

USER MANUAL

X8121r

ADSL Modem/Bridge
Annex A/B

VERSION 1.1

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Revision Marks

Revision	Date	Notes
V 1.0	May 8, 2003	Software: 3.51XAT1.8121A/138030331a3
V 1.1	June 10, 2003	Software: 3.51XAT1.8121A/138030331a3

Chapter 1

Getting Started

I. Overview

X8121r is multi-mode ADSL Router, compliant with ANSIT1.413 Issue 2, ITU G.992.1 (G.dmt) Annex A/B, G.992.2 (G.lite). **X8121r** provides high-speed Internet access via one WAN port over ATM over ADSL, and also connects to a corporate network via one 10/100BaseT Ethernet port. **X8121r** allows the service provider to deploy ADSL rapidly over existing wire infrastructure (POTS or ISDN line).

II. Features

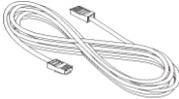
- High speed asymmetrical data transmission on a single twisted copper pair
- Full rate operations up to 8Mbps downstream (12Mbps to be provided) and up to 1Mbps upstream. G.lite operation up to 1.5Mbps downstream and 512Kbps upstream
- One 10/100BaseT Ethernet port for PC connection
- DHCP server support for easy LAN IP address management
- Supports PPPoE (RFC2516), PPP (RFC2364), and IP (RFC 2225/RFC1577) over ATM over ADSL
- RFC2684 (RFC1483) Bridged/Routed for both LLC/VC MUX
- Allows LAN users to access the Internet through Network Address Translation (NAT, IP sharing) simultaneously
- Local OAM&P through command line interface via RJ-45 Ethernet port or RS-232 Craft port (optional)
- Configuration and management via Telnet and Web browser through the Ethernet and ADSL interfaces
- Supports applications such as TFTP, DHCP, Telnet, HTTP, and FTP
- Firmware upgradeable through TFTP
- Interoperability complies with TR-48, U-R2
- Supports dying gasp detection (optional)

III. Packaging

This package consists of the following items:



X8121r ADSL device unit



RJ-45 Cable



RJ-11 Cable



AC Adapter



User's Manual CD

IV. Appearance

Front Panel



	Label	LED Status	Color	Description
①	100M	ON	Green	100M Ethernet transmitting.
②	10M	ON	Green	10M Ethernet transmitting.
③	PWR	ON	Green	Power supply is connected.
④	WAN	Blinking	Green	Training with DSLAM.
		ON	Green	ADSL link is ready.
⑤	ALM	Blinking	RED	Booting up.
		ON	RED	Error.

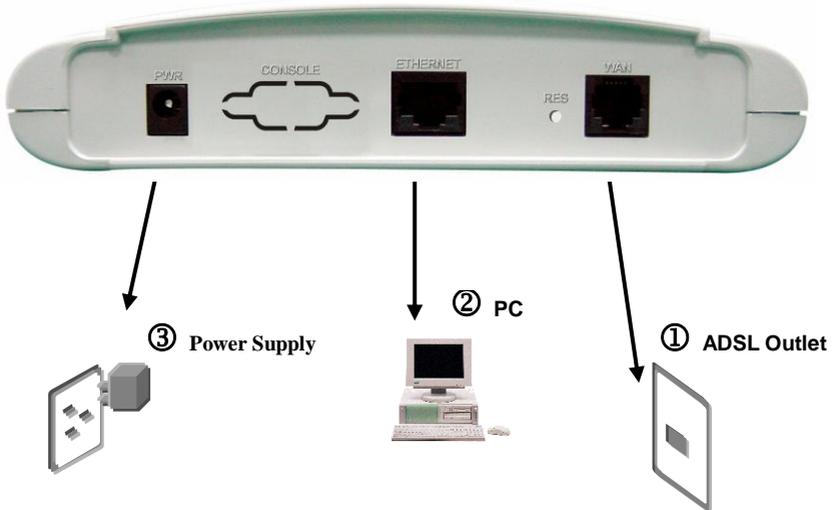
Rear Panel



Label		Description
①	PWR	Power jack; connect to a power adapter.
②	ETHERNET	RJ-45 port; connect to a PC or LAN.
③	RESET	Reset the modem back to factory settings by holding down on this button.
④	WAN	RJ-11 or RJ-45 port; connect to the ADSL outlet. X8121r uses RJ-11 Cable. X8121r-B uses RJ-45 Cable.

V. Hardware Installation

1. Connect one end of the ADSL cable to the WAN port of **X8121r** and the other end to the ADSL wall outlet. (**X8121r** uses RJ-11 cable and **X8121r-B** uses RJ-45 cable)
2. Use a RJ-45 cable to connect one end to the Ethernet port of **X8121r**, and the other end to the LAN or a PC with an Ethernet adapter installed.
3. Plug in the AC adapter to the AC power socket, and then connect the DC jack to the PWR inlet of **X8121r**.



Note: Be sure to use a RJ-45 crossover cable while connecting to a hub.

VI. Management

X8121r supports simple, flexible, and easy-to-operate methods for management purposes. **X8121r** can be managed via the following paths:

- ✓ **Local Ethernet Port (Telnet)** – connect the Ethernet port to your local area network or directly to a PC. “*Telnet*” **X8121r** from any workstation in the LAN. The default local Ethernet IP address is “**192.168.1.1**”.
- ✓ **Local Ethernet Port (Web Browser)** – connect the Ethernet port to your local area network or directly to a PC. Launch your web browser and enter default local Ethernet IP address “**192.168.1.1**” into the address bar.
- ✓ **ADSL Port from Remote Site** – while the ADSL connection is in service, you may remotely “*Telnet*” **X8121r** from a workstation connected to the CO equipment.

Note: As operating an ADSL device requires technical know-how and experience. It is recommended that only qualified technical staffs manage **X8121r**. Therefore, a password authentication is required when you enter the web interface. To obtain the password, see the *Default Values* section.

VII. Default Values

X8121r is pre-configured with the following parameters; you may also re-load the default parameters by rebooting the router into the Default configuration from the web browser.

Default Mode: Bridge	Login Name: admin
	Password: admin
Bridge Mode Setting	WAN and ADSL
Ethernet (local) IP: 192.168.1.1	Local Line Code: Auto
Subnet Mask: 255.255.255.0	Trellis Mode: Enable
Full Duplex: Auto	FDM Mode: Fdm
Protocol: RFC1483, Bridge Mode	Coding Gain: Auto
VPI/VCI: 8/35	Transmit Power Attenuation: 0dB
Class (QoS): UBR	
Spanning Tree: Disable	
Packet Filter: Any	
Router Mode Setting	DHCP Server: Disable
Ethernet (local) IP: 192.168.1.1	DNS Relay: Disable
Subnet Mask: 255.255.255.0	

Note: The User Name and Password are case-sensitive.

VIII. Software Upgrade

You may easily upgrade **X8121r** embedded software by obtaining the compressed upgrade kit from the service provider then following the steps:

- ✓ Extract the ZIP file for updated firmware.
- ✓ Connect **X8121r** via the local Ethernet port or remote ADSL link. Make sure that **X8121r** Ethernet IP address and your terminal are properly configured, then you can successfully “ping” **X8121r**. The default local IP address is 192.168.1.1.
- ✓ Under DOS prompt, execute the **FTP** command “**open <IP address of X8121r>**”, then input user name and password.
- ✓ Execute upload command “**put tepatch.bin**”.
- ✓ This upgrading process may last as long as 60 seconds.
- ✓ Then reboot to the default values of **X8121r** with new software.

Note 1: **X8121r** software may also be upgraded through the web interface. See *Chapter 2: G. Admin, 3. Image Upgrade*

Note 2: Strictly maintain stable power to **X8121r** while upgrading its software. If the power fails during the upgrading process, contents in the memory could be destroyed, and the system may hang. In such a case, you must call the dealer or system integrator for repairs.

Chapter 2

Web Interface Management

I. Overview

The Web management is provided in order to manage the ADSL device as easily as possible. It provides a very user-friendly configuration and graphical interface through a Web based platform. You can configure a bridge or a router, as you feel appropriate. In the section below, each configuration item is described in detail.

II. Preparation

- 1) Please refer the hardware installation procedure to install modem.
- 2) You should configure the PC to the same IP subnet as the modem.
For example: The modem: 192.168.1.1
Your PC: 192.168.1.x
- 3) Let your PC access the modem, and make sure that the PING function is working properly. The default IP address of this modem could be found in the default settings section.
- 4) Open the Web browser (Internet explorer or Netscape), enter the default IP address "**192.168.1.1**" for the website address to access the web management page.
- 5) The **Login** dialog box will pop up first.

III. Login

- ▶ The window **Enter Network Password** will pop up while starting the configuration. With the window open, type **admin** for both the **Username** and the **Password**. You can also edit the Username and Password or add new users. (For further details, see **G. Admin: 1. User Config**)



- ▶ After you log into the web interface, you will notice that it is divided into seven different sections, or tabs. From this point on, each tab is described in detail along with instructions for configuration. The seven tabs are:
 - A. Home
 - B. LAN
 - C. WAN
 - D. Bridging
 - E. Routing
 - F. Services
 - G. Admin

A. HOME

- ▶ After logging in, the first tab that will be displayed is the **Home** tab. Under this tab, the **System View** page is displayed. This page displays a summary of the interfaces and their settings.

Home
LAN
WAN
Bridging
Routing
Services
Admin

Home | System Mode | Quick Configuration

System View

Use this page to get the summary on the existing configuration of your device.

Device		DSL			
Model:	Titanium	Operational Status:			
H/W Version:	81001a	Last State:		0x0	
S/W Version:	3.51XAT1.8121A/138030331a3	DSL Version:		Y1.4.1	
Serial Number:	xxxxxxxxxxxxxx	Standard:		Multimode	
Mode:	Routing And Bridging	Up		Down	
Up Time:	0:42:30	Speed	Latency	Speed	Latency
Time:	Thu Jan 01 00:42:30 1970	0 Kbps	-	0 Kbps	-
Time Zone:	GMT				
Daylight Saving Time:	OFF				
Name:	-				
Domain Name:	-				

WAN Interfaces							
Interface	Encapsulation	IP Address	Mask	Gateway	Lower Interface	VPI/VCI	Status
eo0-0	Bridged	0.0.0.0	0.0.0.0	0.0.0.0	aal5-0	0/32	
eo0-1	Bridged	0.0.0.0	0.0.0.0	0.0.0.0	aal5-1	0/35	
eo0-2	Bridged	0.0.0.0	0.0.0.0	0.0.0.0	aal5-2	0/100	
eo0-3	Bridged	0.0.0.0	0.0.0.0	0.0.0.0	aal5-3	8/81	
eo0-4	Bridged	0.0.0.0	0.0.0.0	0.0.0.0	aal5-4	8/35	

LAN Interface							
Interface	Mac Address	IP Address	Mask	Lower Interface	Speed	Duplex	Status
eth-0	00:01:38:11:BE:EB	192.168.10.99	255.255.255.0	-	100BT	Full	

Services Summary							
Interface	NAT	IP Filter	RIP	DHCP Relay	DHCP Client	DHCP Server	IGMP
eth-0	✓ inside	✗	✗	✗	✗	✗	✗
eo0-0	✓ outside	✗	✗	✗	✗	✗	✗
eo0-1	✓ outside	✗	✗	✗	✗	✗	✗
eo0-2	✓ outside	✗	✗	✗	✗	✗	✗
eo0-3	✓ outside	✗	✗	✗	✗	✗	✗
eo0-4	✓ outside	✗	✗	✗	✗	✗	✗

Modify
Refresh
Help

- ▶ This page is divided into five sections. The table below describes each section.

Section Name	Description
Device	Displays model name, hardware/software version, device mode, uptime, current time, time zone, daylight savings time, and domain name.
DSL	Displays operation status, last state, DSL version, and DSL standard.
WAN Interface	Displays the WAN interface name, encapsulation type, IP address, subnet mask, lower interface, VPI/VCI values, and operational status.
LAN Interface	Displays the LAN interface name, MAC address, IP address, subnet mask, lower interface, transmission speed, duplex type and operational status.
Services Summary	Displays the interface name, and enabled/disabled features, such as: NAT, IP filter, RIP, DHCP relay, DHCP client, DHCP server, and IGMP.

- ▶ To add, change, or remove any of the interface settings, click on the interface name.
- ▶ Click on the **Modify** button to set the device date, time, time zone, and other related settings. Click on the **Submit** button when completed.

System - Modify

System Parameters	
Date:	<input type="checkbox"/> Jan 1 1970
Time:	<input type="checkbox"/> 0 : 8 : 54
Time Zone:	GMT +0000 Greenwich Mean
Daylight Saving Time:	<input type="radio"/> ON <input checked="" type="radio"/> OFF
Name:	<input type="text"/>
Domain Name:	<input type="text"/>

B. LAN

Click on the **LAN** tab to view its sub-menu's and configure the LAN settings. The four sub-menu's are: LAN Config, DHCP Mode, DHCP Server, and DHCP Relay. Each sub-menu is described below.



1. LAN Config

Click on the **LAN Config** link to change the LAN IP address/subnet mask, decide where the LAN is getting its IP address from, and enable or disable IGMP. Follow the steps below in order to set up the LAN.

- I. *Get LAN Address:* Select **Manual** if you would like to enter your own IP address. Select **External DHCP Server** if a DHCP server other than this device assigns the IP addresses. Select **Internal DHCP Server** if you would like this device to assign the IP addresses.
- II. *LAN IP Address:* Enter the LAN IP address into these text boxes.
- III. *LAN Network Mask:* Enter the subnet mask of the LAN IP address into these text boxes.
- IV. *IGMP:* Depending on your ISP's settings, choose to enable or disable IGMP.
- V. Click on the **Submit** button when completed.

LAN Configuration

to set the LAN configuration, which determines how your device is identified

LAN Configuration	
System Mode:	Routing And Bridging
Get LAN Address:	<input checked="" type="radio"/> Manual <input type="radio"/> External DHCP Server <input type="radio"/> Internal DHCP Server
LAN IP Address:	<input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="1"/> <input type="text" value="1"/>
LAN Network Mask:	<input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="0"/>
IGMP:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

2. DHCP Mode

Click on the **DHCP Mode** link to select a DHCP setting. From the drop down list, select **DHCP Server**, **DHCP Relay**, or **None**. Click on the **Submit** button when completed.

LAN Config | DHCP Mode | DHCP Server | DHCP Relay

Dynamic Host Configuration Protocol (DHCP) Configuration

and configure the Dynamic Host Configuration Protocol mode for your device. With DHCP, IP addresses are dynamically assigned and distributed as needed by this device or an ISP device. See help for a detailed explanation.

DHCP Mode:

3. DHCP Server

Click on the **DHCP Server** link to view the DHCP Server settings. The table displays the DHCP server settings, this includes: start IP, end IP, domain name, gateway address, and status. Click on the **Add** button to enable a DHCP server and fill in the IP information based on your ISP settings.

LAN Config | DHCP Mode | DHCP Server | DHCP Relay

Dynamic Host Configuration Protocol (DHCP) Server Configuration

page if you are using the device as a DHCP server. This page lists the IP address pools available to computers on your network. The device distributes numbers in the pool to devices on your network as they request Internet access.

Start IP Address	End IP Address	Domain Name	Gateway Address	Status	Action(s)
No DHCP Server Pool!					

4. **DHCP Relay**

Click on the **DHCP Relay** link to view the DHCP Relay settings. Fill in the DHCP server IP address in the text boxes and select an interface name from the drop down list, then click on the **Add** button to complete the DHCP Relay configuration.

LAN Config | DHCP Mode | DHCP Server | DHCP Relay

Dynamic Host Configuration Protocol (DHCP) Relay Configuration

...t, when a computer request Internet access, the device requests an IP address from you ... to the computers. This table lists each interface on the device that relays data from your IP ... port is listed.

DHCP Server Address:

Interfaces Running DHCP Relay	Action
No Interface Running DHCP Relay!	
<input type="text" value="eth-0"/>	<input type="button" value="Add"/>

C. WAN

Click on the **WAN** tab to view its sub-menu's and configure the WAN settings. The five sub-menu's are: DSL, ATM VC, PPP, EOA, and IPOA. Each sub-menu is described below.



1. **DSL**

- ▶ Click on the **DSL** link to view the DSL status. Click on the **DSL Param** button to view the DSL parameters and the **Stats** button to view the DSL statistics. Both the **DSL Parameters** and **DSL Statistics** are described below.
- ▶ Click on the **Clear** button to clear and refresh the DSL status. You may also change the page refresh rate by selecting a different time period from the **Refresh Rate** drop down list.

DSL | ATM VC | PPP | EOA | IPDA

DSL Status

This page displays DSL Status Information

Refresh Rate:

DSL Status		Counters		Local		Remote	
Operational Status:	Startup Handshake <input type="button" value="Loop Stop"/>	FEC:	CRC:	NCD:	OCN:	HEC:	SEF:
Last Failed Status:	0x0	Local	Remote	Intrlvd	Fast	Intrlvd	Fast
Startup Progress:	0xA0	0	0	0	0	0	0
		0	0	0	0	0	0
		0	0	0	0	0	0
		0	0	0	0	0	0
		0	0	0	0	0	0
		0	0	0	0	0	0
		0	0	0	0	0	0

a) DSL Parameters

Click on the **DSL Param** button to view the DSL parameters. Another window will then display the DSL parameters, which may be different due to the type and speed of the network. Click on the **Close** button to close the window, or click on the **Refresh** button to refresh the status.

DSL Parameter

DSL Parameters and Status		Config Data		Up		Down	
Vendor ID:	00B5GSPN	AS0(kbps):	AS1(kbps):	Intrlvd	Fast	Intrlvd	Fast
Revision Number:	Y1.4.1	LS0(kbps):	LS1(kbps):	-	-	0	0
Serial Number:	xxxxxxxxxxxxxxx	RValue:	SValue:	-	-	0	0
Local Tx Power:	0.0 dB	DValue:		0	0	0	0
Remote Tx Power:	0.0 dB	Self Test:		0	0	0	0
Local Line Atten.:	0.5 dB	DSL Standard:		0	0	0	0
Remote Line Atten.:	0.5 dB	Trellis Coding:		0	0	0	0
Local SNR Margin:	0.0 dB	Framing Structure:		0	0	0	0
Remote SNR Margin:	0.0 dB			0	0	0	0
Self Test:	Passed			0	0	0	0
DSL Standard:	T1.413			0	0	0	0
Trellis Coding:	Disable			0	0	0	0
Framing Structure:	Framing-0			0	0	0	0

b) DSL Stats

Click on the **Stats** button to view the DSL status. Another window will then display the DSL status, which may be different due to the type and speed of the network. Click on the **Close** button to close the window, or click on the **Refresh** button to refresh the status.

DSL Statistics

No. of 15 Min. Valid Data Intervals: 1
No. of 15 Min. Invalid Data Intervals: 0

Current 15-Min Interval Statistics	
<i>Elapsed Time(MM:SS):</i>	6:58
<i>Errored Seconds:</i>	5
<i>Severely Errored Seconds:</i>	0
<i>Unavailable Seconds:</i>	0
Current Day Statistics	
<i>Elapsed Time(HH:MM:SS):</i>	0:21:58
<i>Errored Seconds:</i>	17
<i>Severely Errored Seconds:</i>	0
<i>Unavailable Seconds:</i>	0
Previous Day Statistics	
<i>Monitored Time(HH:MM:SS):</i>	0:0:0
<i>Errored Seconds:</i>	0
<i>Severely Errored Seconds:</i>	0
<i>Unavailable Seconds:</i>	0

Detailed Interval Statistic (Past 24 hrs)					
1-4	5-8	9-12	13-16	17-20	21-24

Close	Refresh	Help
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2. ATM VC

- ▶ Click on the **ATM VC** link to view the ATM VC table. This table displays the interface name, VPI/VCI values, Mux type, and maximum protocols per AAL5.
- ▶ Click on the **trash can** icon to delete the current interface, or edit the current interface by clicking on the **pencil** icon.
- ▶ Click on the **Add** button to another interface.

DSL | ATM VC | PPP | EDA | IPOA

ATM VC Configuration

This page is used to view and configure ATM VCs

Interface	VPI	VCI	Mux Type	Max Proto per AAL5	Action(s)
aal5-0	0	32	LLC	2	
aal5-1	0	35	LLC	2	
aal5-2	0	100	LLC	2	
aal5-4	8	35	LLC	2	
aal5-3	8	81	LLC	2	

Add Refresh Help

- ▶ After you click on the **Add** button, another window will pop-up. First select a VC interface from the drop down list. Then enter the VPI, VCI values into the text box. Select a Mux type from the drop down list, and then enter the number of protocols per AAL5 in the text box.
- ▶ Click on the **Submit** button when completed.

ATM VC - Add

Basic Information

VC Interface: aal5-1

VPI:

VCI:

Mux Type: LLC

Max Proto per AAL5: 2

Submit Cancel Help

3. Point to Point Protocol (PPP)

- ▶ Click on the **PPP** link to view the PPP configuration table. This table displays PPP information such as: interface name, interface type, protocol, WAN IP, gateway IP, default route, DHCP, DNS, and operation status.
- ▶ Click on the **trash can** icon to delete the current interface, or edit the current interface by clicking on the **pencil** icon.
- ▶ Click on the **Add** button to another interface.

DSL | ATM VC | PPP | EDA | IPOA

Point to Point Protocol (PPP) Configuration

This page is used to Configure and View PPP interfaces.

Inactivity TimeOut(mins) for startondata PPP Interfaces:

Ignore WAN to LAN traffic while monitoring inactivity:

Interface	VC	Interface Sec Type	Protocol	WAN IP	Gateway IP	Default Route	Use DHCP	Use DNS	Oper. Status	Action
No PPP Interface Entry!										

- ▶ After you click on the **Add** button, another window will pop-up.

PPP Interface - Add

Basic Information	
<i>PPP Interface:</i>	<input type="text" value="ppp-0"/>
<i>ATM VC:</i>	<input type="text" value="aal5-0"/>
<i>Interface Sec Type:</i>	<input type="text" value="Public"/>
<i>Status:</i>	<input type="text" value="Start"/>
<i>Protocol:</i>	<input type="radio"/> PPPoA <input checked="" type="radio"/> PPPoE
<i>Service Name:</i>	<input type="text"/>
<i>Use DHCP:</i>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<i>Use DNS:</i>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<i>Default Route:</i>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Security Information	
<i>Security Protocol:</i>	<input checked="" type="radio"/> PAP <input type="radio"/> CHAP
<i>Login Name:</i>	<input type="text"/>
<i>Password:</i>	<input type="text"/>

- ▶ The following is a list of field names and their descriptions. After filling in the table click on the **Submit** button when completed.

Field Name	Description
PPP Interface	Select an interface name from the drop down list.
ATM VC	Select an ATM VC from the drop down list.

Interface Sec Type	Select between public, private, or DMZ.
Status	Select start, stop, or start on data.
Protocol	Select between PPPoA or PPPoE.
Service Name	Enter a name for this service in the text box.
Use DHCP	Select between enable or disable.
Use DNS	Select between enable or disable.
Default Route	Select between enable or disable.
Security Protocol	Select between PAP or CHAP.
Login Name	Enter the username for this service.
Password	Enter the password for this service.

4. *Ethernet over ATM (EoA)*

- ▶ Click on the EOA link to view the RFC1483/EoA configuration table. This table displays EoA information such as: interface name, interface security type, lower interface, config IP, network IP, DHCP, default route, gateway IP, and status.
- ▶ Click on the **trash can** icon to delete the current interface, or edit the current interface by clicking on the **pencil** icon.
- ▶ Click on the **Add** button to add another interface.

The screenshot shows a web interface for configuring RFC1483/Ethernet over ATM (EoA). The navigation menu includes Home, LAN, WAN, Bridging, Routing, Services, and Admin. The current page is titled "RFC1483/Ethernet over ATM(EoA) Config" and includes a sub-menu: DSL | ATM VC | PPP | EOA | IPDA. A message states: "This Page is used to View, Add, Modify and Delete EOA Interfaces." Below this is a table with the following data:

Interface	Interface Sec Type	Lower Interface	Config IP Address	Netmask	Use DHCP	Default Route	Gateway Address	Status	Action
eo-a-0	Public	aal5-0	0.0.0.0	0.0.0.0	Disable	Disable	0.0.0.0		
eo-a-1	Public	aal5-1	0.0.0.0	0.0.0.0	Disable	Disable	0.0.0.0		
eo-a-2	Public	aal5-2	0.0.0.0	0.0.0.0	Disable	Disable	0.0.0.0		
eo-a-3	Public	aal5-3	0.0.0.0	0.0.0.0	Disable	Disable	0.0.0.0		
eo-a-4	Public	aal5-4	0.0.0.0	0.0.0.0	Disable	Disable	0.0.0.0		

At the bottom of the page, there are three buttons: **Add**, **Refresh**, and **Help**.

- ▶ After you click on the **Add** button, another window will pop-up.

EOA Interface - Add

EOA Information	
<i>EOA Interface:</i>	<input type="text" value="eoa-5"/>
<i>Interface Sec Type:</i>	<input type="text" value="Public"/>
<i>Lower Interface:</i>	<input type="text" value="aal5-0"/>
<i>Conf. IP Address:</i>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
<i>Netmask:</i>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
<i>Use DHCP:</i>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<i>Default Route:</i>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
<i>Gateway IP Address:</i>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

- ▶ The following is a list of field names and their descriptions. After filling in the table click on the **Submit** button when completed.

Field Name	Description
EoA Interface	Select an interface name from the drop down list.
Interface Sec Type	Select between public, private, or DMZ.
Lower Interface	Select a lower interface name from the drop down list.
Conf IP Address	Enter the LAN IP address here.
Netmask	Enter the subnet mask here.
Use DHCP	Select between enable or disable.
Default Route	Select between enable or disable.
Gateway IP Address	Enter the gateway IP address here.

5. IP over ATM (IPoA)

- ▶ Click on the IPoA link to view the IP over ATM configuration table. This table displays IPoA information such as: interface name, interface security type, lower interface, config IP, network IP, subnet mask gateway IP, and status.
- ▶ Click on the **trash can** icon to delete the current interface, or edit the current interface by clicking on the **pencil** icon.
- ▶ Click on the **Add** button to add another interface.

- ▶ After you click on the **Add** button, another window will pop-up.
- ▶ The following is a list of field names and their descriptions. After filling in the table click on the **Submit** button when completed.

Field Name	Description
IPoA Interface	Select an interface name from the drop down list.
Conf IP Address	Enter the LAN IP address here.
Interface Sec Type	Select a lower interface name from the drop down list.
Netmask	Enter the subnet mask here.
RFC 1577	Select between Yes or No to use RFC 1577.
Use DHCP	Select between enable or disable.
Default Route	Select between enable or disable.
Gateway IP Address	Enter the gateway IP address here.

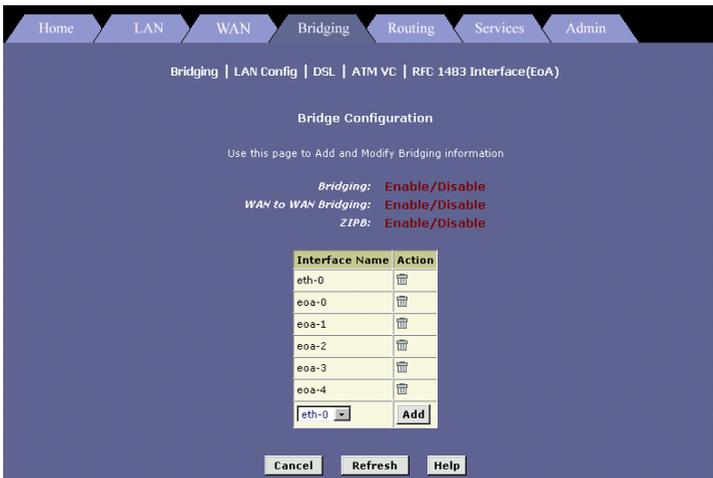
D. Bridging

Click on the **Bridging** tab to view its sub-menu's and configure the bridge settings. The six sub-menu's are: Bridging, LAN Config, DSL, ATM VC, and RFC 1483 Interface (EoA). The bridging sub-menu is described below. (*Each of the other sub-menus is described in the earlier sections.*)



1. Bridging

- ▶ Click on the Bridging link to view the Bridge configuration. This table displays bridge information such as: interface name.
- ▶ Click on the **trash can** icon to delete the current interface, or edit the current interface by clicking on the **pencil** icon.
- ▶ There are three radio buttons on this page. In order to use bridging, you must enable **Bridging** and **WAN to WAN Bridging**.
- ▶ Click on the **Submit** button when completed.



E. Routing

Click on the **Routing** tab to view its sub-menu's and configure the routing settings. The eight sub-menu's are: IP route, IP address, LAN Config, DSL, ATM VC, PPP, EoA, and IPoA. The IP route sub-menu is described below. (Each of the other sub-menus is described in the earlier sections.)



1. IP Route

- ▶ Click on the IP Route link to view the IP route table. This table displays IP route information such as: destination, net mask, next hop, interface name, route type and route origin. This table lists IP addresses of Internet destinations commonly accessed by your network. When a computer requests to send data to a listed destination, the device uses the Next Hop to identify the first Internet router it should contact to route the data most efficiently.
- ▶ Click on the **trash can** icon to delete the current destination or click on the **Add** button to add another destination.

IP Route Table

This table lists IP addresses of Internet destinations commonly accessed by your network. When a computer requests to send data to a listed destination, the device uses the Next Hop to identify the first Internet router it should contact to route the data most efficiently.

Destination	Netmask	NextHop	IF Name	Route Type	Route Origin	Action
127.0.0.0	255.0.0.0	127.0.0.1	lo-0	Direct	Dynamic	
192.168.10.0	255.255.255.0	192.168.10.99	eth-0	Direct	Dynamic	
192.168.10.99	255.255.255.255	127.0.0.1	lo-0	Direct	Dynamic	

- ▶ After you click on the **Add** button, another window will pop-up.

- ▶ The following is a list of field names and their descriptions. After filling in the table click on the **Submit** button when completed.

Field Name	Description
Destination	Enter the destination IP address of the router.
Netmask	Enter the subnet mask of the IP address.
Gateway/Next Hop	Enter the IP address of the gateway or the next router hop

F. Services

Click on the **Services** tab to view its sub-menu's and configure the service settings. The six sub-menu's are: NAT, RIP, Firewall, IP filter, DNS, and Blocked Protocols. Each one is described in detail below.



1. NAT

- ▶ Click on the NAT link to view the NAT global information table. The table displays the idle times for several protocols; you may change the times and click on the **Submit** button.
- ▶ The NAT feature offers three sections. First, click on the **Enable** radio box, to enable the NAT feature. Then select a NAT option from the drop down list.

- ▶ The three options are: NAT Global Info, NAT Rule Entry, and NAT translations. Each one is described below.

a) NAT Global Info

The table displays the idle times for several protocols; you may change the times and then click on the **Submit** button.

NAT Global Information	
TCP Idle Timeout(sec):	86400
TCP Close Wait(sec):	60
TCP Def Timeout(sec):	60
UDP Timeout(sec):	300
ICMP Timeout(sec):	5
GRE Timeout(sec):	300
ESP Timeout(sec):	300
Default Nat Age(sec):	240
NAPT Port Start:	50000
NAPT Port End:	51023

Buttons: Submit, Global Stats, Cancel, Refresh, Help

b) NAT Rule Entry

- ▶ The table displays NAT rule configuration. Click on the **trash can** icon to delete the current rule or click on the **Add** button to add another rule.

Network Address Translation (NAT) Rule Configuration

Each row in the table lists a rule for translating addresses. See Help for instructions on creating NAT rules.

NAT Options: NAT Rule Entry

Rule ID	IF Name	Rule Flavor	Protocol	Local IP From	Local IP To	Action
1	ALL	NAPT	ANY	0.0.0.0	255.255.255.255	Stats

Buttons: Add, Refresh, Help

- ▶ After you click on the **Add** button, another window will pop-up.

NAT Rule - Add

NAT Rule Information	
Rule Flavor:	RDR
Rule ID:	
IF Name:	ALL
Protocol:	ANY
Local Address From:	
Local Address To:	
Global Address From:	0 0 0 0
Global Address To:	0 0 0 0
Destination Port From:	Any other port 0
Destination Port To:	Any other port 65535
Local Port:	Any other port 0

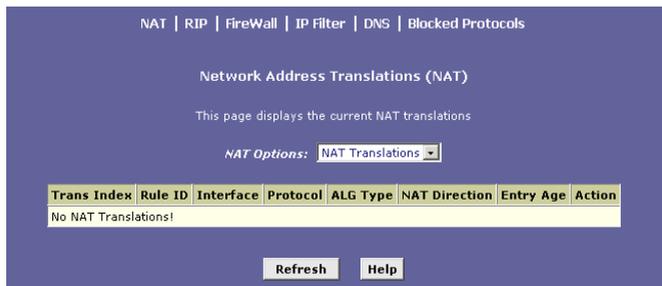
- ▶ The following is a list of field names and their descriptions. After filling in the table click on the **Submit** button when completed.

Field Name	Description
Rule Flavor	Select a rule from the drop down list.
Rule ID	Enter a rule ID into this text box.
IF Name	Select an interface name from the drop down list.
Protocol	Select a protocol from the dorp down list.
Local Address From	Enter a local IP address from where NAT will be used.
Local Address To	Enter a local IP address to where NAT will be used.
Global Address From	Enter an Internet IP address from where NAT will be used.
Global Address To	Enter an Internet IP address to where NAT will be used.
Destination Port From	Select a destination port from the drop

	down list, or enter it into the text box.
Destination Port To	Select a destination port from the drop down list, or enter it into the text box.
Local Port	Select a local port from the drop down list, or enter it into the text box.

c) NAT Translations

- ▶ The table displays the current NAT translations, if any exist.
- ▶ Click on the **trash can** icon to delete a translation or click on the **Refresh** button to refresh the page.



2. RIP

- ▶ Click on the RIP link to view the Routing Information Protocol (RIP) Configuration table. Routers on your LAN communicate with one another using the Routing Information Protocol. This table lists any interfaces on your device that use RIP (typically the LAN interface), and the version of the protocol used. In order to add a RIP configuration, follow the steps below:
 - a. First, click on the **Enable** radio box, to enable the RIP configuration
 - b. Select an **interface name** from the drop down list.
 - c. Enter the number of router hops into the **metric** text box
 - d. Select a send mode from the drop down list.
 - e. Select a receive mode from the drop down list.
 - f. Click on the **add** button
- ▶ Click on the **trashcan** icon to delete a RIP interface
- ▶ Click on the **Global Stats** icon to view the NAT statistics. This table will open in a new window.

NAT | RIP | FireWall | IP Filter | DNS | Blocked Protocols

Routing Information Protocol (RIP) Configuration

our LAN communicate with one another using the Routing Information Protocol. This table lists any interface device that use RIP (typically the LAN interface), and the version of the protocol used.

Enable
 Disable

Age(seconds):

Update Time(seconds):

IF Name	Metric	Send Mode	Receive Mode	Action
No Rip Entries!				
<input type="text" value="eth-0"/>	<input type="text" value="1"/>	<input type="text" value="RIP1COMPAT"/>	<input type="text" value="RIP1"/>	<input type="button" value="Add"/>

3. Firewall

- ▶ Click on the Firewall link to view the Firewall Configuration table. The Firewall adds security to your network by protecting it from Internet intruders.

NAT | RIP | FireWall | IP Filter | DNS | Blocked Protocols

Firewall Global Configuration

Blacklist Status:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Blacklist Period(min):	<input type="text" value="10"/>
Attack Protection:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
DOS Protection:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Max Half open TCP Conn.:	<input type="text" value="25"/>
Max ICMP Conn.:	<input type="text" value="25"/>
Max Single Host Conn.:	<input type="text" value="75"/>
Log Destination:	<input type="checkbox"/> Email <input checked="" type="checkbox"/> Trace
E-Mail ID of Admin 1:	<input type="text"/>
E-Mail ID of Admin 2:	<input type="text"/>
E-Mail ID of Admin 3:	<input type="text"/>

- ▶ The following is a list of field names and their descriptions. After filling in the table click on the **Submit** button

Field Name	Description
Blacklist Status	Select enable or disable blacklist.
Blacklist Period	Enter a time period to hold the blacklist.
Attack Protection	Select enable or disable Attach protection.
DOS Protection	Select enable or disable DoS protection.
Max half open TCP Conn.	Enter the maximum number of TCP connections.
Max ICMP Conn.	Enter the maximum number of ICMP connections.
Max Single Host Conn.	Enter the maximum number of host connections.
Log Destination	Select a destination for the log file.
Email ID of admin	Enter the email addresses of up to three administrators.

4. **IP Filter**

- ▶ Click on the **IP Filter** link to view the IP Filter Configuration table. In order to configure the IP filter function, follow the steps below:
 - a. Select a **security level** from the drop down list. The options available are: Low, Medium, and High.
 - b. Select if you would like to accept or deny the **private default action**. This will apply the security level to the private domain
 - c. Select if you would like to accept or deny the **public default action**. This will apply the security level to the public domain
 - d. Select if you would like to accept or deny the **DMZ default action**. This will apply the security level to the DMZ domain

Home LAN WAN Bridging Routing Services Admin

NAT | RIP | FireWall | IP Filter | DNS | Blocked Protocols

IP Filter Configuration

This Page is used to View and Modify IP Filter Global and Rule Configuration.

Security Level: Public Default Action:

Private Default Action: DMZ Default Action:

Rule ID	I/F	Apply Stateful Inspection	Direction	Rule Action	In I/F	Log Option	Rule Description	Oper. Status	Action (s)
No IP Filter Rules!									

Submit Cancel Add Session Refresh Help

- ▶ Click on the **Session** to view the IP filter sessions.
- ▶ You may delete a session by clicking on the **trash can** icon.
- ▶ Click on the **Close** button to close the window.

IP Filter Session

Session Index	Time to expire	Protocol	I/F	IP Address	Port	In Rule Index	In Action	Out Rule Index	Out Action	Act (s)
1	3	UDP	eth-0 Self	192.168.10.235 192.168.10.255	138 138	0 0	Accept Unknown	0 0	Unknown Unknown	
15	164	UDP	eth-0 Self	0.0.0.0 255.255.255.255	68 67	0 0	Accept Unknown	0 0	Unknown Unknown	
17	164	UDP	eth-0 Self	192.168.10.113 255.255.255.255	67 68	0 0	Accept Unknown	0 0	Unknown Unknown	
20	175	UDP	eth-0 Self	192.168.10.111 255.255.255.255	68 67	0 0	Accept Unknown	0 0	Unknown Unknown	
21	154	UDP	eth-0 Self	192.168.10.1 255.255.255.255	68 67	0 0	Accept Unknown	0 0	Unknown Unknown	
66	86400	TCP	eth-0 Self	192.168.10.54 192.168.10.99	1511 80	0 0	Accept Unknown	0 0	Accept Unknown	
67	86388	TCP	eth-0 Self	192.168.10.54 192.168.10.99	1510 80	0 0	Accept Unknown	0 0	Accept Unknown	

Close Refresh Help

- ▶ To add an IP filter rule, click on the **Add** button .The table will pop-up in a new window.

IP Filter Rule - Add			
<input checked="" type="radio"/> Enable <input type="radio"/> Disable			
Basic Information			
Rule ID:	<input type="text"/>	Action:	<input type="radio"/> Accept <input checked="" type="radio"/> Deny
Direction:	<input type="radio"/> Incoming <input checked="" type="radio"/> Outgoing	Interface:	ALL ▾
In Interface:	ALL ▾	Log Option:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Security Level:	<input type="checkbox"/> High <input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low	Blacklist Status:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Log Tag:	<input type="text"/>		
Start Time (HH MM SS):	00 00 00	End Time (HH MM SS):	23 59 59
Src IP Address:	any ▾ 0 0 0 0 0 0 0 0 <input type="text"/>		
Dest IP Address:	any ▾ 0 0 0 0 0 0 0 0 <input type="text"/>		
Protocol:	any ▾ TCP ▾		
Apply Stateful Inspection:	<input type="checkbox"/>		
Source Port:	any ▾	Any other port ▾ 0	Any other port ▾ 0
Dest Port:	any ▾	Any other port ▾ 0	Any other port ▾ 0
TCP Flag:	All ▾		
ICMP Type:	any ▾ Echo Reply ▾		
ICMP Code:	any ▾ 0		
IP Frag Pkt:	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Ignore	IP Option Pkt:	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Ignore
Packet Size:	any ▾ 0		
TOD Rule Status :	<input checked="" type="radio"/> Enable <input type="radio"/> Disable		
<input type="button" value="Submit"/> <input type="button" value="Cancel"/> <input type="button" value="Help"/>			

- The following is a list of field names and their descriptions. After filling in the table click on the **Submit** button

Field Name	Description
Rule ID	Enter a Rule ID.
Direction	Select an <i>incoming</i> or <i>outgoing</i> direction.

In Interface	Select an incoming interface from the drop down list.
Security Level	Select a security level: <i>high</i> , <i>medium</i> , or <i>low</i> .
Log Tag	Enter a name for the log.
Start Time	Enter a start time for the IP filter.
Action	Select <i>accept</i> or <i>deny</i> incoming IPs.
Interface	Select an outgoing interface from the drop down list.
Log Option	Select to <i>enable</i> or <i>disable</i> logging.
Blacklist status	Select to <i>enable</i> or <i>disable</i> the blacklist.
End time	Select an end time for the IP filter.
Src IP Address	Enter the source IP address range.
Dest IP Address	Enter the destination IP address range.
Protocol	Select a protocol from the drop down list.
Apply Stateful Inspection	Check this box if you would like to enable <i>Stateful</i> Inspection. If you decide to use Stateful Inspection, you must supply the source/destination port, TCP flag, ICMP type, and ICMP code.
IP Frag Pkt	Select <i>Yes</i> , <i>No</i> , or <i>Ignore</i> packet fragmenting.
Packet Size	Enter the packer size into the text box, or select <i>any</i> from the drop down list.
TOD Rule Status	Select to <i>enable</i> or <i>disable</i> time-out detection.

NAT | RIP | FireWall | IP Filter | DNS | Blocked Protocols

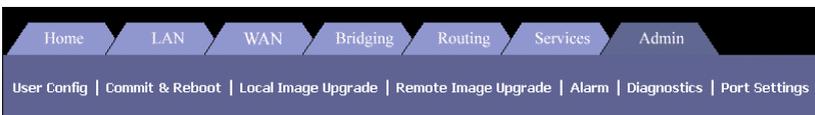
Blocked Protocols

This page is used to Block/UnBlock the protocols running across the system.

Protocol	Blocked
PPPoE	<input type="checkbox"/>
IP Multicast	<input type="checkbox"/>
RARP	<input type="checkbox"/>
AppleTalk	<input type="checkbox"/>
NetBEUI	<input type="checkbox"/>
IPX	<input type="checkbox"/>
BPDUI	<input type="checkbox"/>
ARP	<input type="checkbox"/>
IPV6 Multicast	<input type="checkbox"/>
802.1.Q	<input type="checkbox"/>

G. Admin

Click on the **Admin** tab to view its sub-menu's and configure the admin settings. The six sub-menu's are: User Config, Commit & Reboot, Local Image Upgrade, Remote Image Upgrade, Alarm, Diagnostics, and Port Settings. Each one is described in detail below.



1. User Config

- ▶ Click on the **User Config** link to view the list of users. This page displays user information. Use this page to add/delete users and change your password. Your new username and password can be up to 128 characters and is case-sensitive.
- ▶ To add a new user click on the **Add** button, or click on the **pencil** icon to edit the settings of an existing user.



- ▶ After you click on the **Add** button, another window will pop-up.

- ▶ The following information is required in order to create a new user.
- ▶ Click on the **Submit** button when completed.

Field Name	Description
User ID	Enter the username here
Privilege	Select a privilege, <i>root</i> , or <i>user</i> .
Password	Enter the password here
Confirm Password	Re-enter the password here

2. **Commit & Reboot**

- ▶ Click on the **Commit & Reboot** link to view the reboot options. This page is used to save the changes into the device's memory and reboot the device using different options.
- ▶ Click on the **Commit** button to save the changes.
- ▶ In order to reboot the device, select an option from the drop down list. The six options are:
 - a. Reboot
 - b. Reboot from default configuration
 - c. Reboot from backup configuration
 - d. Reboot from last configuration
 - e. Reboot from clean configuration
 - f. Reboot from minimum configuration
- ▶ Click on the **Reboot** button after you have made your choice.

User Config | Commit & Reboot | Image Upgrade | Alarm | Diagnostics | Port Settings

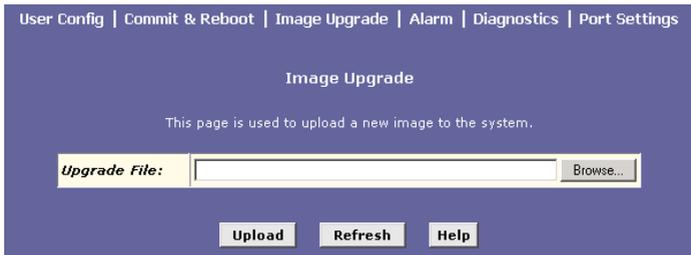
Commit & Reboot

Use this page to commit changes to system memory and reboot your system with different configurations.

Reboot Mode:

3. *Local Image Upgrade*

- ▶ Click on the **Local Image Upgrade** link to upgrade the software on the modem.
- ▶ You may easily upgrade **X8024r** embedded software by obtaining the compressed upgrade kit from the service provider and then following the steps:
 - a. Click on the **Browse** button to select the upgrade file (tepatch.bin).
 - b. Click on the **Upload** button to upload the file into the modem
 - c. This process may last as long as 60 seconds.



The screenshot shows a web interface for upgrading the modem's software. At the top, there is a navigation bar with links: "User Config", "Commit & Reboot", "Image Upgrade", "Alarm", "Diagnostics", and "Port Settings". The main heading is "Image Upgrade". Below the heading, a message states: "This page is used to upload a new image to the system." There is a form with a label "Upgrade File:" followed by a text input field and a "Browse..." button. At the bottom of the form, there are three buttons: "Upload", "Refresh", and "Help".

Note: The device software may also be upgraded through the DOS prompt. See *Chapter 1: VIII Software Upgrade* for more details.

4. Remote Image Upgrade

- ▶ Click on the **Remote Image Upgrade** link to upgrade the software on the modem.
- ▶ Enter the IP address where the software is located, the name of the software, and the User name and password of the site.

Remote Image Upgrade

This page is used to upload a new image to the system from a remote location.

IP Address:	<input type="text"/>
Upgrade File:	<input type="text"/>
Username:	<input type="text"/>
Password:	<input type="text"/>

5.

- ▶
- ▶

Alarm

shown in the table have been recorded in response to system events. See Help for a list of events that cau

Refresh Rate: No Refresh ▾

Alarms/Traps Information
Thu Jan 01 01:28:35 1970 : WARNING : ATM VC Down : Interface - aal5-0, PortId=7, Vpi=8, Vci=35
Thu Jan 01 01:28:35 1970 : MAJOR ALARM : ATM Interface Down : Interface - atm-0
Thu Jan 01 01:28:35 1970 : MAJOR ALARM : DSL Interface Down
Thu Jan 01 01:27:31 1970 : STATUS ALARM : ATM VC Up : Interface - aal5-0, PortId=7, Vpi=8, Vci=35
Thu Jan 01 01:27:31 1970 : STATUS ALARM : ATM Interface Up : Interface - atm-0
Thu Jan 01 01:27:31 1970 : STATUS ALARM : DSL Interface Up
Thu Jan 01 00:00:03 1970 : STATUS ALARM : System Up

ms
stem

6. Diagnostics

- ▶ Click on the **Diagnostics** link to test the device. Results will be displayed as *pass*, *fail*, or *N.A.*, depending on your settings.
- ▶ Click on the **Submit** button to begin the diagnostic tests.

Testing Connectivity to modem		
Testing Ethernet connection	PASS	Help
Testing ADSL line for sync	PASS	Help
Testing Ethernet connection to ATM	PASS	Help
Testing Telco Connectivity		
Testing ATM OAM segment ping	FAIL	Help
Testing ATM OAM end to end ping	FAIL	Help
Testing ISP Connectivity		
Testing PPPoE server connectivity	N.A.	Help
Testing PPPoE server session	N.A.	Help
Testing authentication with server	N.A.	Help
Validating assigned IP address 0.0.0.0	N.A.	Help
Testing Internet Connectivity		
Ping default gateway 0.0.0.0	N.A.	Help
Ping Primary Domain Name Server	N.A.	Help
Query DNS for www.globespanvirata.com	FAIL	Help
Ping www.globespanvirata.com	FAIL	Help

6. Port Settings

- ▶ Click on the **Port Settings** link to change the port settings on the device.
- ▶ Change the settings by entering the new value into the text box and click on the **Submit** button when completed.

Home
LAN
WAN
Bridging
Routing
Services
Admin

User Config
Commit & Reboot
Local Image Upgrade
Remote Image Upgrade
Alarm
Diagnostics
Port Settings

Port Settings

This page is used to modify various port settings across the system.

HTTP Port: (80, 61000-62000)	80
Telnet Port: (23, 61000-62000)	23
FTP Port: (21, 61000-62000)	21

Chapter 3

Quick Protocol Setup

Overview

This chapter provides quick steps on setting up the protocols on this device. From this point on, configuration steps are listed for each of the protocols in their respective sections. The seven sections are:

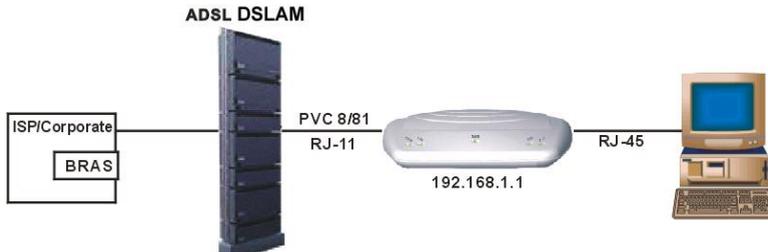
- A. RFC 1483 Bridge
- B. PPPoE Route Configuration
- C. RFC 1483 + NAT
- D. PPPoA Route Configuration
- E. IPoA Route Configuration
- F. DHCP Configuration
- G. NAT Configuration

Note: The settings/parameters listed in the next few sections only provide an example to setting up the protocols. Contact your ISP for the actual settings

A. RFC 1483 Bridge

Configuration Table:

Protocol	RFC1483 Bridge Mode.
WAN IP	The ISP assigns the IP address, or have an IP address assigned from an external/internal DHCP server.
Modem IP	192.168.1.1
Gateway IP	None.
VPI/VCI	8/81



1. Click on the **WAN** tab to view its sub-menu's and configure the WAN settings, then click on the **ATM VC** link below it.



2. You will then see the ATM VC Configuration table. Click on the **Add** button to add a new VPI/VCI setting.

The screenshot shows the 'ATM VC Configuration' page. At the top, there is a navigation bar with 'DSL | ATM VC | PPP | EDA | IPDA'. Below this, the title 'ATM VC Configuration' is displayed. A message states: 'This page is used to view and configure ATM VCs'. Below the message is a table with the following data:

Interface	VPI	VCI	Mux Type	Max Proto per AAL5	Action(s)
aal5-0	8	35	LLC	2	 

At the bottom of the page, there are three buttons: 'Add', 'Refresh', and 'Help'.

- Another window will then appear. Enter the VPI/VCI values (8/81) into the VPI and VCI text boxes. Then click on the **Submit** button to confirm the changes.

ATM VC - Add

Basic Information	
<i>VC Interface:</i>	aal5-2
<i>VPI:</i>	8
<i>VCI:</i>	81
<i>Mux Type:</i>	LLC
<i>Max Proto per AALS:</i>	2

- Click on the **EoA** link below the **WAN** tab.



- Enter the IP address and subnet mask based on your ISP settings. The default gateway is not required in RFC 1483 bridge mode. Then click on the **Submit** button to confirm the changes.

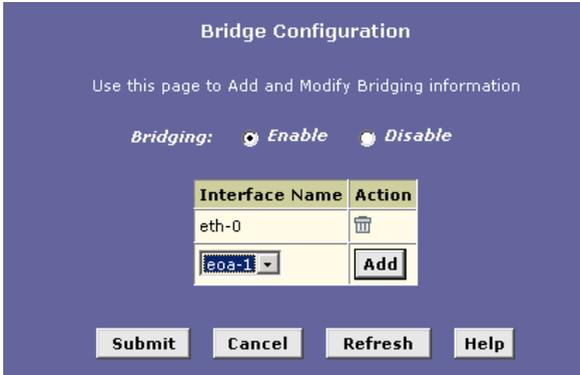
EoA Interface - Add

EoA Information	
<i>EoA Interface:</i>	eea-1
<i>Interface Sec Type:</i>	Public
<i>Lower Interface:</i>	aal5-0
<i>Conf. IP Address:</i>	0 0 0 0
<i>Netmask:</i>	0 0 0 0
<i>Use DHCP:</i>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<i>Default Route:</i>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
<i>Gateway IP Address:</i>	

- Click on the **Bridging** tab to view its sub-menu's and configure the bridging settings, then click on the **Bridging** link below it.



- Select **EOA-1** from the drop down list, and click on the **Add** button. Then click on the **Submit** button to confirm the changes.



- Click on the **Admin** tab to view its sub-menu's and configure the bridging settings, then click on the **Commit & Reboot** link below it.

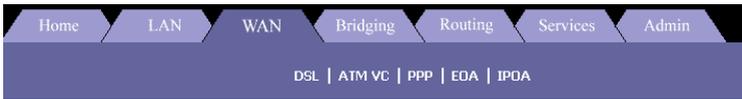


- Select the **Reboot from last configuration** option from the drop down list, and the click on the **Commit** and **Reboot** button.



B. PPPoE Route Configuration

1. Click on the **WAN** tab to view its sub-menu's and configure the WAN settings, then click on the **PPP** link below it.



2. You will then see the PPP Configuration table. Click on the **Add** button to add a new **PPPoE** setting.

PPP Interface - Add

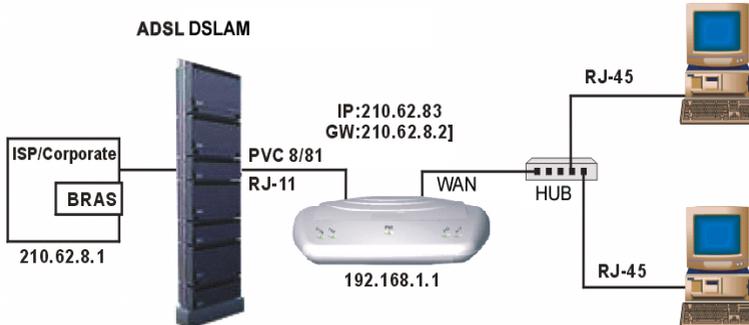
Basic Information	
PPP Interface:	<input type="text" value="ppp-1"/>
ATM VC:	<input type="text" value="aal5-0"/>
IPF Type:	<input type="text" value="Public"/>
Status:	<input type="text" value="Start"/>
Protocol:	<input type="radio"/> PPPoA <input checked="" type="radio"/> PPPoE
Service Name:	<input type="text"/>
Use Dhcp:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Use DNS:	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Default Route:	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Security Information	
Security Protocol:	<input checked="" type="radio"/> PAP <input type="radio"/> CHAP
Login Name:	<input type="text" value="user"/>
Password:	<input type="text" value="****"/>

3. Select an interface name: *PPP-1*
4. Select a protocol: *PPPoE*
5. Default Route: *Disable*
6. Security Protocol: Select *PAP* or *CHAP*
7. Login Name: Enter *username* here (from ISP)
8. Password: Enter *password* here (from ISP)
9. Click on the **Submit** button to confirm the changes.

C. RFC 1483 + NAT

Configuration Table:

Protocol	RFC1483 Mode + NAT.
LAN IP	192.168.1.xxx or assigned by DHCP server.
Modem IP	192.168.1.1
WAN IP	210.62.8.3
VPI/VC Value	8/81



1. Click on the **WAN** tab to view its sub-menu's and configure the WAN settings, then click on the **ATM VC** link below it.



2. You will then see the ATM VC Configuration table. Click on the **Add** button to add a new VPI/VC setting.

The screenshot shows the ATM VC Configuration page. The page title is "ATM VC Configuration" and it says "This page is used to view and configure ATM VCs". Below is a table with columns: Interface, VPI, VCI, Mux Type, Max Proto per AAL5, and Action(s). The table contains five rows of configuration data. At the bottom are buttons for Add, Refresh, and Help.

Interface	VPI	VCI	Mux Type	Max Proto per AAL5	Action(s)
aal5-0	0	32	LLC	2	
aal5-1	0	35	LLC	2	
aal5-2	0	100	LLC	2	
aal5-4	8	35	LLC	2	
aal5-3	8	81	LLC	2	

Buttons: **Add** **Refresh** **Help**

- Another window will then appear. Enter the VPI/VCI values (8/81) into the VPI and VCI text boxes. Then click on the **Submit** button to confirm the changes.

Basic Information	
<i>VC Interface:</i>	aal5-5
<i>VPI:</i>	
<i>VCI:</i>	
<i>Mux Type:</i>	LLC
<i>Max Proto per AAL5:</i>	2

Submit Cancel Help

- Click on the **EoA** link below the **WAN** tab.



- Enter the **IP address** and **subnet mask** based on your ISP settings.
- Enable **DHCP** and **Default Route** and click on the **Submit** button.

EOA Information	
<i>EOA Interface:</i>	eoa-5
<i>Interface Sec Type:</i>	Public
<i>Lower Interface:</i>	aal5-0
<i>Conf. IP Address:</i>	0 0 0 0
<i>Netmask:</i>	0 0 0 0
<i>Use DHCP:</i>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
<i>Default Route:</i>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
<i>Gateway IP Address:</i>	

Submit Cancel Help

- Click on the **Services** tab to view its sub-menu's and configure the **NAT** settings, then click on the **NAT** link below it.



- Select **NAT Rule Entry** from the NAT configuration drop down list. Then click on the **Add** button to add a NAT entry.

NAT Rule - Add

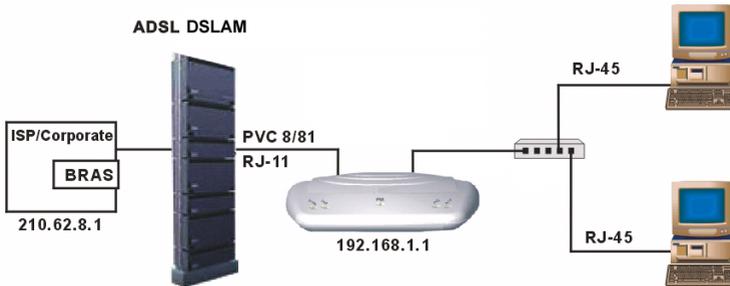
NAT Rule Information				
Rule Flavor:	BASIC ▾			
Rule ID:	1			
IF Name:	ALL ▾			
Protocol:	ANY ▾			
Local Address From:	192	168	1	1
Local Address To:	255	255	255	255
Global Address From:	210	62	8	2
Global Address To:	210	62	8	3

- Rule Flavor: Select a *Rule flavor* from the drop down list (Basic)
- Rule ID: *Enter a number here*
- Local Address From: *Address from where this device will receive IPs*
- Local Address to: *255.255.255.255 (broadcast) or other*
- Login Name: *Enter username here (from ISP)*
- Global Address From: *Global Address from where this device will receive IPs*
- Global Address From: *Global Address from where this device will send its packets*
- Click on the **Submit** button to confirm the changes.

D. PPPoA Route Configuration

Configuration Table:

Protocol	PPPoA Route Mode.
LAN IP	192.168.1.xxx
Modem IP	192.168.1.1
Gateway IP	Not required.
VPI/VCI	8/81
Username	From ISP.
Password	From ISP.



1. Click on the **Routing** tab to view its sub-menu's and configure the Routing settings, then click on the **ATM VC** link below it.



2. You will then see the ATM VC Configuration table. Click on the **Add** button to add a new VPI/VCI setting.
3. Another window will then appear. Enter the VPI/VCI values (8/81) into the VPI and VCI text boxes. Then click on the **Submit** button to confirm the changes.

The screenshot shows the ATM VC - Add configuration window. The 'VC Interface' is set to 'aal5-5', 'Mux Type' is 'LLC', and 'Max Proto per AAL5' is '2'. The 'VPI' and 'VCI' fields are empty.

Basic Information	
VC Interface:	aal5-5
VPI:	
VCI:	
Mux Type:	LLC
Max Proto per AAL5:	2

Buttons: Submit, Cancel, Help

- Click on the **PPP** link in the **Routing** tab, and then click on the **Add** button to add a **PPPoA** configuration.

PPP Interface - Add

Basic Information	
<i>PPP Interface:</i>	<input type="text" value="ppp-1"/>
<i>ATM VC:</i>	<input type="text" value="aal5-0"/>
<i>IPF Type:</i>	<input type="text" value="Public"/>
<i>Status:</i>	<input type="text" value="Start"/>
<i>Protocol:</i>	<input checked="" type="radio"/> PPPoA <input type="radio"/> PPPoE
<i>Service Name:</i>	<input type="text"/>
<i>Use Dhcp:</i>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<i>Use DNS:</i>	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<i>Default Route:</i>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Security Information	
<i>Security Protocol:</i>	<input checked="" type="radio"/> PAP <input type="radio"/> CHAP
<i>Login Name:</i>	<input type="text" value="user"/>
<i>Password:</i>	<input type="text" value="*****"/>

- Select an interface name: *PPP-1*
- Select a protocol: *PPPoA*
- Default Route: *Enable*
- Security Protocol: Select *PAP* or *CHAP*
- Login Name: Enter *username* here (from ISP)
- Password: Enter *password* here (from ISP)
- Click on the **Submit** button to confirm the changes.
- Click on the **Admin** tab to view its sub-menu's and configure the bridging settings, then click on the **Commit & Reboot** link below it.



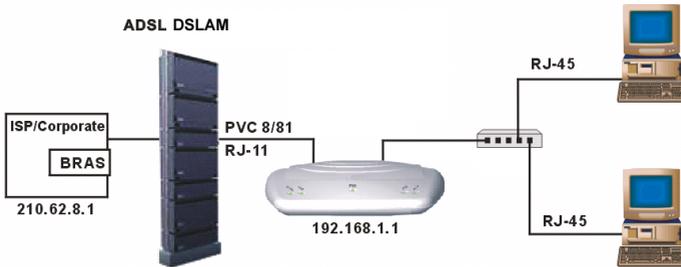
13. Select the **Reboot from last configuration** option from the drop down list, and then click on the **Commit** and **Reboot** button.



E. IPoA Route Configuration

Configuration Table:

Protocol	IPoA Route Mode
LAN IP	192.168.1.xxx
Modem IP	192.168.1.1
Gateway IP	210.62.8.1
VPI/VCI	8/81
WAN IP	210.62.8.2



1. Click on the **Routing** tab to view its sub-menu's and configure the Routing settings, then click on the **ATM VC** link below it.



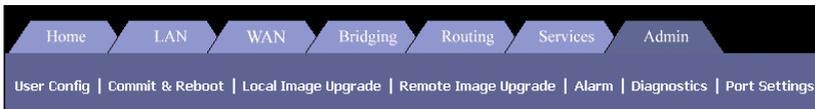
2. You will then see the ATM VC Configuration table. Click on the **Add** button to add a new VPI/VCI setting.
3. Another window will then appear. Enter the VPI/VCI values (8/81) into the VPI and VCI text boxes. Then click on the **Submit** button to confirm the changes.

ATM VC - Add

Basic Information	
VC Interface:	<input type="text" value="aal5-5"/>
VPI:	<input type="text"/>
VCI:	<input type="text"/>
Mux Type:	<input type="text" value="LLC"/>
Max Proto per AAL5:	<input type="text" value="2"/>

- Click on the **IPoA** link in the **Routing** tab, and then click on the **Add** button to add an **IPoA** configuration.

- Select an interface name: *IPoA-0*
- Conf. IP Address: *From ISP*
- Net mask: *From ISP*
- Gateway IP Address: *From ISP*
- Login Name: Enter *username* here (from ISP)
- Lower Interface: Select *aal5-0*
- Click on the **Submit** button to confirm the changes.
- Click on the **Admin** tab to view its sub-menu's and configure the bridging settings, then click on the **Commit & Reboot** link below it.



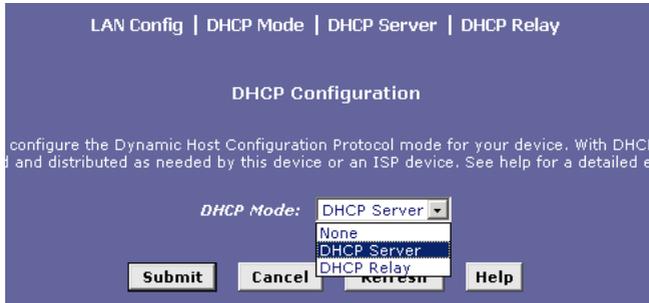
- Select the **Reboot from last configuration** option from the drop down list, and then click on the **Commit** and **Reboot** button.

F. DHCP Configuration

1. Click on the **LAN** tab to view its sub-menu's and configure the **LAN** settings, then click on the **DHCP Mode** link below it.



2. From the drop down list, select **DHCP Server**, and click on the **Submit** button.



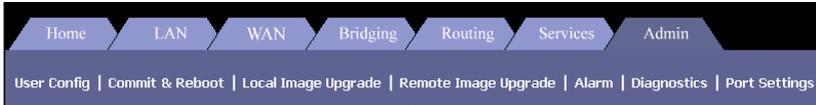
3. Click on the **DHCP Server** link under the LAN tab, and click on the **Add** button.

The screenshot shows the "DHCP Server Pool - Add" configuration form. The form has a title bar "DHCP Server Pool - Add" and a section header "DHCP Pool Information". The form contains the following fields:

DHCP Pool Information			
Start IP Address:	192	168	1 2
End IP Address:	192	168	1 13
Mac Address:	00	:00	:00 :00 :00 :00
Netmask:	255	255	255 0
Domain Name:	Pool Name		
Gateway Address:	192	168	1 1
DNS Address:	0	0	0 0
SDNS Address:	0	0	0 0
SMTP Address:	0	0	0 0
POP3 Address:	0	0	0 0
NNTP Address:	0	0	0 0
WWW Address:	0	0	0 0
IRC Address:	0	0	0 0
WINS Address:	0	0	0 0
SWINS Address:	0	0	0 0

At the bottom of the form are buttons: Submit, Cancel, and Help.

4. Start IP Address: Enter the *Start IP Address (192.168.1.2)*
5. End IP Address: Enter the *End IP Address (192.168.1.13)*
6. Net mask: *based on IP address (255.255.255.0)*
7. Domain Name: Enter a *name* here
8. Gateway IP Address: Enter a Gateway IP Address here
9. Click on the **Submit** button to confirm the changes.
10. Click on the **Admin** tab to view its sub-menu's and configure the bridging settings, then click on the **Commit & Reboot** link below it.



11. Select the **Reboot from last configuration** option from the drop down list, and then click on the **Commit** and **Reboot** button.

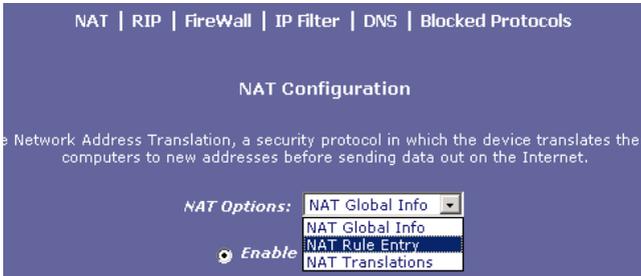


G. NAT Configuration

1. Click on the **Services** tab to view its sub-menu's and configure the **NAT** settings, then click on the **NAT** link below it.



2. From the **NAT Options** drop down list, select **NAT Rule Entry**.



3. Click on the **Add** button to add a new **NAT Rule Entry**.

A screenshot of the "NAT Rule - Add" form. The form is titled "NAT Rule - Add" and contains a table with the following information:

NAT Rule Information				
Rule Flavor:	BASIC			
Rule ID:	1			
IF Name:	ALL			
Protocol:	ANY			
Local Address From:	192	168	1	1
Local Address To:	255	255	255	255
Global Address From:	210	62	8	2
Global Address To:	210	62	8	3

At the bottom of the form, there are three buttons: Submit, Cancel, and Help.

4. Rule Flavor: Select a *Rule flavor* from the drop down list (Basic)
5. Rule ID: *Enter a number here*
6. Local Address From: *Address from where this device will receive IPs*
7. Local Address to: *255.255.255.255 (broadcast) or other*
8. Login Name: Enter *username* here (from ISP)
9. Global Address From: *Global Address from where this device will receive IPs*
10. Global Address From: *Global Address from where this device will send its packets*
11. Click on the **Submit** button to confirm the changes.

Appendix A – Specifications

A1. Hardware Specifications

- Local Interface
 - One 10/100BaseT Ethernet port, IEEE 802.3, RJ-45 connector
- WAN ADSL Line Interface
 - For ADSL over POTS, compliant with ITU G.992.1 (G.dmt) Annex A, ITU G.992.2 (G.lite), and ANSI T1.413 issue 2
 - For ADSL over ISDN, Compliant with ITU G.992.1 (G.dmt) Annex B, and ETSI TS 101 388
 - Interoperability complies with TR-48 and U-R2
 - Line Impedance: 100 Ω
 - Connection Loop: Single pair (2-wire)
 - Connector: RJ-11 for Annex A, RJ-45 for Annex B
- Indicators
 - PWR – Green LED, indicates power and operation
 - 10M – Green LED, indicates 10M Ethernet transmitting/receiving
 - 100M – Green LED, indicates 10M Ethernet transmitting/receiving
 - WAN – Green LED, indicates ADSL data link
 - ALM – Red LED, indicates data error or operation fault
- OAM&P
 - Telnet and Web GUI management
- Environment
 - Operation Temperature: 0°C ~ 45°C
 - Operation Humidity: 5% ~ 95%
 - Storage Temperature: -20 ~ +85°C
 - Storage Humidity: 5%~95%
- Power
 - AC Adapter: Input 120 VAC/60Hz or 230VAC/50Hz; Output 15VAC 1A
 - Power Consumption: Less than 10 Watts
- Physical Dimensions
 - 180mm x 143mm x 42mm (W x D x H)
- Certificates
 - CE, CB, FCC Part 15 Class B, UL

A2. Software Specifications

■ ATM

- ATM Cell over ADSL, AAL5
- Supports UBR/GFR, CBR, VBR-rt and VBR-nrt
- VPI Range (0-4095) and VCI range (1-65535)
- Supports up to 8 PVCs (Bridge Mode), 5 PVCs (Router Mode)
- Support OAM F4/F5, AIS, RDI, and loopback cells
- Supports Bit Swap
- Payload Encapsulation –
 - RFC2684 (RFC1483), multi-protocol over ATM
 - RFC2225 (RFC1577), IPoA
 - RFC2364, PPP over ATM (CHAP and PAP supported)
 - RFC2516, PPPoE (PPP over Ethernet) over ATM

■ Bridging

- Transparent Bridging (IEEE 802.1D)
- RFC2684 (RFC1483) Bridged
- Spanning Tree Protocol (IEEE 802.1D)
- Supporting IP, IGMP v1/v2 and PPPoE packets filter function

■ Routing

- Routing Information Protocol (RIP) v1/v2 and Static Routing
- NAT/PAT – RFC1631 (basic firewall support)
- Supports Point-to-Point Protocol (PPP)
- PAP or CHAP for user authentication
- RFC2684 (RFC1483) Routed
- DNS relay

■ Security

- Raw IP filtering
- VPN supports IPsec Pass through, L2TP Client/Server & L2TP/PPTP Pass Through
- DoS (UDP/TCP), Detection of Known Attacks
- Detects port attack
- ID Password Authentication

■ Configuration and Network Management

- DHCP server for IP management
- FTP, TFTP, Telnet for local or remote management
- TFTP for firmware upgrade and configuration
- Web configuration
- SNMP v1 and MIB II (RFC 1213)
- Auto Detect – VCI/VPI Setup
- Auto Detect – PPPoA Setup
- Command Line Interface

Appendix B – Warranties

B1. Product Warranty

1. XAVi Technologies warrants that the ADSL unit will be free from defects in material and workmanship for a period of twelve (12) months from the date of shipment.
2. XAVi Technologies shall incur no liability under this warranty if
 - The allegedly defective goods are not returned prepaid to XAVi Technologies within thirty (30) days of the discovery of the alleged defect and in accordance with XAVi Technologies' repair procedures; or
 - XAVi Technologies' tests disclose that the alleged defect is not due to defects in material or workmanship.
3. XAVi Technologies' liability shall be limited to either repair or replacement of the defective goods, at XAVi Technologies' option.
4. XAVi Technologies MARKS NO EXPRESS OR IMPLIED WARRANTIES REGARDING THE QUALITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE BEYOND THOSE THAT APPEAR IN THE APPLICABLE USER'S DOCUMENTATION. XAVi SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGE, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO BUSINESS OR BUSINESS RELATIONS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES.

B2. Warranty Repair

1. During the first three (3) months of ownership, XAVi Technologies will repair or replace a defective product covered under warranty within twenty-four (24) hours of receipt of the product. During the fourth (4th) through twelfth (12th) months of ownership, XAVi Technologies will repair or replace a defective product covered under warranty within ten (10) days of receipt of the product. The warranty period for the replaced products shall be ninety (90) days or the remainder of the warranty period of the original unit, whichever is greater. XAVi Technologies will ship surface freight. Expedited freight is at customer's expense.
2. The customer must return the defective product to XAVi Technologies within fourteen (14) days after the request for replacement. If the defective product is not returned within this time period, XAVi Technologies will bill the customer for the product at list price.

B3. Out-of-Warranty Repair

XAVi Technologies will either repair or, at its option, replace a defective product not covered under warranty within ten (10) working days of its receipt. Repair charges are available from the Repair Facility upon request. The warranty on a serviced product is thirty (30) days measured from date of service. Out-of-warranty repair charges are based upon the prices in effect at the time of return.

Appendix C – Regulations

C1. FCC Part 15 Notice

Warning: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 to the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is unlikely to cause harmful interference. But if it does, the user will be required to correct the interference at his or her own expense. The authority to operate this equipment is conditioned by the requirement that no modifications will be made to the equipment unless XAVi expressly approves the changes or modifications.

C2. IC CS-03 Notice

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 appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installing this equipment, users should make sure that it is permissible to be connected to the facilities of the local telecommunications company. An acceptable method of connection must be used to install the equipment. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative 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.

Warning: Users should not attempt to make such connections themselves, but should contact appropriate electric inspection authority, or electrician, as appropriate.

C3. UL Notice

The following markings and instructions are provided as bellow.

"Disconnect TNV circuit connector before removing cover" or equivalent.

"Disconnect TNV circuit connector(s) before disconnecting power."

(Instruction)

Including the following:

-Do not use this product near water for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.

-Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

-Do not use the telephone to report a gas leak in the vicinity of the leak.

-Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

No. 26 AWG Telephone Line Cord shall either be provided with the equipment or shall be described in the safety instruction, if Fuse (F1) is not present. The caution statement list below:

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

Contact Information

You can help us serve you better by sending us your comments and feedback. Listed below are the addresses, telephone and fax numbers of our offices. You can also visit us on the World Wide Web at www.xavi.com.tw for more information. We look forward to hearing from you!

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