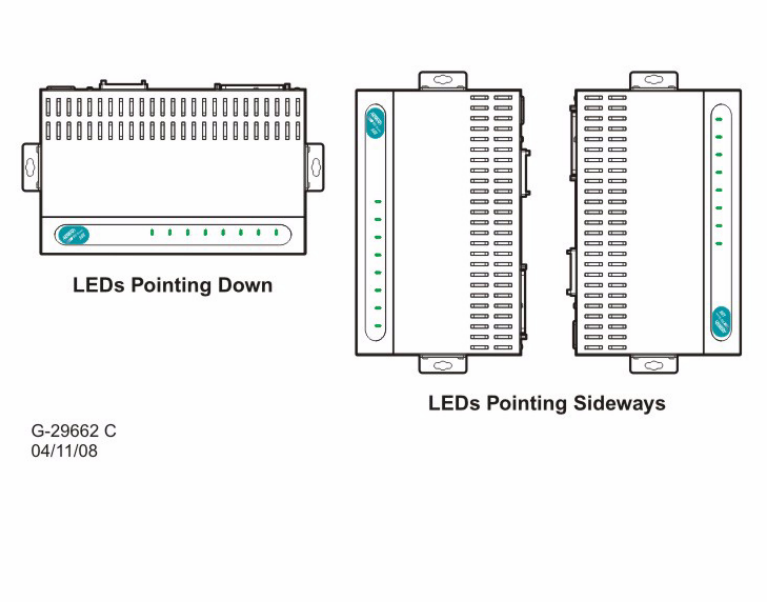


Figure 85: LED positions

Prepare the mounting surface by attaching a board (typically plywood, 3/4” to 1” thick) to a wall stud. Mounting to a stud ensures stability. Avoid using sheetrock anchors as they may not

provide sufficient stability. Refer to Figure 86 on page 102 for a wallmount illustration.

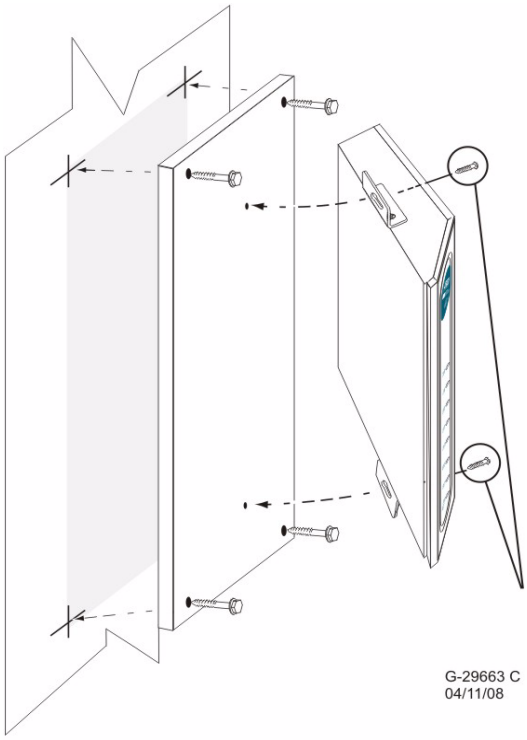


Figure 86: Wallmount

Install two #6 to #10 (1 1/2" or greater in length) wood screws through the unit's brackets and into the mounted board.

Supplying power

Each unit includes an auto ranging 90-250 VAC, 50/60 Hz power supply with a 3-prong removable cable. Connect the power supply to a standard 120 VAC, 60 Hz electrical outlet for proper operation.

ADTRAN front panel

The front panel of the ADTRAN has 5 LEDs used to monitor the operation and activity of the unit. They are:

- LAN - TX/RX
- LAN - LINK
- WAN - STAT
- WAN - ERR
- PWR

Figure 87 on page 103 shows the front panel of the unit.

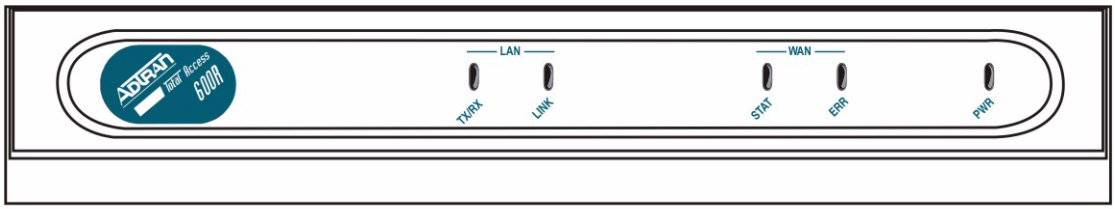


Figure 87: ADTRAN front panel

Front panel LEDs

You can use the front panel LEDs to monitor the operation and activity of the ADTRAN. Refer to Table 5 for an explanation of the color patterns.

Table 5: ADTRAN front panel LEDs

LEDs	Color	Indication
LAN TX/RX	Off	No traffic on the LAN.
	Green (blinking)	No data traffic on the LAN.
LAN LINK	Off	The physical link is down; there is no Ethernet connection.
	Green (solid)	There is link integrity on the LAN.
WAN STAT	Red (solid)	T1 sync loss has occurred.
	Yellow (solid)	T1 is in yellow alarm.
	Green (solid)	The unit is not in alarm.
WAN ERR	Off	The link is up and error-free.
	Red (solid)	The WAN link has severe errors.
	Red (flashing)	The T1 is down.
	Yellow (solid)	The WAN link has errors.
PWR	Green (solid)	Power is supplied to the unit.
	Off	No power to the unit.

Navigating the user interface

The ADTRAN 600R uses a multi-level menu structure that contains menu items and data fields as shown in Figure 88 on

page 104. This figure illustrates the top-level menu. The structure of the window consists of the following elements.

- Menu path - Shows the session's current path in the menu structure.
- Window panes - There are two window panes, the left and right panes.
  - The left pane shows the list of available sub-menus.
  - The right pane shows the contents of the currently selected sub-menu.
- Navigation help - Lists characters used for navigating the terminal menu.
- Network status - Indicates if the network is up or down.

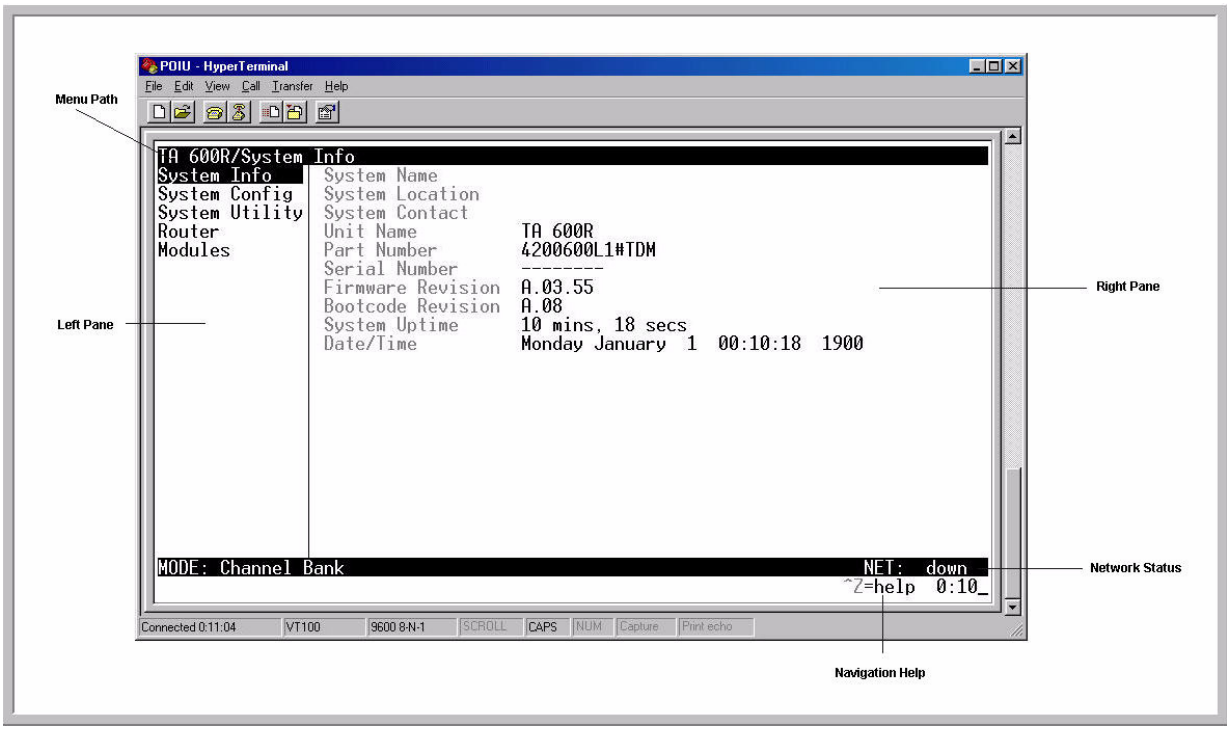


Figure 88: Terminal menu window

The following table gives the keys for navigating between and within the window panes.

To do this	Use this key
Move from left pane to right pane	Tab Enter Right Arrow
Move from right pane to left pane	Tab Escape Left arrow Backspace
Move within each pane	Up arrow Down arrow Left arrow Right arrow

The right window pane shows the contents of the currently selected menu from the left window pane. The contents of the left window may contain sub-menus or data fields. The following table explains the notation used to identify these items.

Notation	Meaning
[+]	More items are available.
<+>	Take an action
Highlighted menu item	Field allows data entry
Underlined field	Contains read-only information

Navigating using keystrokes

You can use various keystrokes to navigate the terminal menu, to manage a terminal sessions, or to configure the system. The table below outlines these keystrokes.

To do this...	Press this key
Return to the home screen	H
Jump between two menus	J
Select items	Arrows
Edit a selected menu item	Enter
Cancel an edit	Escape
Close a pop-up help screen	Escape
Move between left and right panes	Tab Arrows
Move to the top of the screen	A
Move to the bottom of the screen	Z
Ascend one menu level	Backspace
Log out of session	CTRL+L

To do this...	Press this key
Refresh the screen	CTRL+R
Restore factory default settings	F
Copy items to the clipboard	C
Paste the item stored in the clipboard	P
Save the current configuration to flash memory	CTRL+W
Insert a new list item	I
Delete a list item	D
View the help screen	CTRL+Z
Exit from the help screen	Exit

Connecting the ADTRAN

To connect the ADTRAN:

1. Connect the power cord from the AC PWR plug to the designated T1 outlet.
2. Connect the installer laptop to the 10/100 Base T port on the back of ADTRAN unit with an Ethernet cable.
3. Press any key to display the login screen.

Logging in

Login to the user interface as shown in Figure 89:

1. Enter your username. Press **Enter**.
2. Enter your password. Press **Enter**.

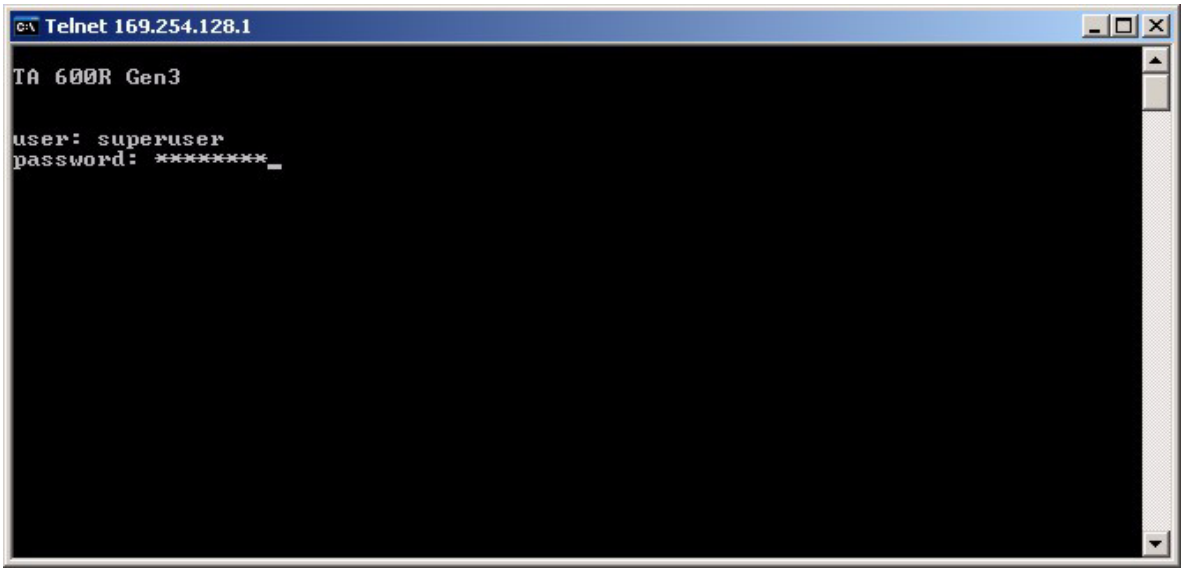


Figure 89: Login screen

The System Info menu screen displays as shown in Figure 90.

System Info menu

The System Info menu screen gives basic information about the ADTRAN and displays the fields available for editing.

Figure 90: System Info menu screen

Configuring the ADTRAN

To begin configuring the ADTRAN:

1. Select the System Config menu to set up the operational configuration for the ADTRAN 600R.
2. Navigate to the Router menu as shown in Figure 91. Use this menu to configure the ADTRAN router parameters and view statistics.
3. Use the down arrow to select **Router** from the main menu list as shown in Figure 91.

4. Press TAB to move to the right pane and select **Config.**

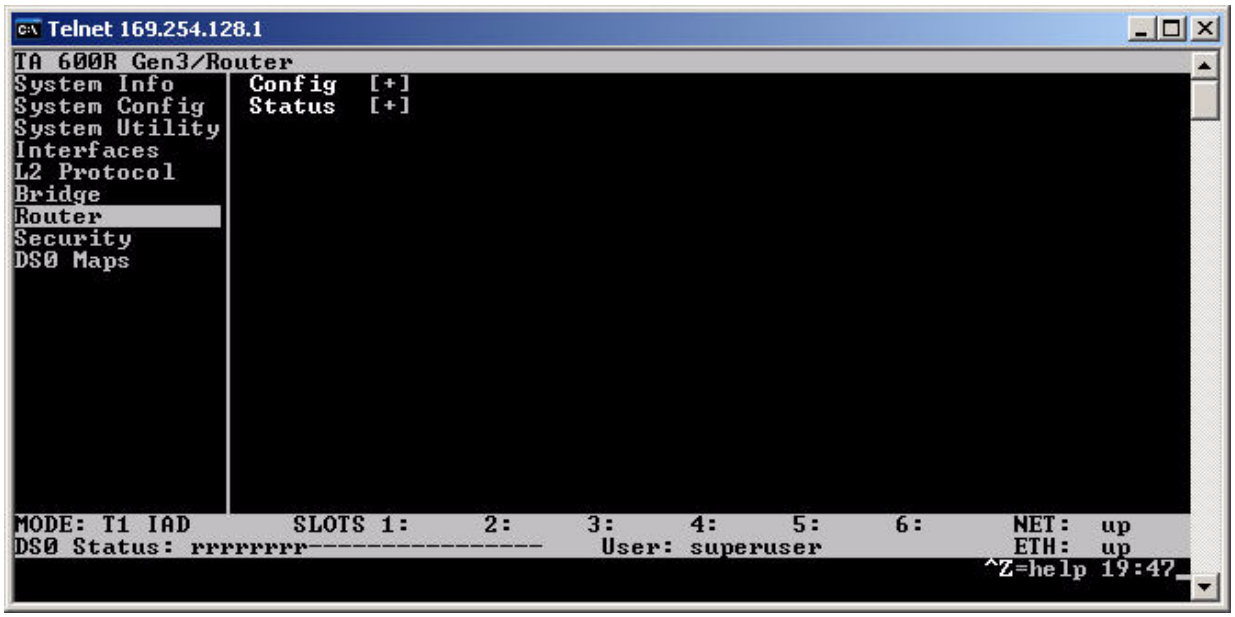


Figure 91: Router menu

5. Select the **+** sign.
6. Press **Enter** to display more options as shown in Figure 92 .

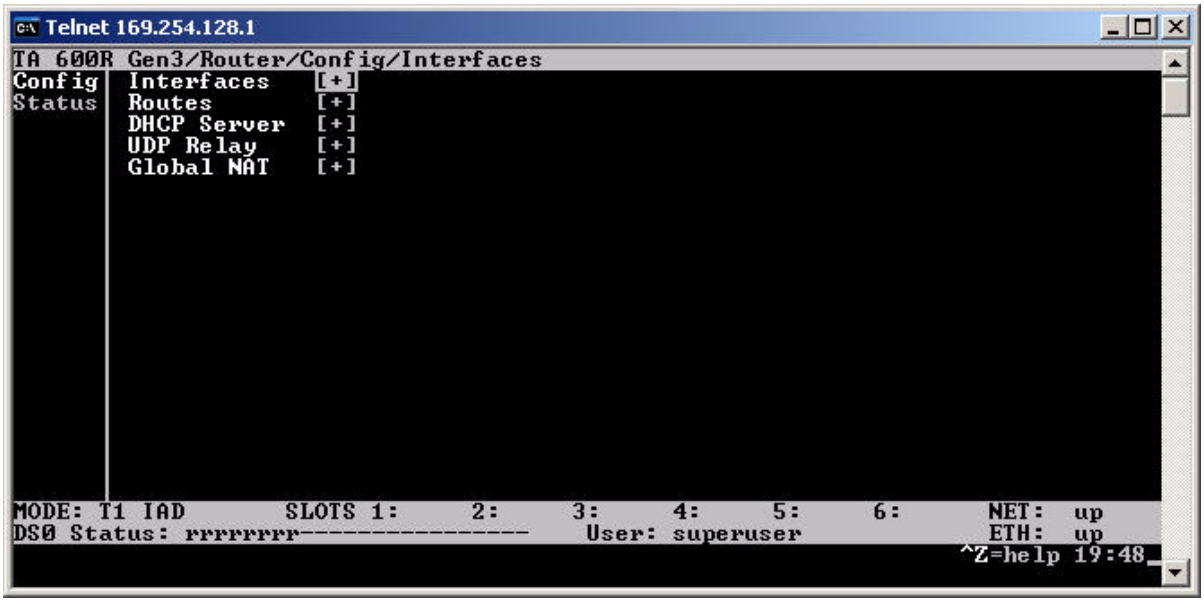
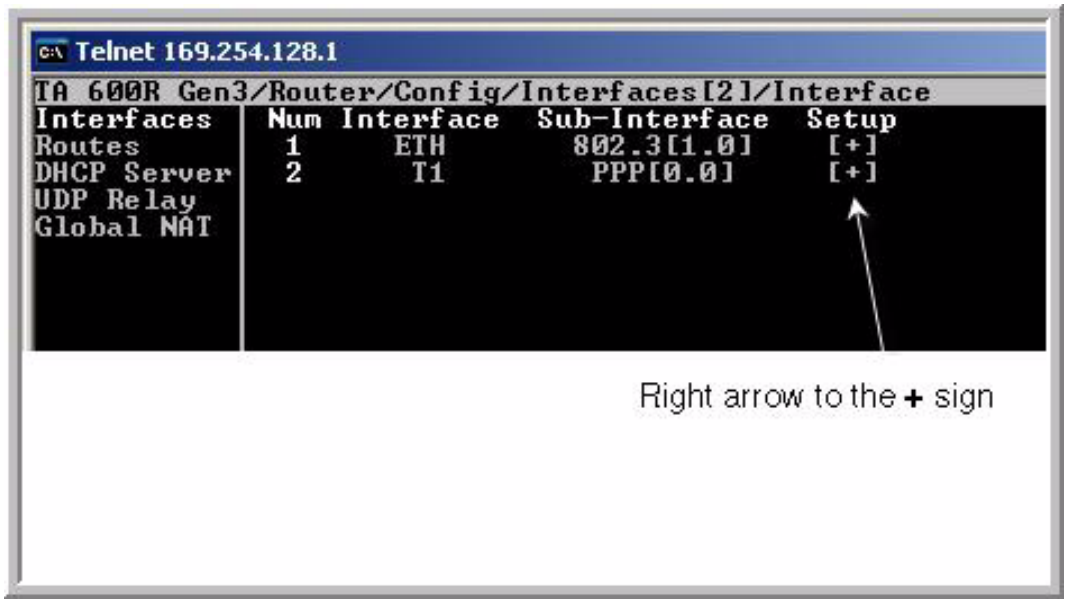


Figure 92: Config Interfaces

7. The **Config/Interfaces** screen displays as shown in Figure 93.

Figure 93: Config/Interfaces screen.

8. Use the down arrow to select **Num 2.**
9. Use the right arrow to move to the **+** sign for the T1 interface as shown in the following figure.



10. Press **Enter**.

11. The Interfaces/Setup screen displays as shown in Figure 94.

Figure 94: Interfaces/Setup screen

12. Use you down arrow to access the **Local IP Address** field.

Note: Use the information on your FSO (field service order) to input data for fields on this screen.

13. Press Tab to input the **Local IP Address**.
14. Press **Enter.**
15. Navigate to the **IP Network** and the **Far-End IP Address** fields and input the data from your FSO. Refer to Figure 95 for a completed sample screen.

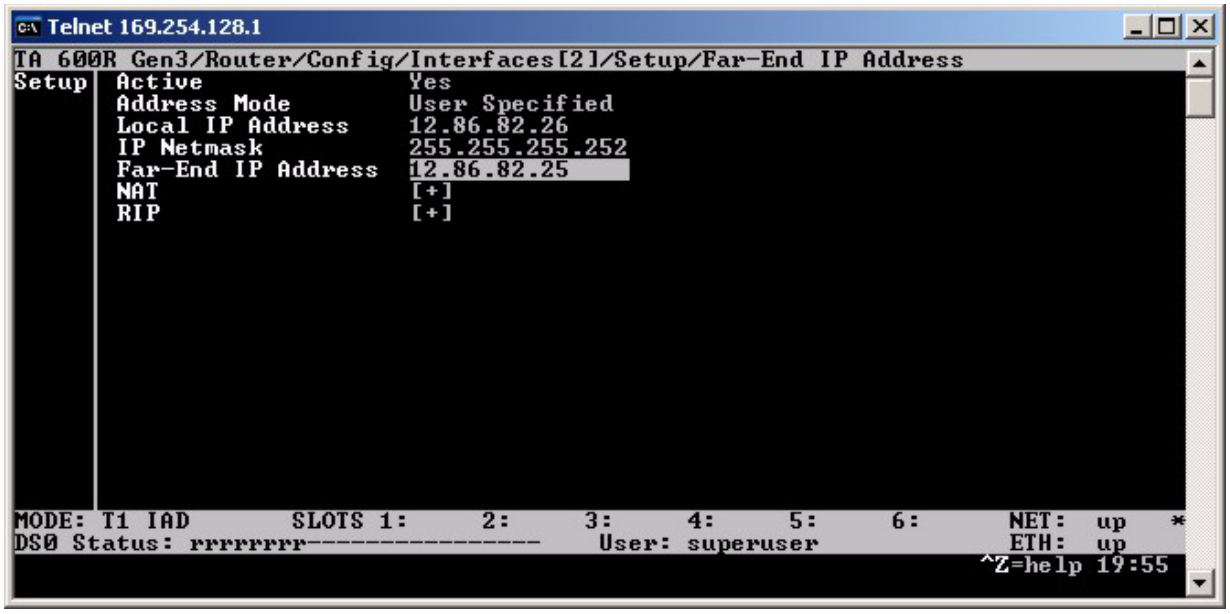


Figure 95: Sample setup screen

16. Press **CTRL+W** to save your changes. Note that the changes remain on the screen until you leave the screen.
17. Press the **H** key to return to Home screen as shown in Figure 96.

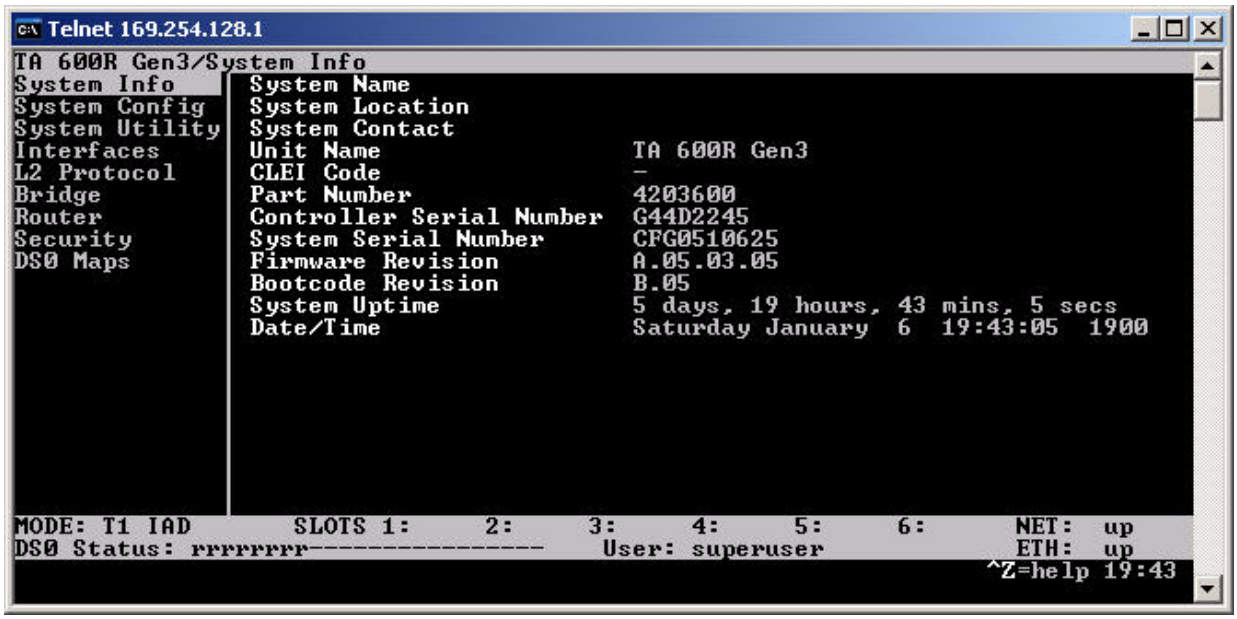


Figure 96: Home screen

DS0 mapping The following procedure gives the steps to map DS0s.

1. From the main menu select **DS0 Maps**.
2. Verify the active map is set to Map 1.
3. Use the down arrow to select **Edit/View Map 1** as shown in Figure 97. P

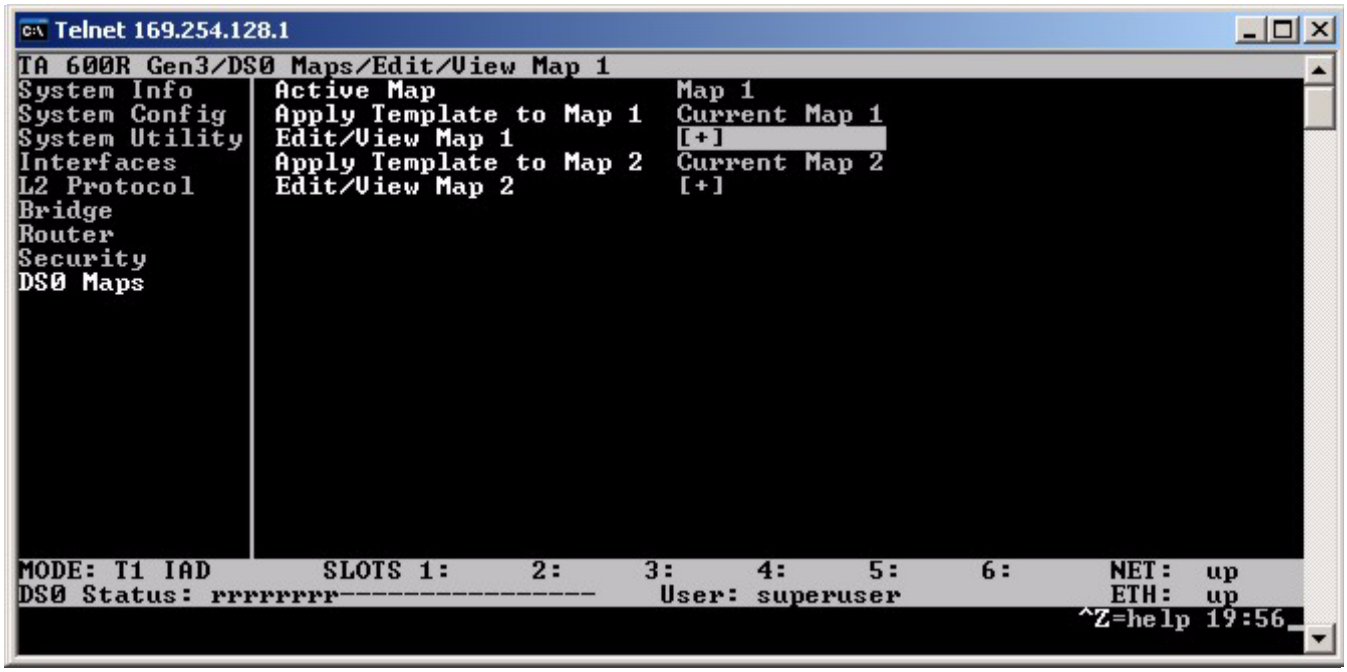


Figure 97: Selecting the map

4. On the **Edit/View Map 1** screen select the **+** sign and press **Enter** to view the map options.

5. Select **DS01** as shown in Figure 98.

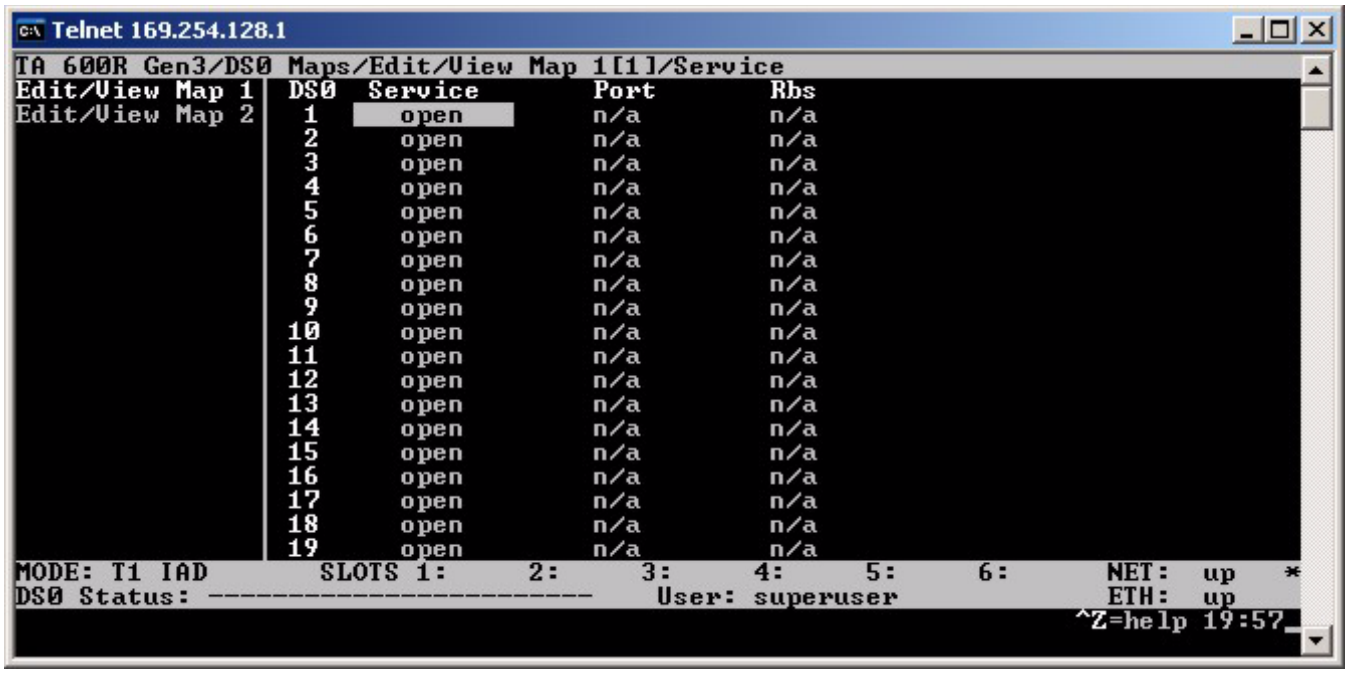


Figure 98: Selecting the DS0

6. Set the Service to **TA IAD** as shown in Figure 99.

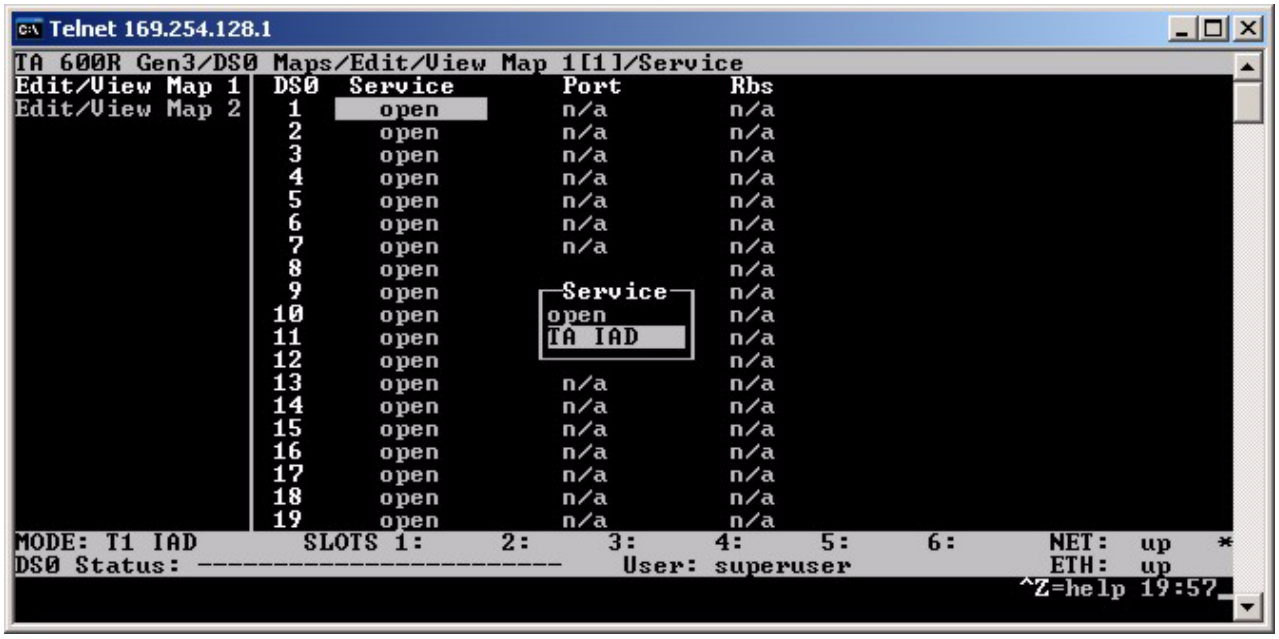


Figure 99: Setting the service

7. Press **Enter**.

8. Select unassigned and press **Enter**.
9. Select **Router 64K** for the **Port** as shown in Figure 100.

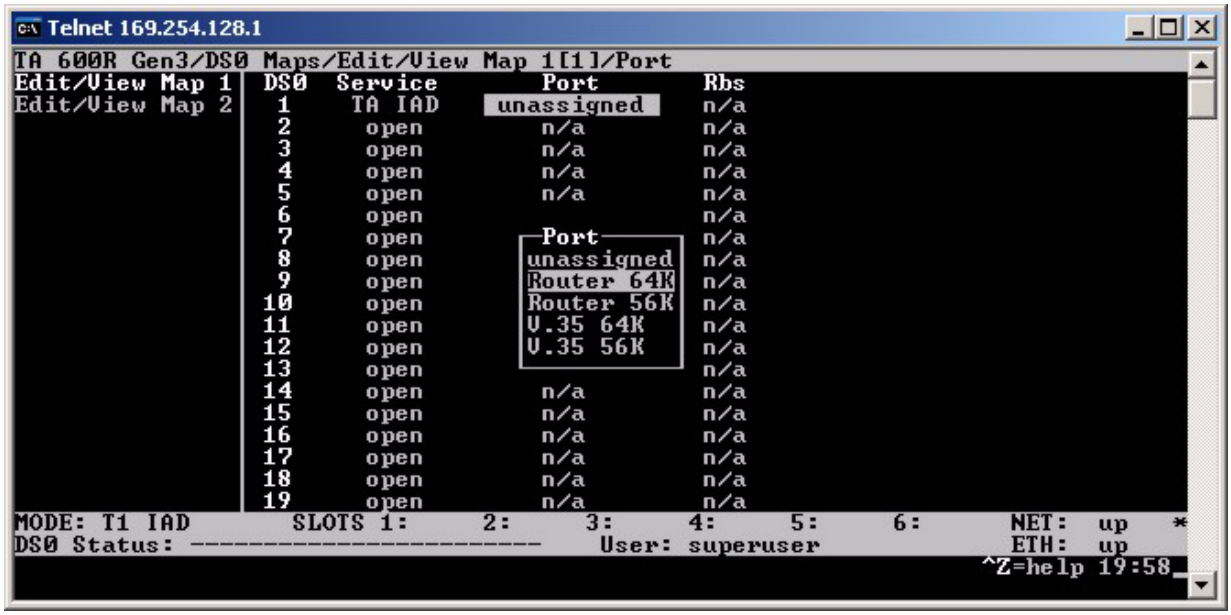


Figure 100: Mapping a DS0 port

10. Use this process to configure the number of channels indicated on your FSO. Figure 101 illustrates eight channels configured.

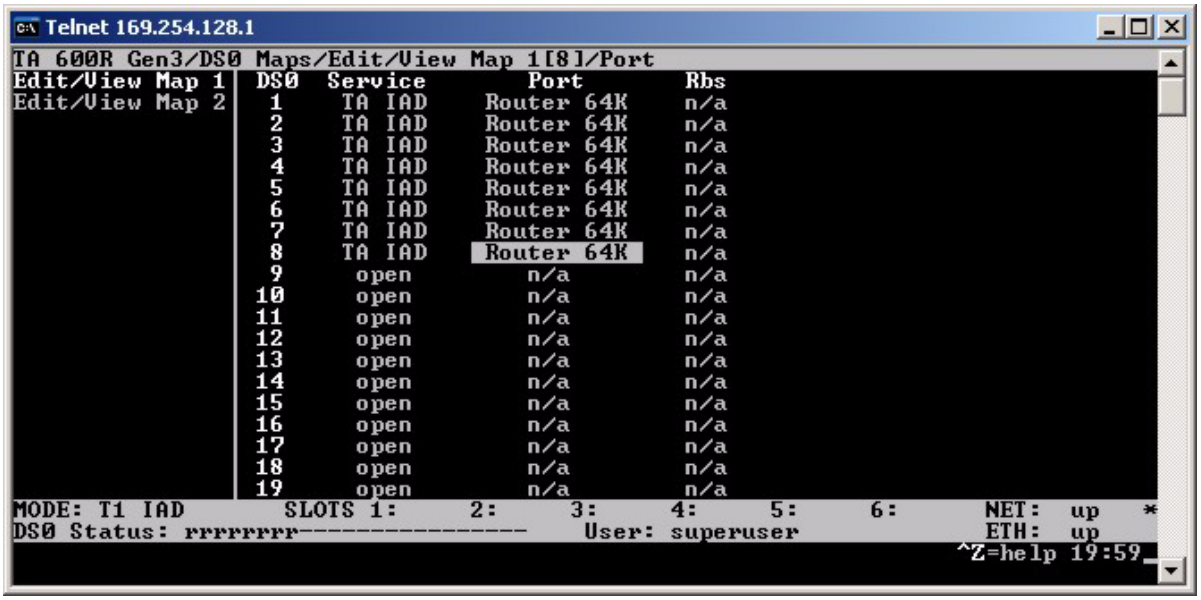


Figure 101: Mapping multiple DS0s

11. When all channels are configured, press **CTRL+W** to save the changes.
12. Press **H** to return to the Home menu.
13. Press **CTRL+L** to log out as shown in Figure 102.

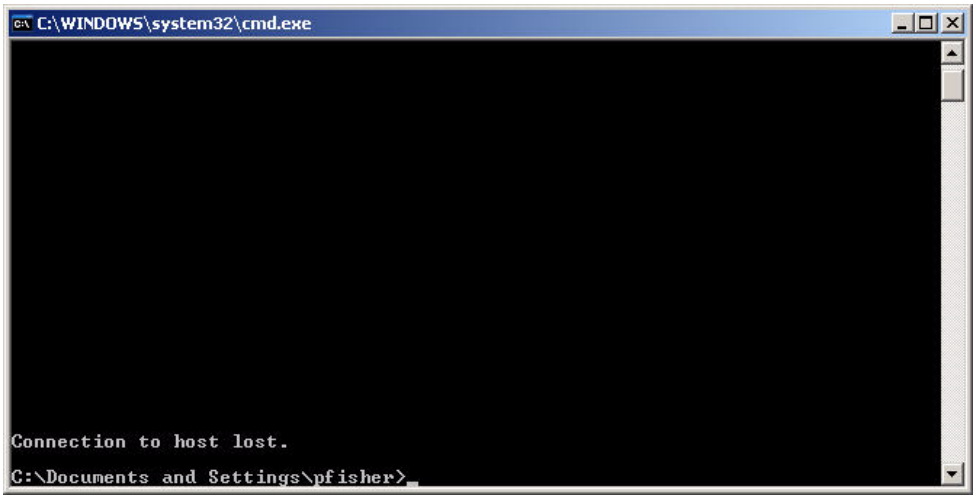


Figure 102: Log out screen

Confirming connectivity

To confirm connectivity to the NAP, ping the Far-End IP Address. You entered this address from your FSO during the setup procedures. Ping this address as shown in sample Figure 103.

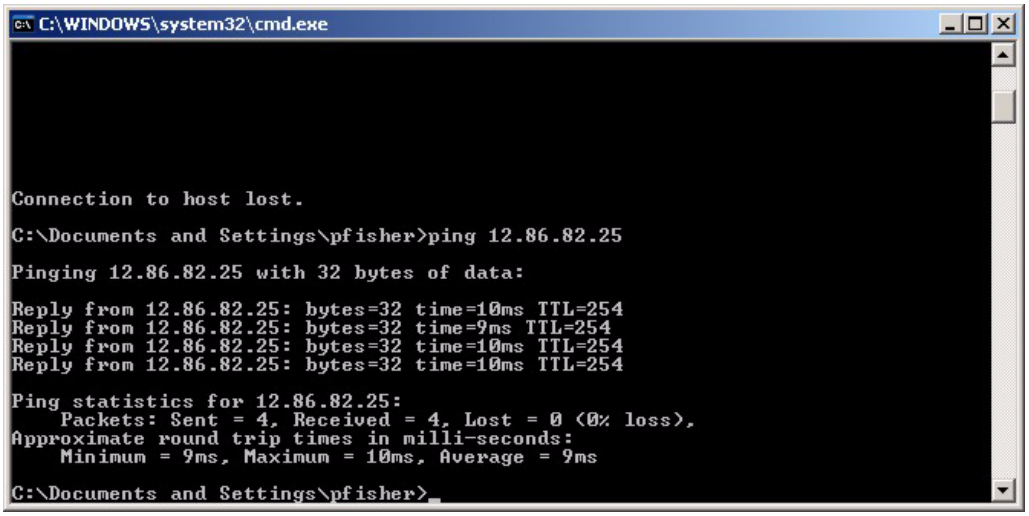


Figure 103: Ping Far-End IP address

Confirm the ping is successful and proceed to Chapter 2 – *Preparing the HN router for installation* on page 5.

Appendix F

Siemens 4100/4101 DSL Modem

This appendix discusses how to install and configure the Siemens 4100/4101 modem. Included are the following topics:

Minimum system requirements

At a minimum, your computer must be equipped with the following to successfully install the modem:

- 32 MB RAM
- Pentium-compatible 166 MHz (or) faster
- 12 MB of hard disk space
- Windows 98 or later operating system

Siemens 4100/4101 shipping carton

Ensure the Siemens 4100/4101 shipping carton contains the following:

- A wall unit power supply
- Cat-5 Ethernet cable
- RJ-11 DSL cable
- A package containing one wall adapter with filter and four telephone inline filters.
- Siemens SpeedStream 4100/4101 Ethernet ADSL modem
- Quick Start Guide
- Safety and Certification document

Items required for installation

Before you begin, verify you have the following that came with your DSL kit:

1. SpeedStream 4100/4101 device
2. Power Supply
3. RJ-45 straight-through Ethernet cable
4. RJ-11 DSL cable

Installation overview

Installing the modem is a multi-step process composed of the following tasks.

- Connecting the cables
- Making the connection
- Commissioning the modem

Installing line filters

Prior to installing the Siemens 4100/4101 DSL modem you must wire and filter the modem for proper installation. This includes:

- Locating the phone line where the modem will be installed.
- Installing filter(s) on a shared ADSL line. Install filters on each analog device sharing the phone line or the phone line needs to be split with a filter on the branch where all the analog devices are. Do not put a filter on the portion of the line where the modem is attached.

Connecting the cables

To connect the modem's cables follow the steps below:

1. Place the SpeedStream ADSL modem is an upright horizontal position on a flat surface.
2. Plug the power cable (black cable) into an electrical outlet and connect it to the black 12VDC port on the back of the DSL modem.
3. Connect one end of the data cable (gray cable) to the gray DSL modem port on the back of the modem. Connect the other end to the phone jack or to the side of the DSL filter labeled "DSL/HPN" the gray port on the phone filter.
4. Connect the yellow Ethernet cable to the Ethernet port on the back of your laptop to the Ethernet port (yellow port) on the back of the DSL modem.

After verifying all connections are correct, toggle the black power switch (on the right side of the back panel) to the on position.

Checking the modem LEDS

Once you turn the modem on, the LEDs on the front of the modem illuminate. If the modem is working properly, you should verify the following: .

Note: The Power light remains red while the unit begins a self-test and tries to establish network connections

- The power LED turns green after all tests have passed.
- The Ethernet light should remain a solid green.
- The DSL LED must remain a solid green. This indicates that a connection has been established.

- The Internet LED should remain a solid green.
- The Activity LED may blink.

Installing the modem

To establish a connection from your computer to the modem:

1. After connecting the modem, power up your laptop.
2. Click the icon appears on the screen that was downloaded from the installer portal.

Notice that the Power, Ethernet, and DSL LEDs on the modem will turn green.

The installation interface

The installation process is an automated process composed of the following steps:

- Searching for the device.
- Installing the device.
- Downloading firmware.
- Rebooting the system.
- Exiting the application.

The installation procedure

Use the following procedure to install the modem:

1. Double-click the Siemens installation icon as shown in Figure 104.

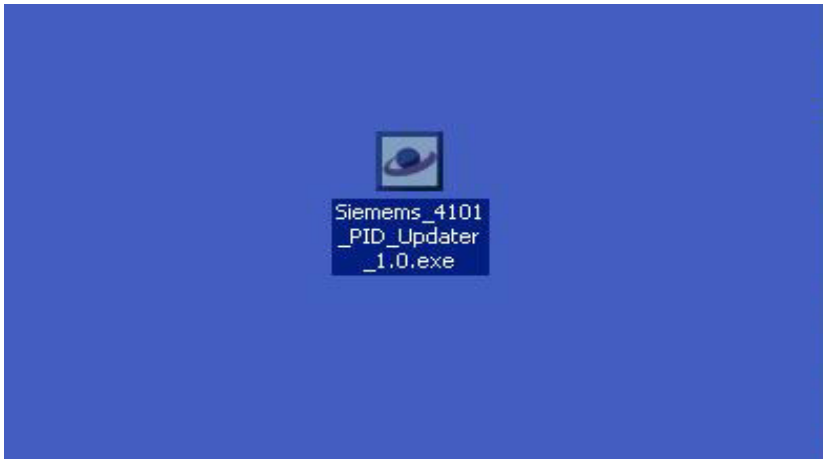


Figure 104: Installation icon

2. The **Searching for device** screen displays as shown in 105.

Note: The installation status appears in the message bar at the bottom of the screen. The main pane of the window does not change.

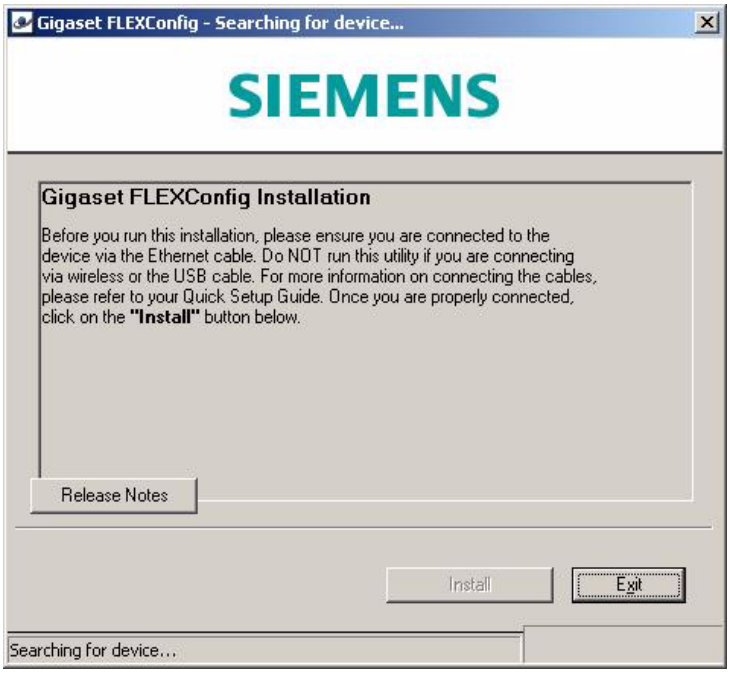


Figure 105: Searching for device

3. Click the **Install** button.
4. When the system has located the device, its displays the **Ready to proceed with device installation** message as shown in Figure 106.

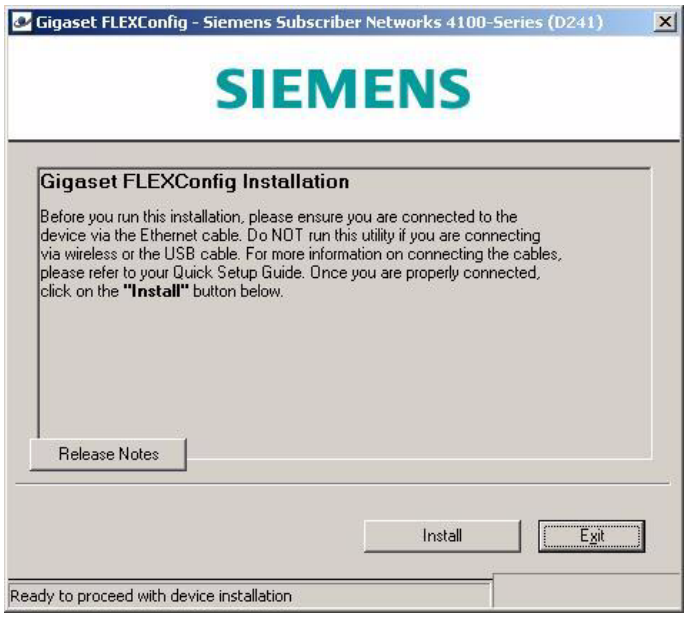


Figure 106: Ready message

5. The system displays the **Downloading Firmware** message as shown in Figure 107.

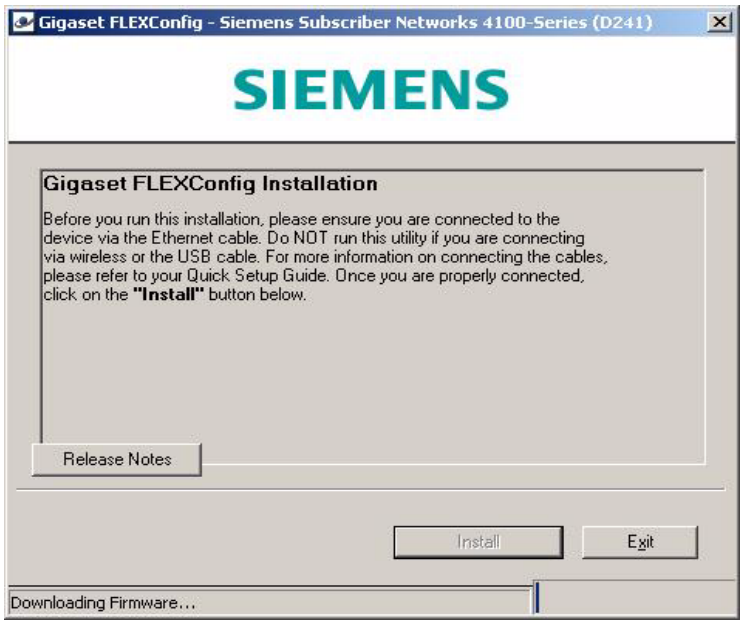


Figure 107: Downloading Firmware

6. The system displays the rebooting message a show in Figure 108.

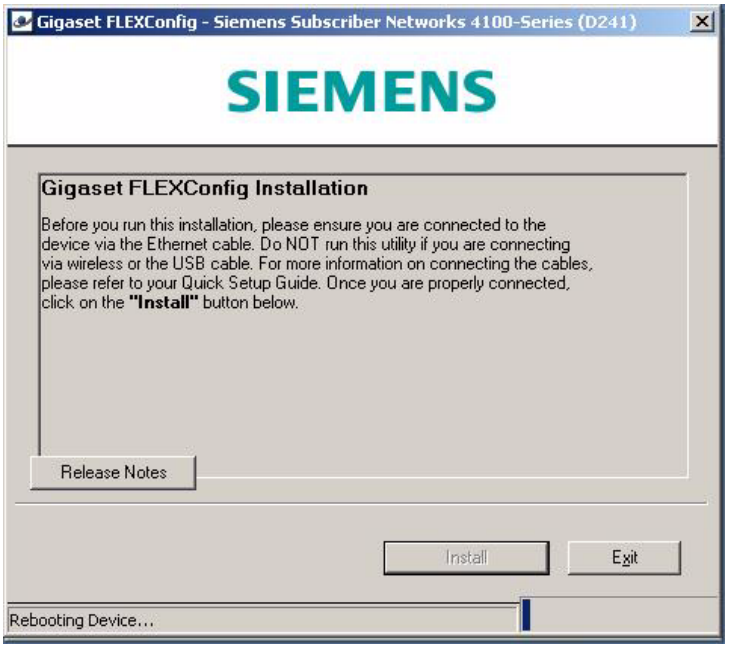


Figure 108: Rebooting Device message

7. Once the system reboots, the installation complete message displays.
8. Click **OK** to exit the application as shown in Figure 109.

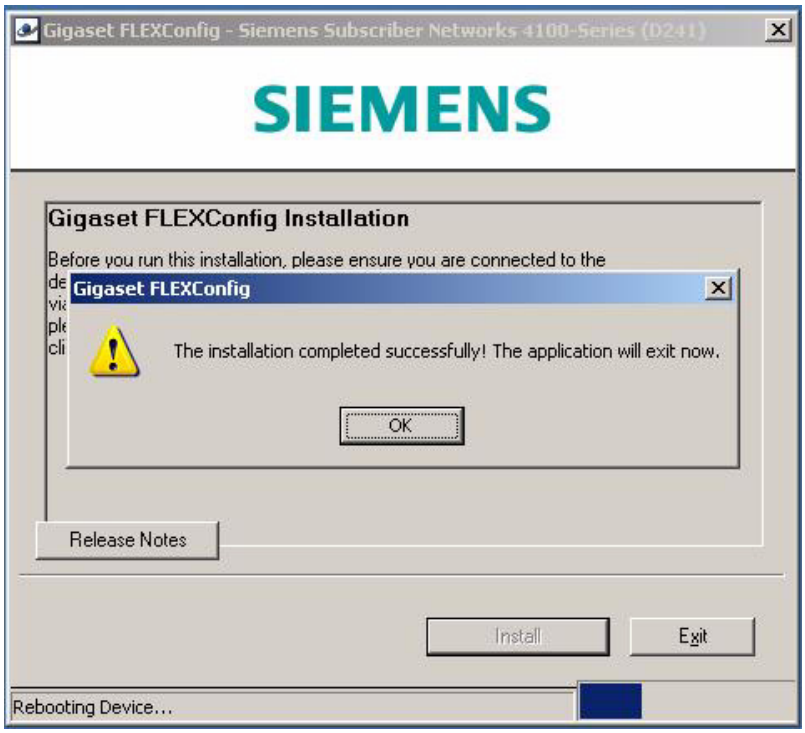


Figure 109: Installation complete

Proceed to Chapter 2 – *Preparing the HN router for installation* on page 5.

Acronyms and abbreviations

A

AC – Alternating current

AWG – American Wire Gauge

C

C – Celsius

D

DC – Direct current

DCE – Data communication equipment

DHCP – Dynamic Host Configuration Protocol

DTE – Data terminal equipment

E

EMC – Electromagnetic compatibility

EMI – Electromagnetic interference

ESN – Electronic serial number

EU – European Union

F

FCC – Federal Communications Commission

ft – Foot

I

IPoS – IP over Satellite standard

ITU-T – Union-Telecommunication Standardization Sector

L

lb – Pound

LED – Light-emitting diode

M

Mbyte – Megabyte

MHz – Megahertz

N

NAP – Network Access Provider

NIC – Network interface card

P

PC – Personal computer

POP – Point of Presence

PSTN – Public switched telephone network

R

R&TTE – Radio Equipment and Telecommunications Terminal Equipment

REN – Ringer equivalence number

V

VAC – Volt. alternating current

VAR – Value added reseller

VPN – Virtual Private Network

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W