

# **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
Α	May 19, 2008	Initial release

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# 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

### 



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

### 



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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	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:		
	<ul> <li>Scope and audience on page 1</li> <li>HN router overview on page 1</li> <li>Router specifications on page 2</li> <li>Commissioning on page 3</li> <li>Installation and commissioning steps on page 4</li> </ul>		
	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:		
	<ul> <li>Professional installers</li> <li>Installer trainers, who prepare separate instructions for the installers</li> <li>Call center operators, who respond to customers' calls</li> <li>Call center trainers, who train call center operators</li> </ul>		
	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 <i>HN7700S</i> acting as a router. Transport devices refer to the <i>Siemens 4100/4101 SpeedStream Modem</i> or the <i>ADTRAN Total Access 660R T-1 line</i> .		
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.





#### **Router specifications**

Table 1 lists the 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)

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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	<ul> <li>Two Ethernet ports supporting 10BaseT or 100BaseT operation, RJ45-switched</li> <li>Telephone line port</li> <li>Serial port, DTE/DCE RS-232, which supports the following protocols: <ul> <li>VISA (Veriphone 3200 and 3300) (the asynchronous protocol of Vanguard International Service Association credit card)</li> <li>X.25 International Telecommunication Union-Telecommunication Standardization Sector (ITU-T) protocol standard for WAN communications</li> <li>XPAD (X.25 Packet Assembler/Disassembler)</li> <li>SDLC (Synchronous Data Link Control)</li> <li>LLC (Logical Link Control)</li> </ul> </li> </ul>	
Power supplies and power requirements	See Table 2 on page 11.	

#### Table 1: Specifications for the HN router

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.		
	<ul> <li>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.</li> <li>Manual Entry - This mode requires you to enter all</li> </ul>		
	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:		
	<ul> <li>ADTRAN Total Access 600R as described in Appendix E – <i>ADTRAN Total Access 600R</i>, on page 99.</li> <li>Siemens Model 4100/4101 as described in Appendix F – <i>Siemens 4100/4101 DSL Modem</i>, on page 117.</li> </ul>		

Installation and commissioning steps	<ul> <li>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.</li> <li>1. Preparing, installing, and commissioning the transport device <i>a. ADTRAN Total Access 600R</i> <ul> <li><i>Installing the ADTRAN 600R</i> on page 100</li> <li><i>Connecting the ADTRAN</i> on page 106</li> <li><i>Configuring the ADTRAN</i> on page 107</li> </ul> </li> </ul>
	<ul> <li>Configuring the ADTRAN on page 107</li> <li>Confirming connectivity on page 115</li> </ul>
	b. Siemens 4100/4101 DSL Modem – Installation overview on page 118 – Installing the modem on page 119
	<ul><li>2. Preparing the router for installation Chapter 2 on page 5</li><li>3. Assembling the HN router</li></ul>
	Chapter 3 on page 9
	<ol> <li>Connecting the router to the transport device Chapter 4 on page 15</li> </ol>
	5. Commissioning the HN router Chapter 5 on page 19
	<ul><li>6. Verifying the installation, commissioning, and connections Chapter 6 on page 37</li></ul>
Contact information	

ontact 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** Ensure the HN router shipping carton contains the items shown in **installation** 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.

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*.

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# Customer site requirements

### 



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:

- Using the pedestal base on page 9
- Selecting the router location on page 11
- Connecting the power supply on page 11



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 <sup>1</sup>/<sub>2</sub> 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		
	<ul> <li>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.</li> <li>Leave 6 inches of space around the top and sides of the router to ensure ventilation and prevent overheating.</li> </ul>		
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.		
	<ul> <li>CAUTION</li> <li>Always use the power supply provided with the system. The HN router's performance may suffer if the wrong</li> </ul>		

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.

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

Table 2: Available power supplies for the HN router

## **Connecting an AC/DC power** Figure 4 shows the AC/DC power supply that is used with the HN supply 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.

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# Connecting a DC/DC power Figure 5 shows the DC/DC power supply used with the HN supply 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.

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### 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* on page 15
- *Connecting the cables to a T-1 transport device* on page 16
- Powering up and observing the router LEDs on page 16

# 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.

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- **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  $\frac{1}{2}$  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 othe	r LED light pa	tterns 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	Solid blue	Operating normally
WAN	Off	No physical connectivity to the WAN port
	Flashing	Receiving data
	Intermittent flashing	Indicates a problem
Receive	Solid blue	Operating normally
PPP-IP	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 on page 19 • Commissioning procedures on page 19 • Changing from VSAT to router mode on page 20 • Terrestrial Broadband Setup page on page 22 • Commissioning by auto selection on page 24 • Completing the commissioning process on page 30 • Commissioning by manual entry on page 33 **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 Commissioning the router consists of the following tasks: procedures • 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 <u>Advance Commissioning Options</u> 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 <u>Advanced Commissioning Options</u> as shown in Figure 8.
- 5. The Broadband Satellite Setup screen displays as shown in Figure 9.



Figure 9: Setup screen

6. Click the <u>Mode Change</u> 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 <u>Mode Change</u> link since you have already changed the mode to router mode. Using the <u>Mode Change</u> link at this time will change the mode from router to back to VSAT mode.

Figure 11 shows the Terrestrial Broadband Setup page.
HUGH	ES.
- mananananananananananananananananananan	annan an a
Cerrestrial Broad	iband Setup
Velcome to Terrestrial Bro	padband Setup. Use the links below to register your HN7700S-R terminal.
Pagistration Installar	Los this antion if you are an installer and are commissioning a new terminal
Config File Upload	Use this option in you are an installer and are commissioning a new terminal.

Figure 11: Terrestrial Broadband Setup page

1. Click the <u>Config File Upload</u> link. The Configuration File Upload screen displays as shown in Figure 12.

tion File Uploa	h
e used during the com	nmissioning process
	Upload Close

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.

HUGHES	
Ferrestrial Broadband - Configu	ration File Upload
The new Configuration file was successfully trans Configuration file was saved as /cfg0/terr.bak.	ferred and stored in the Terrestrial Broadband terminal, and the old

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 To select the network access provider:

NAP

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

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HUGH	ES.
- Internation	
Ferrestrial Broad	Iband Setup
Velcome to Terrestrial Bri	badband Setup. Use the links below to register your HN7700S-R terminal.
Registration - Installer	Use this option if you are an installer and are commissioning a new terminal.
Config File Upload	Use this option to upload a new registration configuration file.
Mode Change	Change to VSAT mode.
	Close

Figure 14: Terrestrial Broadband Setup screen

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

HUGHES	North State	
THERE IN THE PROPERTY OF THE P		/
Prrestrial Broadband - Ser ase select the NAP from the list below, o ameters manually. Click Next to continu wice: Choose Network Access Prov Enter service parameters manually AN Type: Choose WAN Type	vice Parameters check the "Enter service param der 💌	neters manually" box to enter the service
		Back Next Exit

Figure 15: Auto selection - Service Parameters

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- 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.

	HUGHES	
	strial Broadband - Sonvic	o Paramotors
ease se ramete	elect the NAP from the list below, or che rs manually. Click Next to continue.	ck the "Enter service parameters manually" box to enter the service
ervice:	COVAD ADSL L2	
Ente	Choose Network Access Provider BellSouth ADSL 12	
	COVAD_ADSL_L2	
	COVAD_ADSL_L3 ATT_ADSL_L3 Verizon_East_ADSL_L2 Radiant_West_ADSL_L2 COVAD_IDSL_L2 COVAD_IDSL_L2 COVAD_SDSL_L2 COVAD_SDSL_L3 ATT_T1_L3 COVAD_T1_L3 NewEdge-Owest_ADSL_L3 NewEdge-Core_SDSL_L3 NewEdge-Core_SDSL_L3 NewEdge-Verizon_ADSL_L3 Generic-External_WAN	Back Next Exit

Figure 16: Auto selection - Service Parameters selecting the NAP

HUGHES	
линанининини	
ease select the NAP from the list below, or check the "Enter ser arameters manually. Click Next to continue. Bervice: Choose Network Access Provider ▼	ers rvice parameters manually" box to enter the service
WAN Type: Choose WAN Type 🗾	

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

Ferrestrial Please verify the S o change the Net	Broadband - Verificaton of Service Parameters Service Parameters listed below and click Next to continue. If the configuration is incorrect, click Back work Access Provider selection.
Service Name:	Service_3
WAN Type:	PPPoE Layer 3
	Back Next Exit

Figure 19: DSL NAP verification

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

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

28 Chapter 5 • Commissioning the HN router 1037753-0001 Revision A T1 provider. Your screen may differ depending on the NAP selected.

errestrial B ase enter the cor	roadband - Con	figuration Parameters	
gmt IP Address:	From work order		
PP Username:	From work order	@dsl.hns.com	
PP Password:	From work order		
		Ba	ack Next Exit

Figure 20: Auto selection - DSL Configuration Parameters

HUGH			
errestrial Broa	dband - Configuration	n Parameters	_
ease enter the configu Mgmt IP Address:	ation parameters. Click Next to co	ontinue.	Ĩ
WAN IP Address:	From work order		
VAN Subnet Mask:	From work order		
NAN Default Gateway:	From work order		
		Back Next Exit	1
		Back Next Exit	

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.

Cerrestrial Broadban lease verify the Service Parame change the Network Access Pr	d - Verificaton of Configuration Parameters ters listed below and click Next to continue. If the configuration is incorrect, click Bac ovider selection.
UEM IP Address:	172.18.112.180
UEM Port Number:	4613
LAN Port Speed/Duplex Mode:	Auto
IP Gateway IP Address:	67.46.0.6
Enable DDR:	YES
Encryption:	YES
Mgmt IP Address:	172.18.25.2
PPP Username:	sivgtn02d@poc.gtn.hnsnet.net
PPP Password:	wtjff7zj
Username Capitalization Rule:	Keep As-is
Check Private IP Address:	NO

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.

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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

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## 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 On the Service Parameters screen, enter data as follows.

HUGHES	A.
mannaummann	
restrial Broadband - Servio	e Parameters
e select the NAP from the list below, or ch	eck the "Enter service parameters manually" box to enter the service
neters manually. Click <b>Next</b> to continue.	
ice: COVAD_ADSL_L2	
Choose Network Access Provider	
BellSouth_ADSL_L2	
Ty COVAD ADSL 12	
Verizon East ADSL L2	
Radiant West ADSL L3	Back Next Exit
Radiant_East_ADSL_L2	
COVAD_IDSL_L2	
COVAD_IDSL_L3	
COVAD_SDSL_L2	
COVAD_SDSL_L3	
COVAD TI 13	
NewEdge-Owest ADSI 13	
NewEdge-Sprint ADSL 13	
NewEdge-Core SDSL L3	
NewEdge-Verizon ADSL L3	



- 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.

-		200-000			
errestria ease verify the change the N	Broadband - Service Parameters lis etwork Access Provider	/erificaton of S sted below and click Nex selection.	<b>ervice Param</b> at to continue. If the co	eters onfiguration is inco	rrect, click Bac
Service Name	Service_3				
VAN Type:	PPPoE Layer 3				
			Ba	ck Next	Exit

Figure 27: Manual entry - Verification of Service Parameters

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

**Entering and verifying the** A sample Manual Configuration screen displays as shown in Figure 28.



10. Enter the information for the fields as instructed.

- 11. Click Next.
- 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.

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### 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 on page 37
- Verifying the download status on page 38
- Completing the process on page 40

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.
	<ol> <li>Navigate to the Advance Page.</li> <li>Click the General link in the left frame to expand it.</li> </ol>

3. Click the Summary link.

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

<b>S/N: 1464526</b> Fallback.bin: [5.8.0.9]	Advanced Configuration and Statistics
	Enable Auto Refresh: 📕 Interval (sec): <mark>Submit</mark>
Advanced Menu + General + Diagnostics	Terrestrial Statistics Summary
+ LANAWAN + IP Routing	SysUpTime (d:h:m:s)
<ul> <li>+ IP Stack/Services</li> <li>+ Firewall</li> <li>+ PEP</li> </ul>	Terrestrial Link ENABLED; rfcl483 static mode Network Access Provider: Service_22
<ul> <li>Serial Protocols</li> <li>Logs</li> </ul>	Current Status: Terrestrial link established. Last erlor: No error.
• OS Stats     • VADB	Stage Status Up/Cancel/Down
+ Installation	1. Interface Up 1/ 0/ 0 Ethernet Link Verified
	2. Socket Up 1/ 0/ 0 Socket created
	3. Route Up 1/ 0/ 0 WAN gateway route established
	4. Gateway Up 1/ 0/ 0 WAN gateway ping OK
	5. Tunnel Up 1/ 0/ 0 Terrestrial gateway ping OK
	Ping to WAN Gateway:
	req/resp/tmout: 6 / 5 / 1 ; latency (ms) min/max/avg: <10 / <10 / <10
	Ping to TERR Gateway:
	req/resp/tmout: 4 / 4 / 0 ; latency (ms) min/max/avg: <10 / 10 / 10

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.

<b>S/N: 1464526</b> Fallback.bin: [5.8.0.9]	Advanc	ed Configu	uration	and S	tatistic	s	<u>Home</u> <u>Restart-HN7700S-R</u>
	Enable Auto F	Refresh: 🧾 Inte	erval (sec):		Sub	mit	
Advanced Menu + General + Diagnostics + I ANAVAN	Network Time: TH	U JAN 10 20:36	:19 2008				
+ IP Routing	Current File Lis	t 					
+ IP Stack/Services	Remote File	Version	FileSiz	BytesRx	Copied	State	#Attempt
<ul> <li>Firewall</li> </ul>							
+ PEP	IP_526	526	608	608	608	DELIVERED	1
<ul> <li>Serial Protocols</li> </ul>	QE_445	445	713	713	713	DELIVERED	1
+ 1000	QS_453	453	2801	2801	2801	DELIVERED	1
+ OS State	QW_456	456	438	438	438	DELIVERED	1
	QM_419	419	271	271	271	DELIVERED	1
+ VADB	PX_424	424	446	446	446	DELIVERED	1
<ul> <li>Installation</li> </ul>	PL_425	425	1451	1451	1451	DELIVERED	1
- Setup	QT_427	427	8384	8384	8384	DELIVERED	1
- SDL Monitor	PG_429	429	360	360	360	DELIVERED	1
SDL Pending	PN_431	431	124	124	124	DELIVERED	1
L Config Doromo	QC_460	460	759	759	759	DELIVERED	1
VADB Test	MM_508	508	3930949	268550	0	LOADING	1

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

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#### **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 on page 41
- Accessing the System Control Center on page 43
- The System Control Center home page on page 43
- System Control Center buttons and indicators on page 44
- The System Status page on page 46
- LAN Info page on page 47
- WAN Info page on page 49
- System Info page on page 50
- Additional Home Page links on page 51
- System Status on page 51
- Diagnostic Utilities on page 51
- *Help page* on page 52
- *Help page links* on page 53
- Advanced Pages on page 54

### 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.

netal   Securitu	Privou   Contor	t   Connections   I	Programa   Adu
inordia   peccanty	T INVOCY   COTILET		Tograms   Advo
Home page			
You ca	n change which p	age to use for your	home page.
Addres	s: http://hnsv	veb.hns.com/home	-ie.html
	Use Current	Use Default	Use Blank
<b>T</b> 1.1	10		
Pages I	iet nies iou view on the In	ternet are stored in	a special folder
for quic	k viewing later.	terriet die stored in	a special folder
	Valata Castilas	Dalata Eller	Callings
L.	Pelete COUKIES	Delete Files	
History			
The His	tory folder contain	is links to pages yo	u've visited, for
[ 🛃 quick a	ccess to recently	viewed pages.	
Days to	keep pages in his	story: 20 🐳	Clear History
	Fonte	Languages	Accessibility
Colors	T OFROM	Languages	110000000000000000000000000000000000000
Colors			

Figure 32: Selecting settings option

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

tings	?
🔨 Check for n	ewer versions of stored pages:
🙆 🔍 Every vi	sit to the page
Č Every ti	me you start Internet Explorer
C Automal	tically
C Never	
Current location:	C:\Documents and Settings\dvanorde\Local Settings\Temporary Internet Files\
Amount of disk spa	ace to use:
·]	2382 <u>*</u> MB
Move Folder	View Files View Objects

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
  - 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

System LAN WAN System Status Info Info Info 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. System LAN WAN System Info Info Info Status Problem Figure 39: System Status indicator reporting a problem **Other System Control** <u>LAN Info</u> shows the configuration of the LAN (LAN1) port. It Center buttons 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.

parameters.

view status details and restore previous operating



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.

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.

#### LAN Info page

HUGHES.	System Status OK 2	LAN Info	WAN Info	System Info		
Home			<u>Wha</u>	t do these controls mean? 🛔		
Detailed Problem Statistics	LAN INFO					
Connectivity Test	IP Addr	ess	10.10.65.1	.1		
<u>Help</u>	Subnet Mask         255.255.2           Speed         100 Mbps		255.255.25	255.255.255.0 100 Mbps full duplex		
			100 Mbps			
	Duple	Duplex				
	Current S	Status	LAN UP	LAN UP		
	Utilizat	ion	11686 bps			
			Transmit	Receive	1	
	Packets	2613		8715	1	
	Bytes	1010856		1073222		
	Clear LAN Statistic	CS				

Figure 41: LAN Info page

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#### 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	<ul> <li>This category provides access to system status information.</li> <li><u>View System Status</u> provides access to the System Status page which gives general status information. See System Status on <i>The System Status page</i> on page 46</li> </ul>
	<ul> <li><u>View LAN Info</u> provides LAN information. Refer to the <i>LAN Info page</i> on page 47 for details.</li> <li><u>View WAN Info</u> provides WAN information. Refer to the <i>WAN Info page</i> on page 49.</li> </ul>
Diagnostic Utilities	The Diagnostic Utilities provides access to testing and problem diagnostic links.

- <u>Connectivity Test</u>
- Detailed Problem Statistics

**Connectivity Test** The <u>Connectivity Test</u> 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 <u>Detailed Problem Statistics</u> 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.

HughesNet.	System Status OK	LAN Info	WAN Info	System Info
Home			V	/hat do these controls mean?
Problem Troubleshooting		Detailed P	roblem Statistics	
Detailed Problem Statistics Connectivity Test	Select a problem from	n the menu below	and the hour for whic	h you need detailed statistics.
Help	Cabling/Antenna Po Cabling/Antenna Po Downlink Uplink Uplink Queuing TCP Acceleration IP Gateway RTT	inting 💌 for 0-1	▼ hour(s) ago.	
	Fair Access Policy Web Acceleration[N Web Acceleration[I] DNS Acceleration[N DNS Acceleration[I] IDU LAN LAN Virus	]		

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 <u>View Help Topics</u> on the System Control Center home page

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- or
- Click <u>Help</u> 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.

HUGHES.	System Status OK 2	LAN Info	WAN Info	System Info	
Home			<u>What d</u>	o these controls mean?	*
Detailed Problem Statistics	Welcome to HN7700S-R H	lelp			
Connectivity Test	Use the HN7700S-R Help to	get the most from	your Terrestrial Broad	Iband system.	
<u>Help</u>	Learn about the differe	nt services availat	ole with Terrestrial Bro	adband.	
	<ul> <li>Learn how to configure</li> </ul>	e and optimize Ter	restrial Broadband se	rvices.	
	<ul> <li>Find answers to freque</li> </ul>	ently asked questi	ons.		
	Learn how to troubles	noot potential prob	lems.		
	General Help Topics				
	<ul> <li>Introducing HN7700S-</li> </ul>	R			
	<ul> <li>Frequently Asked Que</li> </ul>	<u>stions</u>			
	<ul> <li><u>Terrestrial Broadband</u></li> </ul>	Glossary			
	<u>Contact Information</u>				

Figure 46: Help welcome page

The links on this page are:

- Introducing the HN7700S-R
- Frequently Asked Questions
- Terrestrial Broadband Glossary
- <u>Contact Information</u>

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).

<b>S/N: 1464526</b> Fallback.bin: [5.8.0.9]	Advanced Configuration and Statistics
	Enable Auto Refresh: 🧮 Interval (sec): Submit
Advanced Menu + General + Diagnostics	Terrestrial Statistics Summary
+ LAÑ/WAN + IP Routing	SysUpTime (d:h:m:s)
+ IP Stack/Services + Firewall + PEP	Terrestrial Link ENABLED; rfc1483 static mode Network Access Provider: Service_22
<ul> <li>Serial Protocols</li> <li>Logs</li> </ul>	Current Status: Terrestrial link established. Last error: No error.
+ OS Stats + VADB	Stage Status Up/Cancel/Down
+ Installation	1. Interface Up 1/ 0/ 0 Ethernet Link Verified
	2. Socket Up 1/ 0/ 0 Socket created
	3. Route Up 1/ 0/ 0 WAN gateway route established
	4. Gateway Up 1/ 0/ 0 WAN gateway ping OK
	5. Tunnel Up 1/ 0/ 0 Terrestrial gateway ping OK
	Ping to WiN Cateway.
	req/resp/tmout: 6 / 5 / 1 ; latency (ms) min/max/avg: <10 / <10 / <10
	Ping to TERR Gateway:
	req/resp/cmouc: 4 / 4 / 0 ; racency (ms) mrn/max/avg: <10 / 10 / 10

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 theYou can access the Advanced Pages using either of the followingAdvanced Pagesmethods:

- 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 on page 57
- Requirements for VADB on page 58
- Installing VADB on page 58
- LED appearance during VADB operation on page 65
- VADB troubleshooting on page 66

**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.

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#### **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 **B**

**ne** 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.

## to the telephone line

**Connecting the HN router** 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** To install a protection module, refer to Figures 54 through 56 and *module* 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.

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- 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.

#### **B functionality** Follow these steps to verify VADB functionality:

- 1. Open a web browser on the installer PC.
- 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

Verifying VADB functionality

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**  $\rightarrow$  *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

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LED	Appearance	Description
LAN	On (solid)	LAN is connected and usable
	Blinking	There is transmit or receive activity on the LAN
Transmit/	On	ОК
LAN	Blinking	Transmitting frames
	Off	Condition preventing transmission
Receive/	On	ОК
PPP-IP	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

Table 3: HN router LED appearance during VADB operation

#### **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.

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## 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 on page 69
- Windows XP on page 72
- Windows 2000 on page 75

Windows Vista

 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.

00		D. I N				[a]		
00	Control	Parlei 🖡 Network	connections		• • • • • • •	Search		~
File E	dit View Tool	ls Advanced H	elp					_
🕒 Organ	nize 🔻 📲 View	s 🔻 🔀 Disable	this network devi	ce 🛛 🔛 Diagnose this c	connection	🗐 Rename th	is connection »	?
Name	Status	Device Name	Connectivity	Network Category	Owner	Туре	Phone # or Host A	Addre
LAN or H	ligh-Speed Interne	et (2)						- ^
<b>N</b>	Local Area Connection-MotH Network cable un	nerboard Iplugged	Local Area ( Card Network 10	Connection-NIC				

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.

 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.

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ø	Realtek RTL8	169/8110 Fami	ly PCI Gigal	bit Ethemet NIC (
				Configure
his c	connection uses	s the following it	ems:	connigare
•	🖳 Client for Mi	crosoft Network	cs	
	QoS Packe	t Scheduler		
	📮 File and Prir	nter Sharing for	Microsoft N	etworks
•	- Internet Pro	tocol Version 6	(TCP/IPv6)	
•	📥 Internet Pro	tocol Version 4	(TCP/IPv4	
-	🔺 Link-Layer 1	Topology Disco	very Mappe	r I/O Driver
			very Respo	nder
•	📥 Link-Layer	Topology Disco		
•	Link-Layer	Topology Disco	,	
~	▲ Link-Layer <sup>*</sup>	Topology Disco	all	Properties
Des	Link-Layer	Topology Disco	all (	Properties
Des Tra	Install cription	Topology Disco Uninst	all (	Properties
	🔺 Link-Layer	Topology Disco		

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.

eneral	Alternate Configuration				
You car this cap for the	n get IP settings assigned au ability. Otherwise, you nee appropriate IP settings.	utomatically if d to ask your	f your n netwo	etwork s ·k admini	supports strator
() O	otain an IP address automat	ically			
-O Us	se the following IP address:				
IP ac	ddress:	() +)	- 54		
Subr	iet mask:	Q.,			
Defa	ult gateway:		(0.)	э.	
() O	otain DNS server address au	Itomatically			
O Us	e the following DNS server	addresses:			
Prefe	erred DNS server:		14.1	12	
Alter	nate DNS server:	n .			
				Adva	anced
		11			_

Figure 61: Internet Protocol Properties - Windows Vista

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



Windows XP

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

Intel(R) PRU	/100 VE Ne	work Conn	ection	
			Config	gure
his connection us	es the follow	ing items:		
🗹 🖳 Client for M	dicrosoft Nel	works		
🗹 📇 File and P	rinter Sharing	) for Micros	oft Networks	
Internet P	rotocol (TCP	/IP)		
		· · · ·	Prope	rties
Install	_ U	ninstall		1000
Install Description		ninstall	Поре	
Install Description Transmission Co wide area netwo across diverse in	ntrol Protoco rk protocol ti iterconnecte	hinstall I/Internet P hat provides d networks	rotocol. The de	efault n

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.

ieneral	Alternate Configuration	n				
You car this cap the appr	get IP settings assigne ability. Otherwise, you r opriate IP settings.	ed autom need to a	atically if sk your n	your ne etwork	etwork : admini	supports strator for
⊙ ОЬ	tain an IP address auto	omatically				
Us	e the following IP addre	BSS:				
IP ad	dress:					
Subn	et mask:					
Defa	ilt gateway:					
⊙ Ob	tain DNS server addre:	ss autom	atically			
OUs	e the following DNS se	rver addr	esses:			
Prefe	rred DNS server:					
Alterr	ate DNS server:					
					Ad	vanced
			Γ	OK		Can

Figure 64: Internet Protocol Properties - Windows XP

- 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**  $\rightarrow$  *Settings*  $\rightarrow$  *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.





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.

Local Area Connection Properties	<u>? </u> ×
General	
Connect using:	
Intel(R) PRO/100 VE Network Connection	
Configure	
Components checked are used by this connection:	
Client for Microsoft Networks     P. Pie and Printer Sharing for Microsoft Networks     Image Content Protocol (TCP/IP)	
Install Uninstall Properties	
Description	
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	
Show icon in taskbar when connected	
OK	cel

Figure 66: Local Area Connection Properties - Windows 2000

Appendix A • Configuring a computer to support DHCP 1037753-0001 Revision A **75** 

- 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.

Internet Protocol (TCP/IP) Prope	erties ?×
General Alternate Configuration	
You can get IP settings assigned auto this capability. Otherwise, you need to the appropriate IP settings.	matically if your network supports ask your network administrator for
<ul> <li>Obtain an IP address automatical</li> </ul>	lly
Use the following IP address: —	
IP address:	
Subnet mask:	
Default gateway:	· · · ·
<ul> <li>Obtain DNS server address autor</li> </ul>	matically
O Use the following DNS server ad	dresses:
Preferred DNS server:	· · ·
Alternate DNS server:	· · ·
	Advanced
	OK Cancel

Figure 67: Internet Protocol Properties - Windows 2000

- 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 <i>fallback.bin</i> file with the current software release. Use the procedures in this appendix only when instructed to do so by Hughes.
	Before updating the <i>fallback.bin</i> 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:
	<ul> <li>Saving the utility on the installer laptop on page 77</li> <li>Configuring TCP/IP properties on the installer laptop on page 78</li> <li>Updating the fallback.bin file on page 86</li> <li>Troubleshooting on page 87</li> </ul>
Saving the utility on the installer laptop	Follow these steps to save the Fallback Updater utility on your (the installer) laptop:
	<ol> <li>Obtain the self-extracting file containing the utility and its supporting files from either the e-mail message or the installation support web site.</li> <li>Copy the self-extracting file to the laptop.</li> </ol>

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

WinZip Self-Extractor - DWFALLUP_1.3	.0.4.exe 🗙
To unzip all files in DWFALLUP_1.3.0.4.exe to the specified folder press the Unzip button.	
Unzip to <u>f</u> older: C:\DWFALLUP_1.3.0.4 <u>B</u> rowse	Run <u>₩</u> in∠ip
☑verwrite files without prompting	About
	<u>H</u> elp

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.
  - 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

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

~								×
00	🗢 🔮 🕨 Control	Panel   Network	Connections		• <b>*</b> 9	Search		٩
File E	dit View Tool	s Advanced H	lelp					
🔮 Organ	nize 👻 🔡 View	s 👻 🔀 Disable	this network devi	ce 🛛 📑 Diagnose this c	onnection	🗴 Rename th	is connection »	0
Name	Status	Device Name	Connectivity	Network Category	Owner	Туре	Phone # or Host #	Addre
LAN or H	ligh-Speed Interne	et (2)						^
	Local Area Connection-Moth Network cable un	nerboard plugged	Local Area ( Card Metwork 10	Connection-NIC				

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.

 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.

Realtek	RTL8169/8	110 Family PC	I Gigabit Ethe	emet NIC (
			С	onfigure
his connectio	n uses the f	ollowing items		
🗹 🥂 Client	for Microsof	t Networks		
🗹 📙 Qo S F	acket Sche	eduler		
🗹 📙 File ar	nd Printer Sł	naring for Micr	osoft Network	s
🗹 🔺 Intem	et Protocol	Version 6 (TCI	P/IPv6)	
🗹 📥 Intern	et Protocol	Version 4 (TCI	P/IPv4)	
🗹 🔺 Link-L	ayer Topolo	ogy Discovery	Mapper I/O [	Driver
🗹 🔺 Link-L	ayer Topolo	ogy Discovery	Responder	
Install		Uninstall	P	roperties
Description				10
Transmission	n Control Pro	otocol/Internet	Protocol. Th	e default
TI di Isi ilissi ul				



- 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.

General	Alternate Configuration				
You car this cap for the	n get IP settings assigned au ability. Otherwise, you need appropriate IP settings.	tomatically if to ask your	your n networ	etwork s 'k admini:	upports strator
O	otain an IP address automati	cally			
O Us	e the following IP address: -				
IP ac	ldress:	÷1	- Şi		
Subr	iet mask:	1			1
Default gateway:		1 o o	0.1		
00	ntain DNS server address aut	romatically			
-0 Us	e the following DNS server a	ddresses:			
Prefe	erred DNS server:		14	4	1
Alter	nate DNS server:	Ū.,			
				Adva	nced
			OK		Cancel

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 255.255.252 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**  $\rightarrow$  *Settings*  $\rightarrow$  *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.





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.

🕹 Local Area Connection Properties 🛛 ? 🗙
General Authentication Advanced
Connect using:
Intel(R) PR0/100 VE Network Connection
Configure
This connection uses the following items:
Elient for Microsoft Networks     Elie and Printer Sharing for Microsoft Networks
Install Uninstall Properties
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in notification area when connected
OK Cancel

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.

Internet Protocol (TCP/IP) Properties		
General		
You can get IP settings assigned autor this capability. Otherwise, you need to the appropriate IP settings.	matically if your network supports ask your network administrator for	
O Dbtain an IP address automatical	ly 👘	
O Use the following IP address: —		
IP address:	192.168.0.2	
S <u>u</u> bnet mask:	255 . 255 . 255 . 252	
Default gateway:		
O Obtain DNS server address autor	matically	
• Use the following DNS server add	dresses:	
Preferred DNS server:		
Alternate DNS server:	· · ·	
	Advanced	
	OK Cancel	

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.
  - 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 list of network adapters appears as snown 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.

ocal Area Connection	Properties	?
General		
Connect using:		
Intel(R) PRO/10	0 VE Network Connec	tion
		Configure
Components checked	are used by this conne	ection:
		Properties
Iristai	Uninstali	Propercies
Transmission Contro wide area network p across diverse intero	I Protocol/Internet Pro rotocol that provides o connected networks.	tocol. The default communication
Show icon in taskb	ar when connected	
		11

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.

Internet Protocol (TCP/IP) Prop	erties ?X
General	
You can get IP settings assigned auto this capability. Otherwise, you need to the appropriate IP settings.	matically if your network supports ask your network administrator for
O <u>O</u> btain an IP address automatica	ally
☐ Use the following IP address: —	
IP address:	192.168.0.2
S <u>u</u> bnet mask:	255 . 255 . 255 . 252
Default gateway:	· · ·
C Obtain DNS server address auto	matically
☐ Use the following DNS server ac	Idresses:
Preferred DNS server:	· · ·
Alternate DNS server:	· · ·
	Advanced
	OK Cancel

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 <i>Troubleshooting</i> 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 <i>fallback.bin</i> file using the Fallback Updater utility:
	<ol> <li>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</li> </ol>
	<ul> <li>2. Test LAN connectivity between the installer laptop and router by performing a ping test:</li> <li>a. Open a DOS command window on the installer laptop.</li> <li>b. Type ping 192.168.0.1.</li> <li>c. Press ENTER.</li> <li>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.</li> </ul>
	<ul> <li>3. Verify that the installer laptop has an IP address of 192.168.0.2.</li> <li>If the address is incorrect or blank, refer to <i>Configuring TCP/IP properties on the installer laptop</i> on page 78 for instructions on how to assign an IP address.</li> </ul>
	<ul> <li>4. After verifying that the installer laptop is connected to the router and its TCP/IP properties are properly configured, restart the router:</li> <li>a. Navigate to the System Control Center home page.</li> <li>b. In the Help section, click <u>Restart HN Router</u>.</li> <li>5. If this does not correct the problem, power cycle the router:</li> </ul>



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.

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## 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:
	<ul> <li>Internet Explorer on page 89</li> <li>Netscape on page 91</li> </ul>
Internet Explorer	To disable the proxy connection if you are using Internet Explorer:
	<ol> <li>Turn the computer on.</li> <li>Open Internet Explorer.</li> <li>Select Tools → Internet Options.</li> </ol>

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.

Local Area Network (LAN) Settings
- Automatic configuration
Automatic configuration may override manual settings. To ensure the use of manual settings, disable automatic configuration.
Automatically detect settings
Use automatic configuration script
Address
Proxy server
$\checkmark$ Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections).
Address: Port: Advanced
Bypass proxy server for local addresses
OK Cancel

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.

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#### Netscape

To disable the proxy connection if you are using Netscape:

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

Lategory	Proxies	
D Appearance		
✓ Navigator History Languages Helper Applicat	Configure Proxies to Access the Inte     O Direct connection to the Internet     Manual proxy configuration	rnet
- Smart Browsing	HTTP Proxy:	Port:
Internet Search	SSI Provvi	Port: 0
Tabbed Browsing		Park [
Downloads		Port: U
D Composer	Gopher Proxy:	Port: 0
D Mail & Newsgroups	SO <u>C</u> KS Host:	Por <u>t</u> : 0
<ul> <li>Instant Messenger</li> <li>ICQ</li> <li>Privacy &amp; Security</li> </ul>	O SOCKS v4	• SOCKS v5
✓ Advanced	Example: .mozilla	a.org, .net.nz
Scripts & Plugins	O Automatic proxy configuration U	RL:
Keyboard Navi		Deload
Cache		
Proxies		
HTTP Networking		
- Software Insta 💌		

Figure 81: Accessing proxy settings: Netscape

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

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## 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.

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

Table 4: HN7700S standards compliance

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.



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.

### 



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 XXXXXX-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.

#### 

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

#### Ringer equivalence number This section applies to the HN7700S only.

**(REN)** The REN is used to determine the number of d

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<br/>changesThis section applies to the HN7700S only.ChangesThe Telephone Company may make changes in its facilities,<br/>equipment, operations, or procedures that could affect the<br/>operation of the equipment. If this happens, the Telephone

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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:
<ul> <li>Minimum system requirements on page 99</li> <li>ADTRAN shipping carton on page 99</li> <li>Installing the ADTRAN 600R on page 100</li> <li>Connecting the ADTRAN on page 106</li> <li>Navigating the user interface on page 103</li> <li>Configuring the ADTRAN on page 107</li> <li>Confirming connectivity on page 115</li> </ul>
At a minimum, your laptop must be equipped with the following to successfully install the ADTRAN 600R:
<ul> <li>32 MB RAM</li> <li>Pentium-compatible 166 MHz (or) faster</li> <li>12 MB of hard disk space</li> <li>Windows 98 or later operating system</li> </ul>
The ADTRAN shipment includes the items listed below. Make sure you have all the items before you install the unit.
<ul> <li>The Total Access 600R unit with attached wallmount brackets</li> <li>The Total Access 600 Series System CD – ADTRAN P/N 3253052</li> <li>Hardware revision notice card – ADTRAN P/N 61200624L1-17</li> <li>Mounting instructions – ADTRAN P/N 61200624L1-19</li> <li>RJ-45 to RJ-45 8-pin cable (6 ft) –ADTRAN P/N 3127004</li> <li>Cable tie (for securing attached cables) – ADTRAN P/N 3292032</li> <li>Four rubber feet (for table top installations) – ADTRAN P/N 3270BF003</li> <li>3-prong, detachable power cord – ADTRAN P/N 3127009</li> </ul>

Appendix E • ADTRAN Total Access 600R 1037753-0001 Revision A 99 Figure 83 and Figure 84 show front and back views of the ADTRAN 600R.







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.

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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

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





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

**102** | Appendix E • ADTRAN Total Access 600R 1037753-0001 Revision A Figure 87 on page 103 shows the front panel of the unit.



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**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.

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.		

Table 5: ADTRAN front panel LEDs

## 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

Appendix E • ADTRAN Total Access 600R 1037753-0001 Revision A **103**  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.

Menu Path	POIL - HyperTerminal File Edit View Call Iran	nsfer <u>H</u> elp <b>D</b> [17]			
Left Pane -	TA 600R/Syste System Info System Config System Utilit Router Modules	m Info System Name System Location y System Contact Unit Name Part Number Serial Number Firmware Revision Bootcode Revision System Uptime Date/Time	TA 600R 4200600L1#TDM  A.03.55 A.08 10 mins, 18 secs Monday January 1 00:10:18	1900	—— Right Pane
	MODE: Channel	Bank 71100 [9600 8-N-1 [SCROLL	CAPS NUM Capture Print echo	NET: down ^Z=help 0:10_	—— Network Status
				Navigation Help	

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 You can use various keystrokes to navigate the terminal menu, to keystrokes 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	Н
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

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To do this	Press this key			
Refresh the screen	CTRL+R			
Restore factory default settings	F			
Copy items to the clipboard	С			
Paste the item stored in the clipboard	Р			
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.

**106** | Appendix E • ADTRAN Total Access 600R 1037753-0001 Revision A **System Info menu** The System Info menu screen gives basic information about the ADTRAN and displays the fields available for editing.

🙀 Telnet 169.254.12	8.1		
IH 600R Gen3/Sy System Info System Config System Utility Interfaces L2 Protocol Bridge Router Security DSØ Maps	Stemminio System Name System Location System Contact Unit Name CLEI Code Part Number Controller Serial Number System Serial Number Firmware Revision Bootcode Revision System Uptime Date/Time	TA 600R Gen3 - 4203600 G44D2245 CFG0510625 A.05.03.05 B.05 5 days, 19 hours, Saturday January	▲ 43 mins, 5 secs 6 19:43:05 1900
MODE: T1 IAD DSØ Status: rrr	SLOTS 1: 2: 3	: 4: 5: User: superuser	6: NET: up ETH: up ^Z=help 19:43

Figure 90: System Info menu screen

Configuring the	To begin configuring the ADTRAN:
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 <b>Router</b> from the main menu list as shown in Figure 91.

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

🗪 Telnet 169.254.12	8.1	_							
TA 600R Gen3/Ro	uter								
System Info System Config System Utility Interfaces L2 Protocol Bridge Router Security DSØ Maps	Config Status	[+] [+]							
MODE: T1 IAD DSØ Status: rrr	SLOT 	\$ 1:	2:	3: User:	4: superu	5: ser	6:	NET : ETH :	սք սք
								^Z=help	19:47

Figure 91: Router menu

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

🔍 Telnet	169.254.128.1					_			
TA 600R	Gen3/Router	/Config/In	terfaces						
Config Status	Interfaces Routes DHCP Server UDP Relay Global NAT	[+] [+] [+] [+] [+]							
MODE: T DSØ Sta	1 IAD tus: rrrrrr	SLOTS 1:	2:	3: User:	4: superu	5: ser	6:	NET : ETH :	սք սք
								^Z=help	19:48

Figure 92: Config Interfaces

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

🗪 Telnet 169.25	4.128.1								_0	×
TA 600R Gen3	/Route	er/Config/	Interface	es[2]	10					
Interfaces Routes DHCP Server UDP Relay Global NAT	Num 1 2	Interface ETH T1	Sub-Inte 802.31 PPP[0	erface Se [1.0] [ ].0] [	tup +] +]					
MODE: T1 IAD		SLOTS 1:	2:	3:	4:	5:	6:	NET :	up	
DSØ Status:	rrrrr	•pp		- User:	super	user	0.	ETH: ^Z=help	up 19:49	•

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.

TA 600R Gen3 Interfaces Routes DHCP Server UDP Relay Global NAT	4.126. Rout Num 1 2	ter/Config/ Interface ETH T1	Interfaces[2]/  Sub-Interface 802.3[1.0] PPP[0.0]	nterface Setup [+] [+]
			Right arro	w to the + sign

10. Press Enter.

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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.

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🖏 Teln	et 169.254.128.1						
TA 600	OR Gen3/Router/Conf	ig/Interfaces	[2]/Setuj	Far-End	<b>IP</b> Address		
Setup	Active Address Mode Local IP Address IP Netmask Far-End IP Addres NAT RIP	Yes User Specif 12.86.82.26 255.255.255 s 12.86.82.25 [+] [+] [+]	ied .252				
MODE: DSØ St	T1 IAD SLOTS atus: rrrrrrr	1: 2:	3: User:	4: 5: superuser	6:	NET : ETH :	սթ <b>*</b> սթ
						^Z=help	19:55

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.

🔤 Telnet 169.254.12	28.1				
TA 600R Gen3/Su System Info System Config System Utility Interfaces L2 Protocol Bridge Router Security DS0 Maps	stem Info System Name System Location System Contact Unit Name CLEI Code Part Number Controller Serial Number System Serial Number Firmware Revision Bootcode Revision System Uptime Date/Time	TA 600R Gen3  4203600 er G44D2245 CFG0510625 A.05.03.05 B.05 5 days, 19 hours, Saturday January	. <b>4</b> 3 6	mins, 5 se 19:43:05	cs 1900
MODE: T1 IAD DSØ Status: rri	SLOTS 1: 2:	3: 4: 5: User: superuser	6:	NET : ETH : ^Z=help	up up 19:43 ▼

Figure 96: Home screen

Appendix E • ADTRAN Total Access 600R | 111 1037753-0001 Revision A | 111 **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.

🗪 Telnet 169.254.128	.1								
TA 600R Gen3/DS0	Maps	/Edit/View	Map	1[1]/Se	ervice				
Edit/View Map 1	DSØ	Service		Port	Rbs				
Edit/View Map 2	1	open		n/a	n/a				1.00
	2	open		n/a	n/a				
	3	open		n/a	n/a				
	4	open		n/a	n/a				
	5	open		n/a	n/a				
	6	open		n/a	n/a				
	7	open		n/a	n/a				
	8	open		n/a	n/a				
	9	open		n/a	n/a				
	10	open		n/a	n/a				
	11	open		n/a	n/a				
	12	open		n/a	n/a				
	13	open		n/a	n/a				
	14	open		n/a	n/a				
	15	open		n/a	n/a				
	16	open		n/a	n/a				
	17	open		n/a	n/a				
	18	open		n/a	n/a				
	19	open		n/a	n/a		1		
MODE: T1 IAD	SL	OTS 1:	2:	3:	4:	5:	6:	NET :	up *
DSØ Status:				- Use	er: super	lser		ETH:	սք
								^Z=help	19:57

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

Figure 98: Selecting the DS0





Figure 99: Setting the service

7. Press Enter.

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

🗪 Telnet 169.254.128	3.1							
TA 600R Gen3/DSI	Ø Maps.	/Edit/View	Map 1[1]/Port					
Edit/View Map 1	DSØ	Service	Port	Rbs				
Edit/View Map 2	1	TA IAD	unassigned	n/a				
	2	open	n/a	n/a				
	3	open	n/a	n/a				
	4	open	n/a	n/a				
	5	open	n/a	n/a				
	6	open		n/a				
	2	open	Port	n/a				
	8	open	unassigned	n/a				
	9	open	Router 64K	n/a				
	10	open	Router 56K	n/a				
	11	open	U.35 64K	n/a				
	12	open	V.35 56K	n/a				
	13	open		n/a				
	14	open	n/a	n∕a				
	15	open	n/a	n/a				
	16	open	n/a	n/a				
	17	open	n/a	n/a				
	18	open	n/a	n/a				
	19	open	<u>n/a</u>	n/a	_			
MODE: T1 IAD	SL	OTS 1:	2: 3:	4:	5:	6:	NET :	up *
DSØ Status:			User:	super	user		ETH:	up
							^Z=help	19:58

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.

🔤 Telnet 169.254.128	.1								_ 🗆 ×	(
TA 600R Gen3/DS0	Maps	/Edit/View	Map	1[8]/F	ort				-	1
Edit/View Map 1	DSØ	Service		Port	Rbs					1
Edit/View Map 2	1	TA IAD	Rou	iter 64	lK n∕a					
	2	TA IAD	Rou	iter 64	lK n∕a					
	3	TA IAD	Rou	iter 64	lK n∕a					
	4	TA IAD	Rou	iter 64	lK n∕a					
	5	TA IAD	Rou	iter 64	lK n∕a					
	6	TA IAD	Rou	iter 64	lK n∕a					
	7	TA IAD	Rou	iter 64	IK n∕a					
	8	TA IAD	Rou	iter 64	IK n∕a					
	9	open		n/a	n/a					
	10	open		n/a	n/a					
	11	open		n/a	n/a					
	12	open		n/a	n/a					
	13	open		n/a	n/a					
	14	open		n/a	n/a					
	15	open		n/a	n/a					
	16	open		n/a	n/a					
	17	open		n∕a	n/a					
	18	open		n/a	n/a					
	19	open		n/a	n/a	18.5				
MODE: T1 IAD	SL	OTS 1:	2:	3:	4:	5:	6:	NET :	up *	
DSØ Status: rrr	PPPPP-			- Us	er: superu	lser		ETH:	սք	
								^Z=help	19:59	•

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.

ex C:\WINDOWS\system32\cmd.exe	
	<b>_</b>
Connection to host lost.	
C:\Documents and Settings\pfisher>ping 12.86.82.25	
Pinging 12.86.82.25 with 32 bytes of data:	
Reply from 12.86.82.25: bytes=32 time=10ms TTL=254	
Reply from 12.86.82.25: bytes=32 time=10ms TIL=254	
Keply from 12.86.82.25: bytes=32 time=10ms TLL=254	
Ping statistics for 12.86.82.25: Packets: Sent = 4 Received = 4 Lost = 0 (0% loss)	
Approximate round trip times in milli-seconds: Minimum = 9ms, Maximum = 10ms, Average = 9ms	
C:\Documents and Settings\pfisher>_	-

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.

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# 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 on page 117
	• Items required for installation on page 117
	• Installation overview on page 118
	• Installing the modem on page 119
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	Before you begin, verify you have the following that came with your DSL kit:
	<ol> <li>SpeedStream 4100/4101 device</li> <li>Power Supply</li> <li>RJ-45 straight-through Ethernet cable</li> <li>RJ-11 DSL cable</li> </ol>

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Installation overview	Installing the modem is a multi-step process composed of the following tasks.
	<ul><li>Connecting the cables</li><li>Making the connection</li><li>Commissioning the modem</li></ul>
Installing line filters	Prior to installing the Siemens 4100/4101 DSL modem you must wire and filter the modem for proper installation. This includes:
	<ul> <li>Locating the phone line where the modem will be installed.</li> <li>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.</li> </ul>
Connecting the cables	To connect the modem's cables follow the steps below:
	<ol> <li>Place the SpeedStream ADSL modem is an upright horizontal position on a flat surface.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>After verifying all connections are correct, toggle the black power switch (on the right side of the back panel) to the on position.</li> </ol>
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: .
	<ul> <li>Note: The Power light remains red while the unit begins a self-test and tries to establish network connections</li> <li>The power LED turns green after all tests have passed.</li> <li>The Ethernet light should remain a solid green.</li> <li>The DSL LED must remain a solid green. This indicates that a connection has been established.</li> </ul>

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

#### Installing 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.

To establish a connection from your computer to the modem:

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

#### The installation interface The

**erface** 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.

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Gigaset FLEXConfig - Searching f	ior device
Gigaset FLEXConfig Instal Before you run this installation, please device via the Ethernet cable. Do NO via wireless or the USB cable. For mo please refer to your Quick Setup Guid click on the <b>"Install"</b> button below.	Ilation ensure you are connected to the T run this utility if you are connecting re information on connecting the cables, le. Once you are properly connected,
Release Notes	
arching for device	

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.

	SIEMENS	
Gigaset FLEXCo Before you run this insta device via the Ethernet via wireless or the USB please refer to your Qui	Infig Installation allation, please ensure you are connected to the cable. Do NOT run this utility if you are connecting cable. For more information on connecting the cables, ck Setup Guide. Once you are properly connected,	
click on the <b>"Install"</b> t	button below.	
Release Notes		-

Figure 106: Ready message



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

Gigaset FLEXConfig - Siemens Subscriber Networks 4100-Series (D241)	>
SIEMENS	
Gigaset FLEXConfig Installation	_
Before you run this installation, please ensure you are connected to the device via the Ethernet cable. Do NOT run this utility if you are connecting via wireless or the USB cable. For more information on connecting the cables, please refer to your Quick Setup Guide. Once you are properly connected, click on the <b>"Install"</b> button below.	
Release Notes	
wnloading Firmware	

Figure 107: Downloading Firmware

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

Gigaset FLEXConfig – Siemens Subscriber Networks 4100–Series (D241)	×
SIEMENS	
Gigaset FLEXConfig Installation	_
Before you run this installation, please ensure you are connected to the device via the Ethernet cable. Do NOT run this utility if you are connecting via wireless or the USB cable. For more information on connecting the cables, please refer to your Quick Setup Guide. Once you are properly connected, click on the <b>"Install"</b> button below.	
Release Notes	
Install Egit	
booting Device	

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.

	3			3		- 10
Gigase	t FLEXConfig I	nstallatio	n			
de Gigase	et FLEXConfig	please ensure	; you are conn	ected to the	×	
	The installation	completed su	uccessfully! Th	e application wi	l exit now,	
Release	Notes					8

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

#### С

C – Celsius

#### D

DC – Direct current
 DCE – Data communication equipment
 DHCP – Dynamic Host Configuration Protocol
 DTE – Data terminal equipment

#### Ε

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

#### М

Mbyte – Megabyte

MHz – Megahertz

#### Ν

NAP - Network Access Provider

NIC - Network interface card

#### Ρ

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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