USER MANUAL

X7028r

ADSL Router with 4-Port Switch and Wireless PCMCIA Interface

VERSION 2.0

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Table of Contents

Chapter 1 – Getting Started

Chapter 2 – Web Management Interface

Table of Contents

Note: This equipment has been tested and found to comply with the limts for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide against harmful interference in a residential installation.
This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, this device may cause harmful interference to radio communications. However, there is no gurantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, (which can be determined by switching the equipment on/off) the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or locate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that of the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any change or modifications to the equipment not expressly approved by the party responsible for compliance could void your authority to operate such equipment.

Revision Marks

Revision	Date	Notes
V2.0	May 14, 2003	*Annex A Software Version:* 5.06XAF0.AWR *Annex B Software Version:* 5.06XAF0.BWR

Chapter 1

Getting Started

I. Overview

X7028r is multi-mode ADSL router, which complies with ANSI T1.413 issue 2, ITU G.992.1 Annex A/B and ETSI ITS 101388 ADSL Standards. ***X7028r*** provides high-speed Internet access via one WAN port over ATM over ADSL, and also connects to a corporate network via four 10/100BaseT Ethernet ports and one 802.11b WLAN for LAN users.

II. Features

- ✓ High Speed Asymmetrical Data Transmission on Single Twisted Copper Pair
- ✓ Full rate operations up to 8Mbps downstream and up to 1Mbps upstream. G.lite operation up to 1.5Mbps downstream rate and 512Kbps upstream rate.
- ✓ Four 10/100BaseT Ethernet ports for PC or LAN connection
- ✓ HP auto-MDIX detects and corrects crossover cables
- ✓ Service provider can deploy ADSL rapidly over existing wire infrastructure (POTs or ISDN line)
- ✓ 802.11b WLAN support up to 11Mbps
- ✓ DHCP server supported for easy LAN IP address management
- ✓ Support 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 Internet through Network Address Translation (NAT, IP sharing) simultaneously
- ✓ Local OAM&P through command line interface via RS-232 Craft port
- ✓ Configuration and management by local Telnet and WEB Browser through the Ethernet interface and remotely through ADSL interface
- ✓ Firmware upgradeable through TFTP

III. Packaging

This package consists of the following items:

X7028r ADSL Router

RJ-45 Cable

RJ-11 Cable

AC Adapter

User's Manual CD-ROM

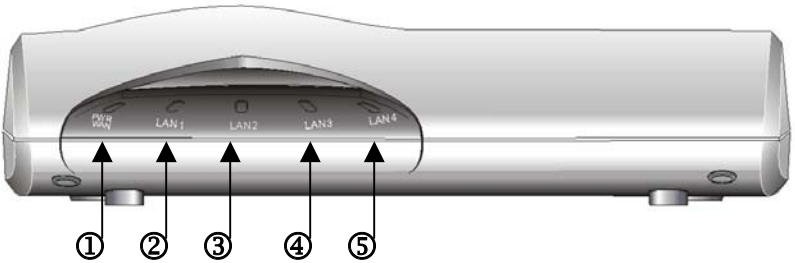
IV. Safety Guidelines

In order to reduce the risk of fire, electric shock and injury, please adhere to the following safety guidelines.

- ✓ Carefully follow the instructions in this manual; also follow all instruction labels on this device.
- ✓ Except for the power adapter supplied, this device should not be connected to any other adapters.
- ✓ Do not spill liquid of any kind on this device.
- ✓ Do not place the unit on an unstable stand or table. This unit may drop and become damaged.
- ✓ Do not expose this unit to direct sunlight.
- ✓ Do not place any hot devices close to this unit, as it may degrade or cause damage to it.
- ✓ Do not place any heavy objects on top of this unit.
- ✓ Do not use liquid cleaners or aerosol cleaners. Use a soft dry cloth for cleaning.

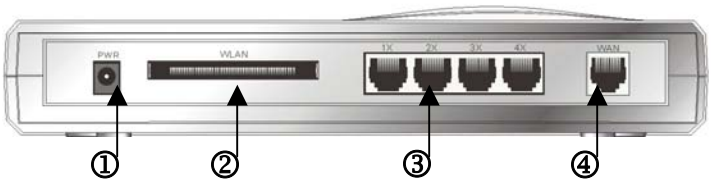
V. Appearance

Front Panel



	Label	Status	Color	Description
①	PWR/ WAN	ON	Orange	Power adapter is properly connected.
			Green	ADSL line is connected.
②	LAN 1	ON	Green	100M data transfer
			Orange	10M data transfer
③	LAN 2	ON	Green	100M data transfer
			Orange	10M data transfer
④	LAN 3	ON	Green	100M data transfer
			Orange	10M data transfer
⑤	LAN 4	ON	Green	100M data transfer
			Orange	10M data transfer

Rear Panel



	Label	Description
①	PWR	DC-inlet for AC adapter
②		Wireless LAN AP slot
③	1X ~ 4X	Four RJ-45 ports for LAN connections
④	WAN	RJ-11 ADSL port

VI. Hardware Installation

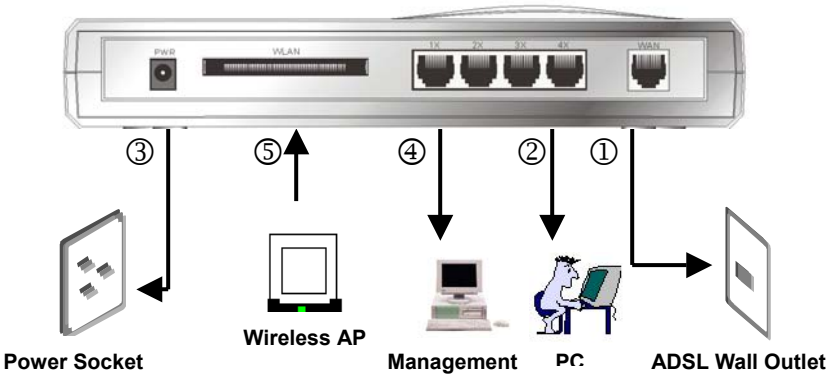
1. Connect one end of the ADSL cable into the WAN port of the ADSL modem, and the other end into the ADSL wall outlet.

2. Connect one end of the RJ-45 cable into one of the RJ-45 ports of the ADSL modem, and the other end into your PC or LAN.

3. Plug in the AC adapter into the AC power socket, and connect the DC jack into the PWR inlet of the modem.

4. Use a 9-pin RS-232 cable to connect the Console cable to the RJ-45 cable then to a PC with data terminal emulation software (Hyper Terminal) installed, in order for local management.

5. Gently slide the Wireless Access Point (AP) into the WLAN slot.



VII. Management

- ✓ **Console Port** – use the RS-232 cable for connecting ***X7028r*** to a console terminal or a PC running a terminal emulation program, such as Hyper Terminal. *(For further details, See Chapter 1: X Console Setup)*
- ✓ **Local Ethernet Port (Telnet)** – connect the Ethernet port to your local area network or directly to a PC, "Telnet" ***X7028r*** 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" ***X7028r*** 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 ***X7028r***. Therefore, a password authentication is required when you enter the web interface. See the *Default Values* section to obtain the password.

VIII. Default Values

X7028r is pre-configured with the following parameters; you may also re-load the default parameters by selecting System – Update in the web interface. (For further details, see *Chapter 2: 4.3 Update*)

Default Mode: Bridge	**Username/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: Disable	FDM Mode: Fdm
Protocol: RFC1483, Bridge Mode	Coding Gain: Auto
VPI/VCI: 8/35	Transmit Power Atten: 0dB
Class (QoS): UBR	
Spanning Tree: Disable	
Packet Filter: Any	

IX. Software Upgrade

You may easily upgrade ***X7028r*** embedded software by obtaining the compressed upgrade kit from the service provider then following the steps:

- ✓ Extract the ZIP file for updated firmware
- ✓ Connect ***X7028r*** via the local Ethernet port or remote ADSL link, make sure that the ***X7028r*** Ethernet IP address and your terminal are properly configured so that you can successfully "*ping*" ***X7028r***. The default local IP address is 192.168.1.1.
- ✓ Under the DOS prompt, execute the command "xupgrade <*IP address of* ***X7028r***>", for instance "xupgrade 192.168.1.1".
- ✓ This upgrading process may last as long as 60 seconds.
- ✓ Then reboot ***X7028r*** with new software.

Note 1: The **X7028r** software may also be upgraded through the web interface. *See Chapter 2: 4.3 Update*

Note 2: Strictly maintain stable power to the ***X7028r*** 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 as case, you must call the dealer or system integrator for repairs.

X. Console Setup

Connect the RS-232 console port to an ASCII data terminal or a PC with Widows serial Terminal mode of VT-100 (Hyper Terminal). To Start the Hyper-terminal, follow the steps below.

1. **Start "Hyper-terminal" program --**

   On Windows 98 or Windows NT:

   Click on the **Start** button → **Programs** → **Accessories** → **Hyper Terminal Group** → Double Click **"Hypertrm.exe"** → Enter Connection Name → Select Icon → Click **OK**

2. **Select COM port to communicate with the *modem***

   Choose direct to COM1 or COM2 and click **OK**

3. **Set Port Properties --**

- **Port Setting:**
  - Bit per second: 9600
  - Data bits: 8
  - Stop bits: 1
  - Parity bits: None
  - Flow Control: None
- **Settings:**
  - Function, arrow, and ctrl keys act as: Windows keys
  - Emulation: Auto-detect
  - Back-scroll buffer lines: 500
- **ASCII Setup:**
  - Echo typed characters locally
  - Line delay: 0 milliseconds
  - Character line feeds incoming line ends: enable

Chapter 2

Web Management Interface

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 platform. You may configure a bridge or a router function to accommodate your device need. In the section below, each configuration item will be described in detail.

II. Preparation

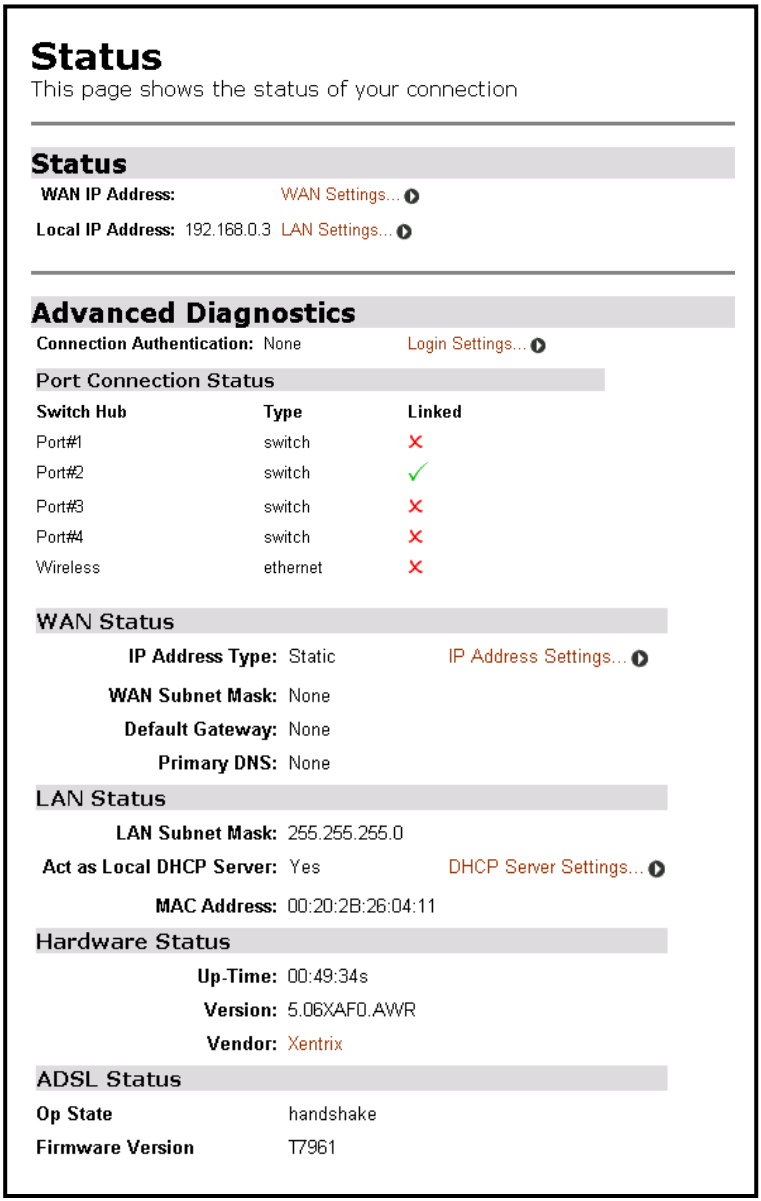
1. Please refer the hardware installation procedure in Chapter 1 to install ***X7028r***.
2. You should configure the PC to the same IP subnet as ***X7028r***.
   Example: The ***X7028r***: 192.168.**1.1**
   Your PC: 192.168.**1.x**
3. Connect your PC to the ***X7028r*** and make sure that the PING function is working properly. The default IP address of this device is 192.168.1.1
4. Launch the Web browser (IE or Netscape), and enter the default IP address 192.168.1.1 into the address bar to access the web management page.
5. The **Enter Network Password** dialog box will popup first.

1. Login

- The window **Enter Network password** will pop up while starting the configuration. With the window active, type **admin** for both the **User Name** and the **Password.** You can also edit the Username and Password or add a new profile. *(See section 4.1 Users for further details)*

2. Status

- The **Status** page displays the current configuration of the **X7028r.** You can click on the shortcuts from the **Status** page for quickly editing most frequent configurations:
- Click **WAN Settings**… to edit/add WAN connections refer to *section 5.3 WAN Connections* for further details.
- Click **LAN Settings**… to edit the default LAN IP address refer to *section 5.2 LAN Connections* for further details.
- Click **Login Settings**… to edit the login type refer to section 5.5 DHCP Server for details.
- Click **IP Address Settings**… to edit/add WAN connections refer to *section 5.3 WAN Connections* for further details)
- Click **DHCP Server**… to edit DHCP Server status refer to *section 5.5 DHCP Server* for details.



Status

This page shows the status of your connection

Status

WAN IP Address: WAN Settings...

Local IP Address: 192.168.0.3 LAN Settings...

Advanced Diagnostics

Connection Authentication: None Login Settings...

Port Connection Status

Switch Hub	Type	Linked
Port#1	switch	✗
Port#2	switch	✓
Port#3	switch	✗
Port#4	switch	✗
Wireless	ethernet	✗

WAN Status

IP Address Type: Static IP Address Settings...

WAN Subnet Mask: None

Default Gateway: None

Primary DNS: None

LAN Status

LAN Subnet Mask: 255.255.255.0

Act as Local DHCP Server: Yes DHCP Server Settings...

MAC Address: 00:20:2B:26:04:11

Hardware Status

Up-Time: 00:49:34s

Version: 5.06XAF0.AWR

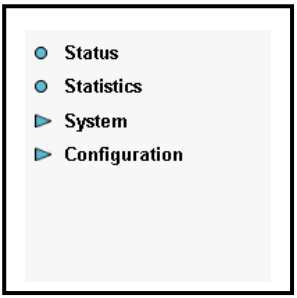
Vendor: Xentrix

ADSL Status

Op State handshake

Firmware Version T7961

3. Statistics

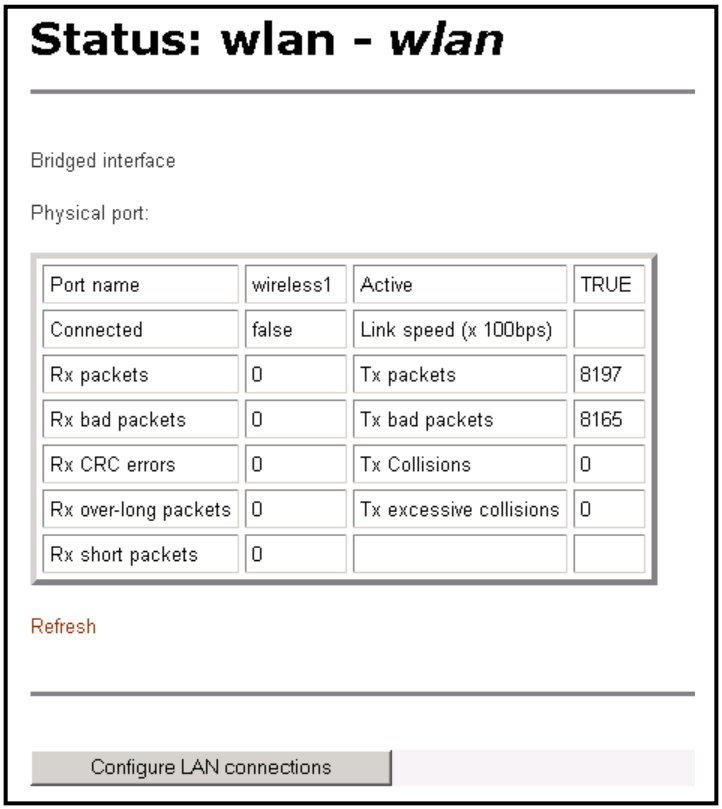


The **Statistics** page displays the current interfaces of the ***X7028r*.** Click on the appropriate **Show Statistics** link to view the statistics of that interface.

Three examples are listed below, two for the **LAN IP**'s and one for **Rfc1483-c-0**.

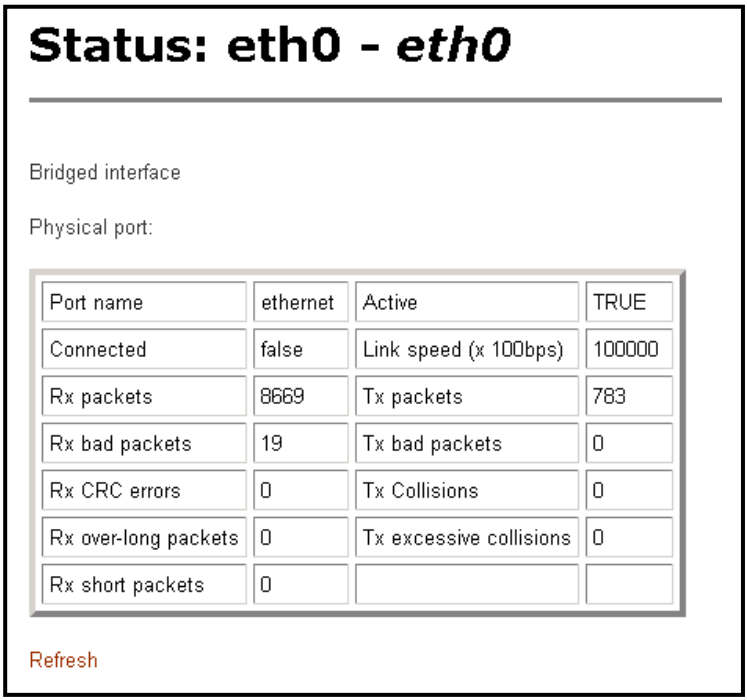
Example 1: LAN IP Show Statistics (Wireless)

- This page displays the current statistics of the wireless LAN (wlan) port. This includes port name, connection status, speed, and transfer/receive packets.
- You may edit the default LAN port by clicking on the **Configure LAN Connections** button. *(For instructions on how to configure LAN connection, See **5B Configuration – LAN connection**)*



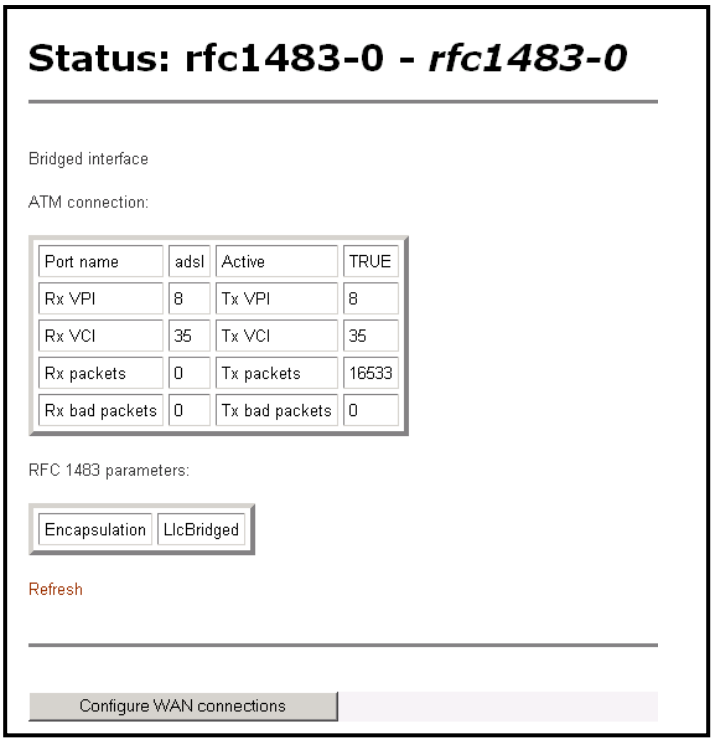
Example 2: LAN IP Show Statistics (Ethernet)

- This page displays the current statistics of the Ethernet port. This includes port name, connection status, speed, and transfer/receive packets.
- You may edit the default LAN port by clicking on the **Configure LAN Connections** button. *(For instructions on how to configure LAN connection, refer to section **5.2 LAN connections**)*

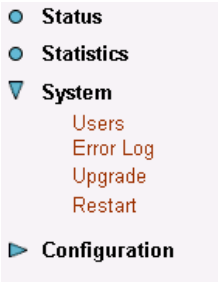


Example 3: RFC1483-0 Show Statistics

- This page displays the current statistics of the default bridge RFC 1483. This includes port name, VPI/VCI values, transfer/receive packets and encapsulation type.
- You may edit/add WAN connections by clicking on the **Configure WAN Connection** button. *(For instructions on how to configure LAN connection, refer to section **5.3 WAN connections**)*



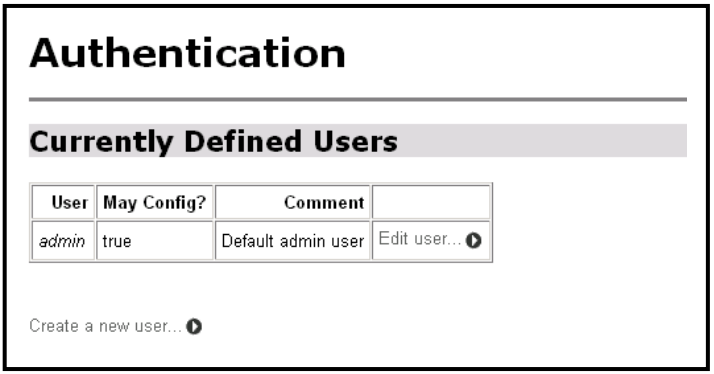
4. System



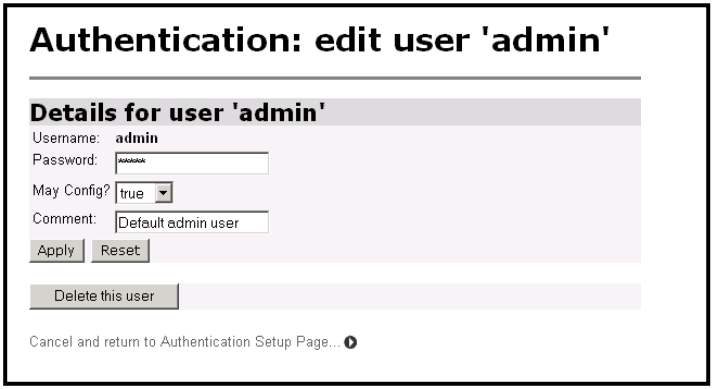
The **System** section includes **Users, Error Log, Update, Backup/restore** and **Restart** links. Each link is described in detail below.

4.1 Users

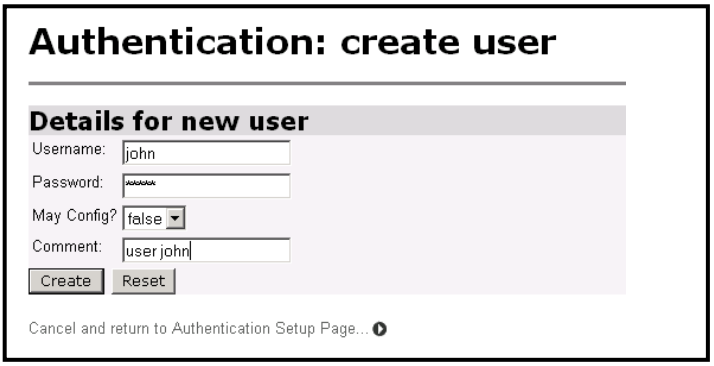
- Click on the **Users** link on the navigation bar to view the list of users. By default, only the **admin** user exists.



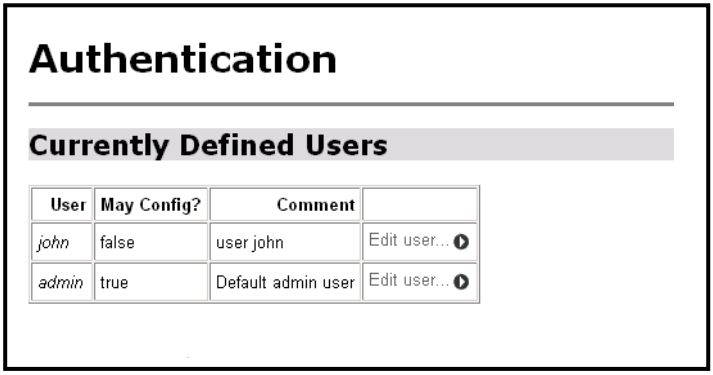
- Click on the **Edit User…** link to change the settings of the **admin** user. On this page you may change the password and comment of the **admin** user. Click on the **Apply** button when completed.



- Click on the **Create a new user…** link to add a new user. On this page you need to enter a username, password, select true or false, if you would like this user to have configuration rights, and add a comment. Click on the **Create** button when completed.



  - You will then notice that the user has been added to the table.



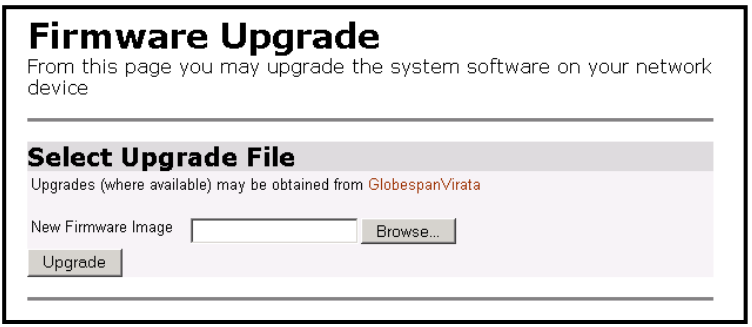
4.2 Error Log

Click on the **Error Log** link in the navigation bar to view the history of errors. Click on the **Clear Logs** button to clear the log table.

4.3 Update

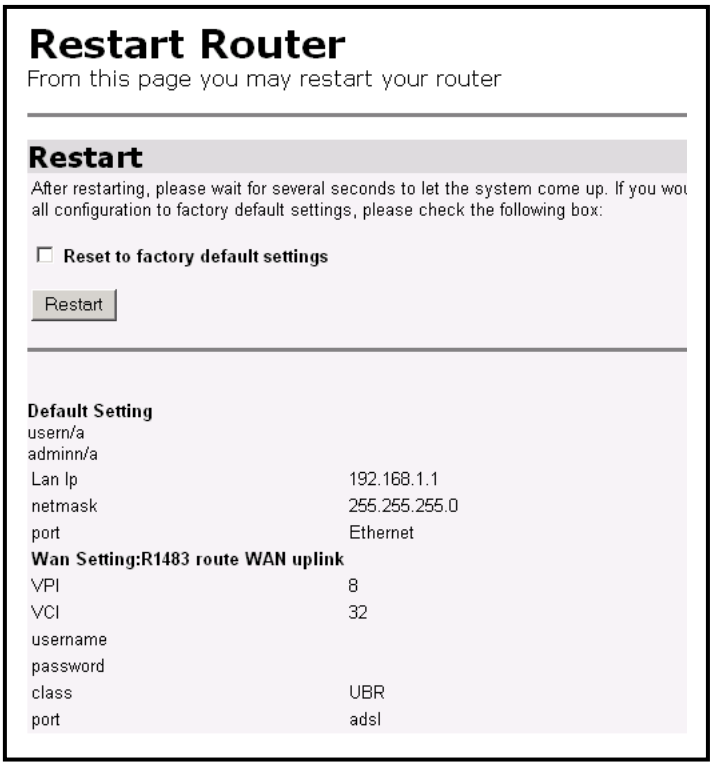
Click on the **Upgrade** link on the navigation bar to view the firmware upgrade page, then follow the steps below:

a) Click on the **Browse** button to select the upgrade file.
b) Click on the **Upgrade** button when completed.

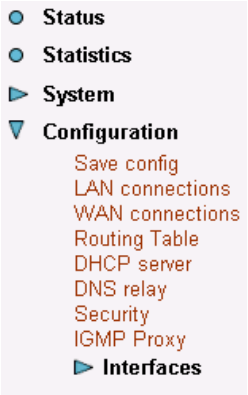


4.4 Restart

To restart the modem, click on the **Restart** button. You may also check the box, if you would like to restart the modem with the factory settings. The default settings are displayed at the bottom of this page.



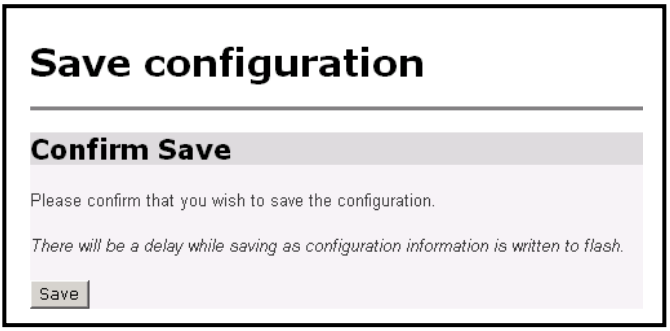
5. Configuration



The **Configuration** section includes **Save Config, LAN connection, WAN connections, routing table, DHCP server, DNS relay, Security,** and **IGMP proxy** links. Each link is described in detail below.

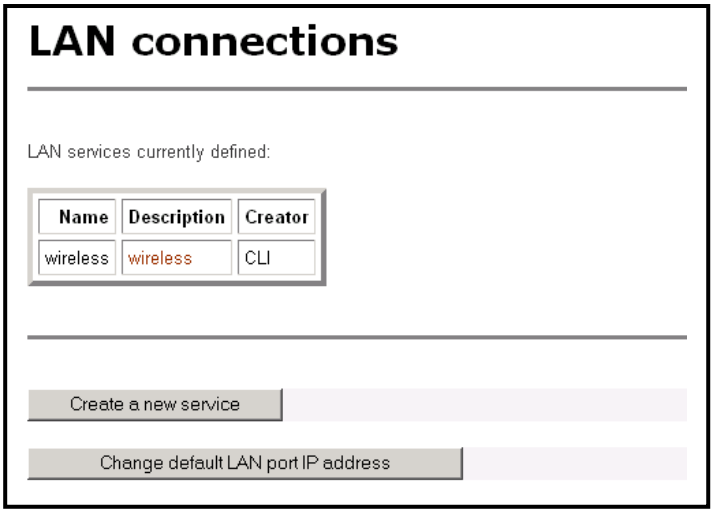
5.1 Save Config

Click on the **Save Config** link in the navigation bar to view the save confirmation page. If you would like to save the current configuration, click on the **Save** button.



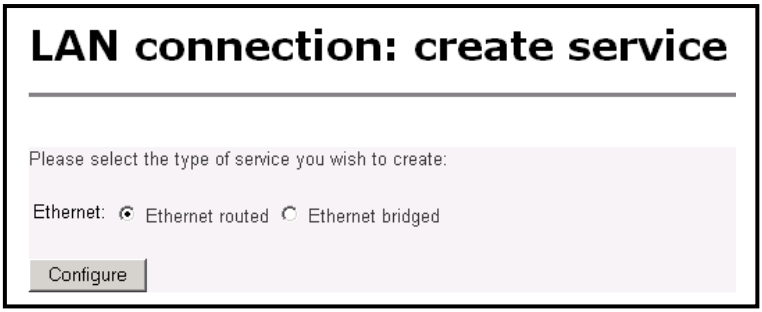
5.2 LAN Connections

This page displays a list of currently defined LAN interfaces. You may create a new LAN service or change the default LAN port IP address from this page. Both examples are listed below.



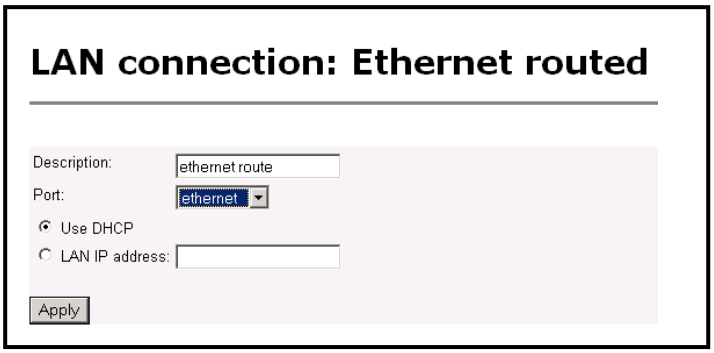
5.2.1 Create a New Service

In order to create a new LAN service, click on the **Create a new service** button. You can then select between Ethernet Routed and Ethernet bridged. After you make a selection, click on the **Configure** button. Both examples are listed below.



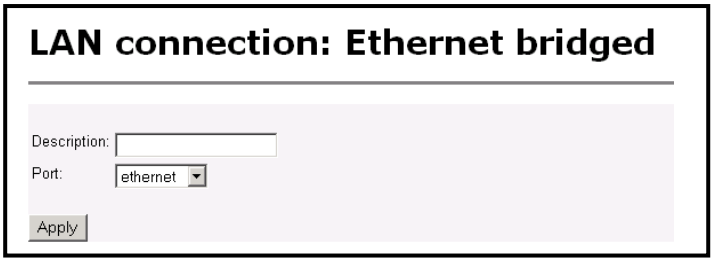
Example 1: Ethernet Routed

- In order to create an Ethernet route the following fields need to be filled in:
  a) *Description*: Enter a description for the route
  b) *Port*: Select between Ethernet and wireless
  c) Select to use DHCP or enter a LAN IP address
  d) Click on the **Apply** button.



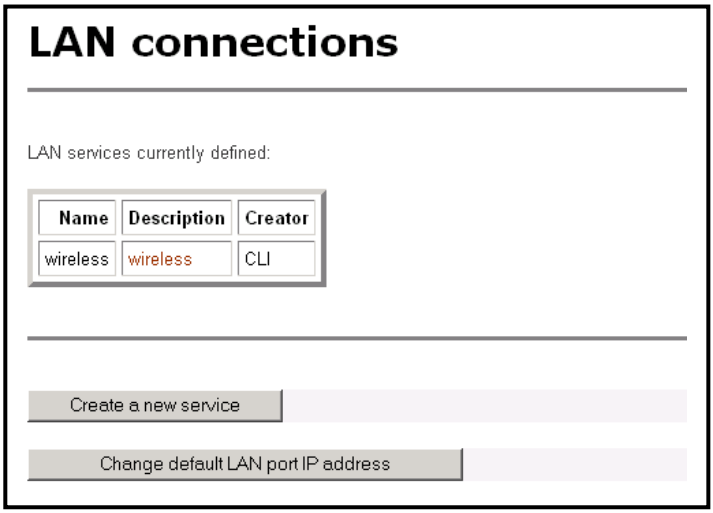
Example 2: Ethernet Bridged

- In order to create an Ethernet route the following fields need to be filled in:
  - *Description*: Enter a description for the route
  - *Port*: Select between Ethernet and wireless
  - Click on the **Apply** button.

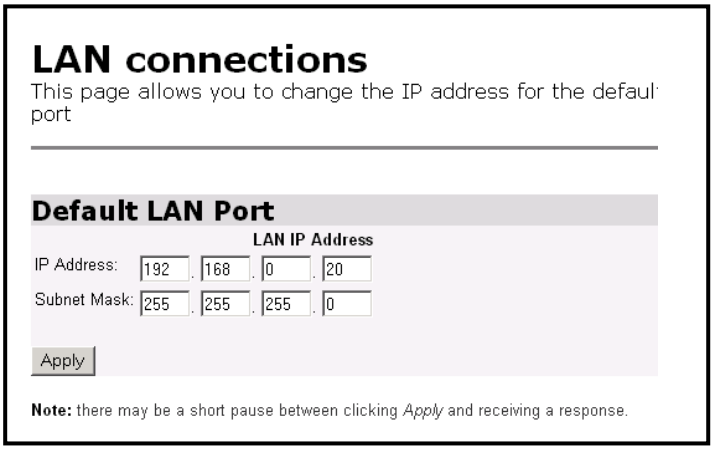


5.2.2 Change Default LAN IP

- Click on the LAN connections link in the navigation bar, and then click on the configure default LAN port IP address.

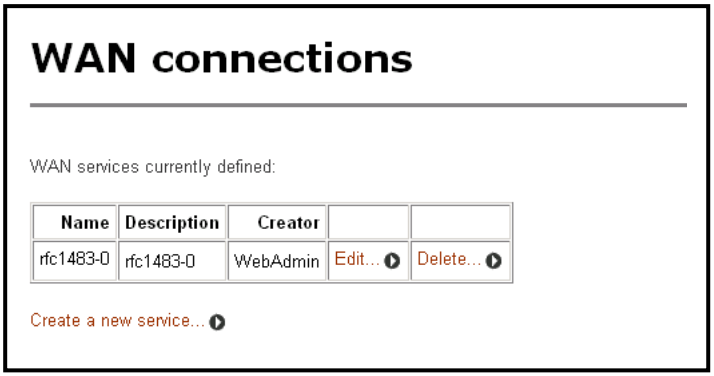


- Define the primary IP address and subnet mask of your device here, and make the change by editing the IP address in the text box. Then click on the **Apply** button.



5.3 WAN Connections

- The page lists WAN connection protocols that are available on this device. Please see the following instructions on creating each type of the WAN connection.

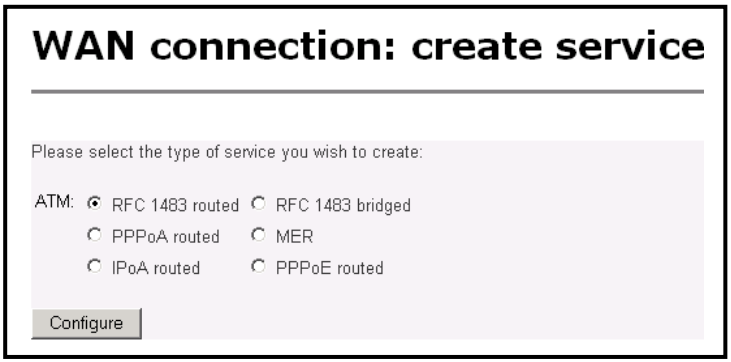


- You can create multiple WAN connection services from each of following protocols:

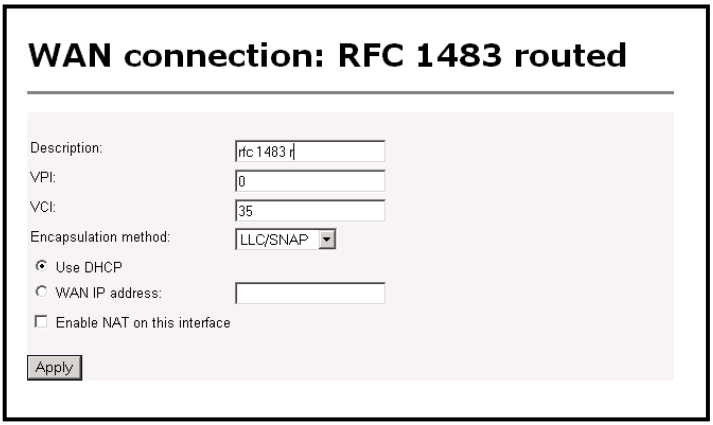
5.3.1 RFC 1483 Routed
5.3.2 RFC 1483 Bridged
5.3.3 PPPoA Routed
5.3.4 MER
5.3.5 IPoA Routed
5.3.6 PPPoE Routed

5.3.1 RFC 1483 Routed

- Click **Create a new service** to display the type of service.
- Select **RFC 1483 routed** and then click on the **Configure** button.

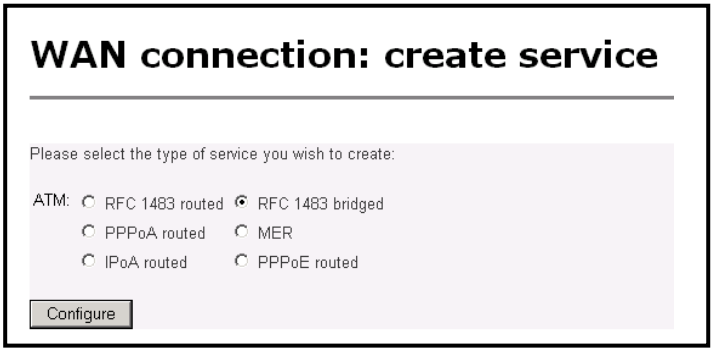


- Define the **VPI, VCI, WAN IP** to match the DSLAM setting. (Provided by the ISP)
- Select **LLC/SNAP** for **Encapsulation**.
- Choose between DHCP and WAN IP, and then click on the **Apply** button to confirm the configuration.

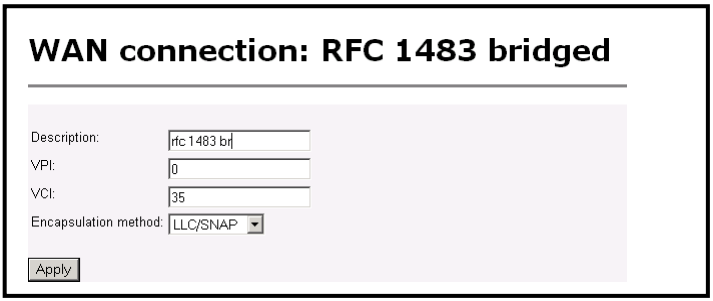


5.3.2 RFC 1483 Bridged

- Click **Create a new service** to display the type of service.
- Select **RFC 1483 Bridged** and then click on the **Configure** button.

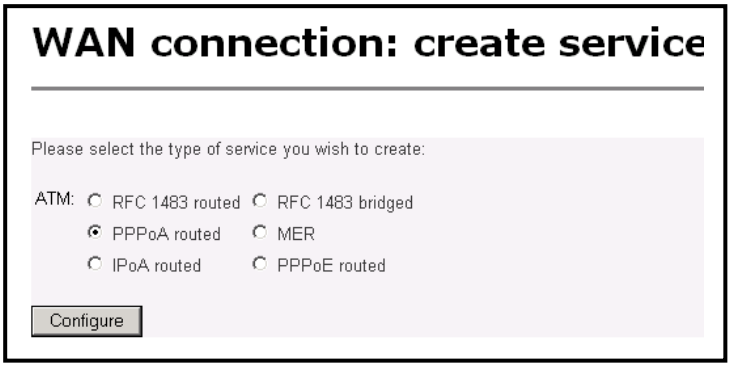


- Define the **VPI**, **VCI** to match the DSLAM setting
- Select **LLC/SNAP** for **Encapsulation,** and then click on the **Apply** button to confirm the configuration.

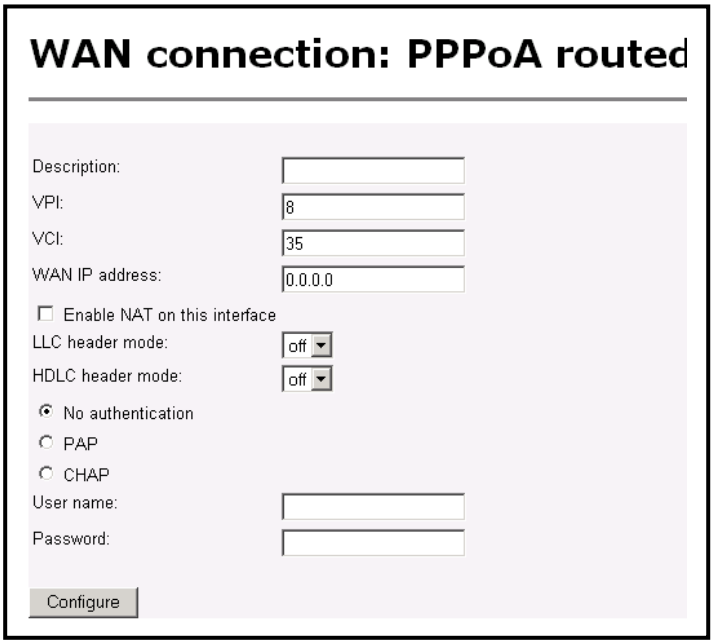


5.3.3 PPPoA Routed

- Click **Create a new service** to display the type of service.
- Select **PPPoA routed** and then click on the **Configure** button.

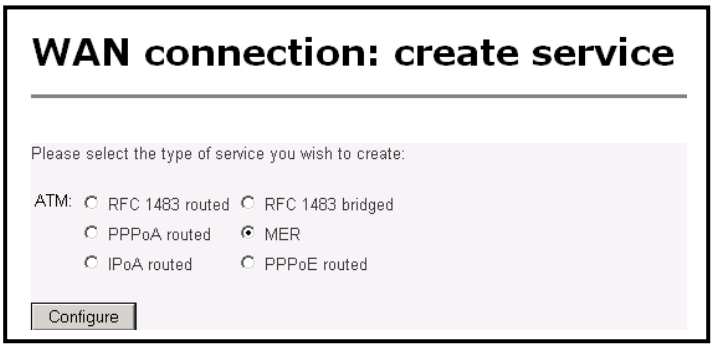


- Type **PPPoA router** for the description, then define the **VPI**, **VCI** to match the DSLAM setting
- Keep WAN IP default setting (0.0.0.0.)
- Leave LLC header Mode/HDLC header mode to **off**.
- Select **PAP**
- Type in the **Username** and **Password**.
- Click on the **Configure** button to confirm the configuration.

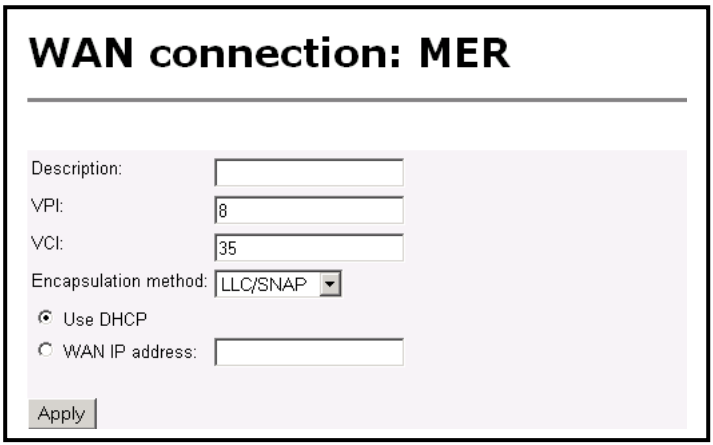


5.3.4 MER

- Click **Create a new service** to display the type of service.
- Select **MER** and then click on the **Configure** button.

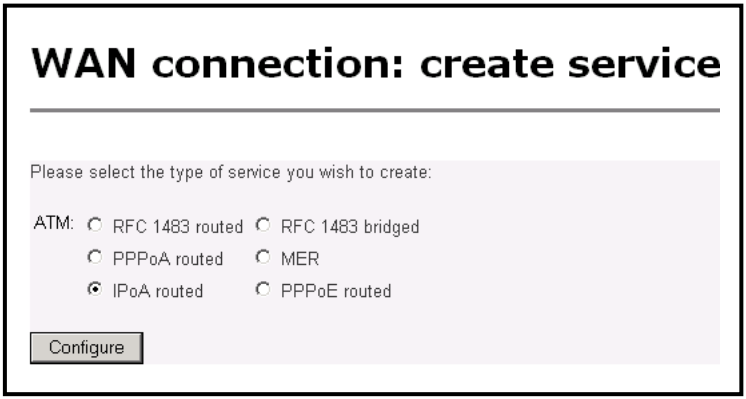


- Type **MER router** for the description
- Define the **VPI**, **VCI**, **WAN IP** based on the DSLAM setting.
- Click on the **Apply** button to confirm the configuration.

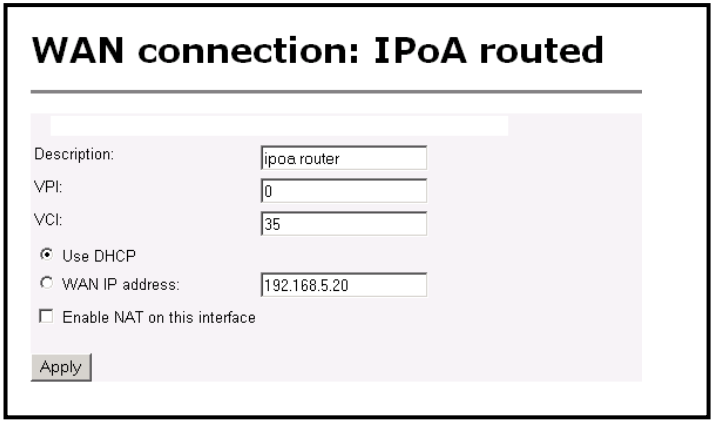


5.3.5 IPoA Routed

- Click **Create a new service** to display the type of service.
- Select I**PoA routed** and then click on the **Configure** button.

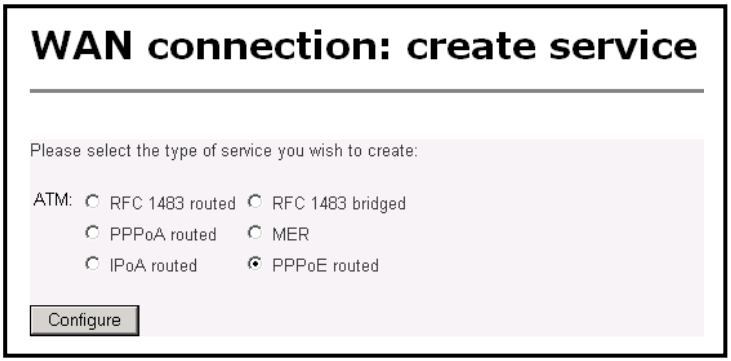


- Type **IPoA router** for the description
- Define the **VPI**, **VCI**, **WAN IP** based on the DSLAM setting.
- Click on the **Apply** button to confirm the configuration.

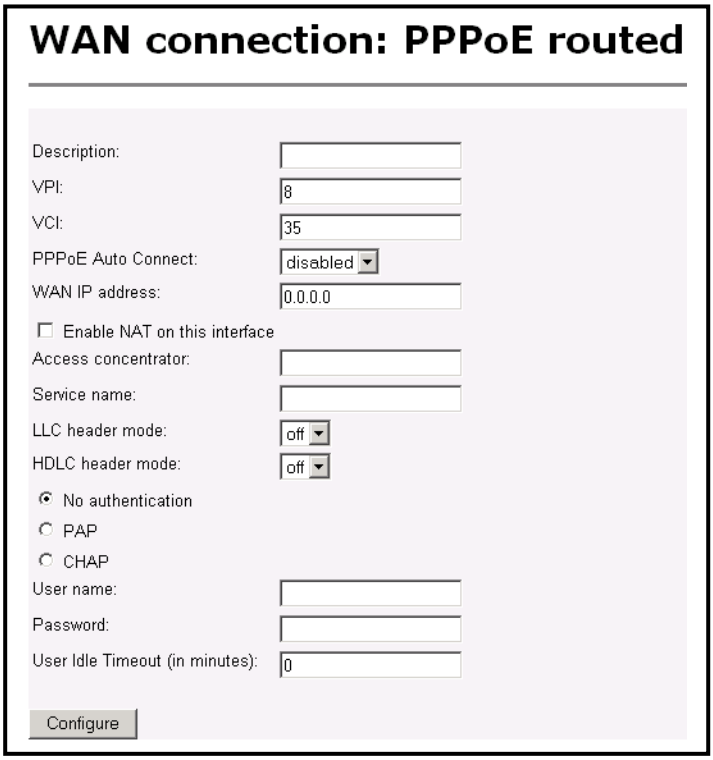


5.3.6 PPPoE Routed

- Click **Create a new service** to display the type of service.
- Select **PPPoE routed** and then click on the **Configure** button.

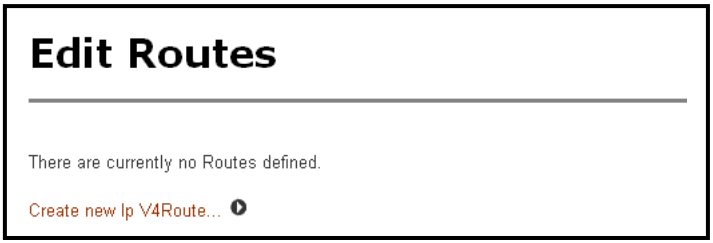


- Type **PPPoE router** for the description.
- Define the **VPI**, **VCI** value to match the DSLAM/ISP setting.
- Set **PPPoE Auto Connect** to **Enabled**.
- Use WAN IP default setting (0.0.0.0.)
- Leave **Access concentrator** and **service name** blank
- Leave LLC/HDLC header Mode to **off**.
- Select **PAP** and type the **Username** and **Password** and type **idle time** number.
- Click on the **Configure** button to confirm the configuration.

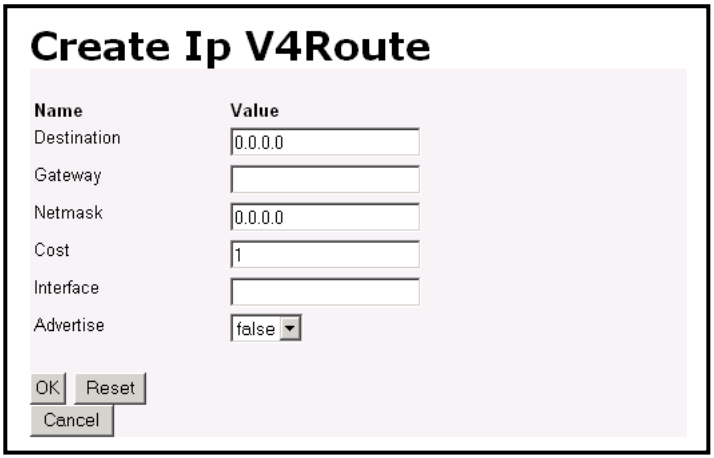

WAN connection: PPPoE routed
Description:
VPI:
8
VCI:
35
PPPoE Auto Connect:
disabled
WAN IP address:
0.0.0.0
Enable NAT on this interface
Access concentrator:
Service name:
LLC header mode:
off
HDLC header mode:
off
No authentication
PAP
CHAP
User name:
Password:
User Idle Timeout (in minutes):
0
Configure

5.4 Routing Table

- Click on the **Routing Table** link in the navigation bar. This page displays a table of the defined routes. Click on the **Create new IP V4Route**, to add an IP route to the table.

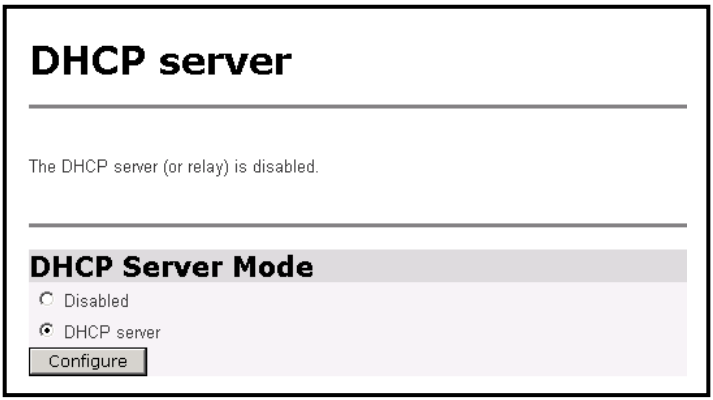


- In order to create an routing table entry the following fields need to be filled in:
  a) *Destination*: Enter the destination of the router
  b) *Gateway*: Enter the IP address of the gateway
  c) *Netmask*: Enter the subnet mask
  d) *Cost*: Enter the cost (number of hops)
  e) *Cost*: Enter an interface name
  f) *Advertise*: Select true/false from the drop down list if you would like the router to display itself.
  g) Click on the **OK** button.

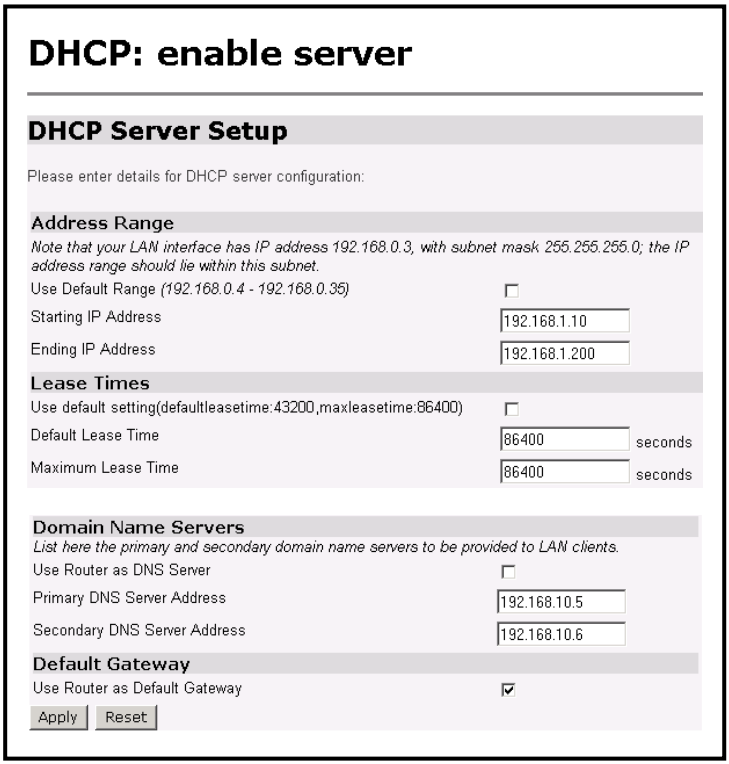


5.5 DHCP Server

- This device can be setup to perform the service of the DHCP Server and enables the data connection between multiple PCs by configuring IP address ranges and lease times.
- Click on the DHCP Server link in navigation bar. You will then see the following screen.



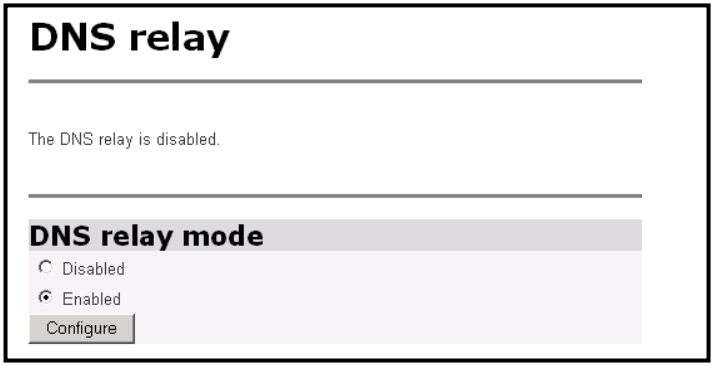
- Select **DHCP Server** and then click on the **Configure** button. You will then see the following screen.



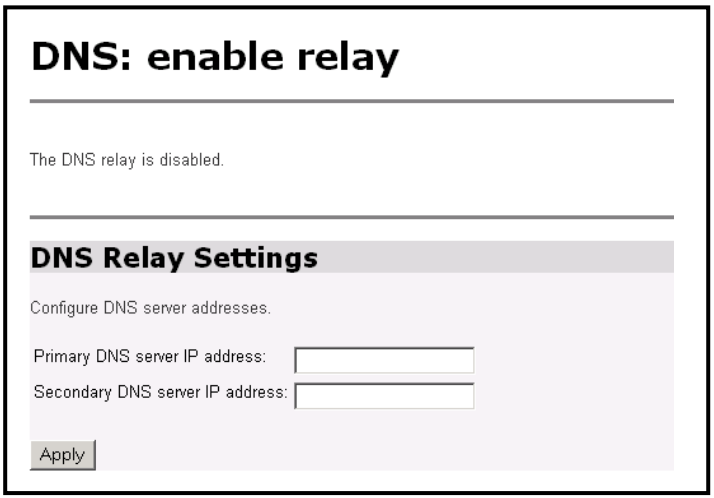
- **Use Default Range:** Place a check in this box if you would like to use the default IP address range. You can only use this if you network is on the 192.168.0.x subnet.
- **Starting IP Address:** Enter the first IP address that will be assigned by the DHCP Server.
- **Ending IP Address:** Enter the last IP address that will be assigned by the DHCP Server.
- **Use Default Setting:** Place a check in this box if you would like to use the default lease times. If not enter the default and maximum lease times in the text boxes provided.
- **Use Router as DNS Server:** Place a check in this box if you would like this device to be the DNS Server.
- **Primary DNS Server Address:** Enter the IP address of the primary DNS Server.
- **Secondary DNS Server Address:** Enter the IP address of the secondary DNS Server.
- **Use Router as Default Gateway:** Place a check in this box if you would like this device to be the default gateway.
- Click on the **Apply** button when completed.

5.6 DNS Relay

- Click on the **DNS Relay** link in the navigation bar. You may enable or disable DNS Relay. Then click on the **Configure** button.

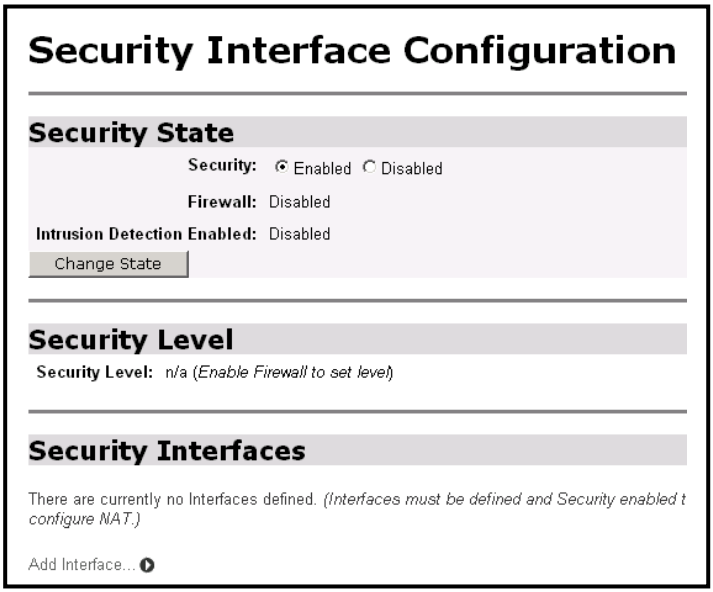


- Enter the primary and secondary DNS Server IP address into the text boxes provided.

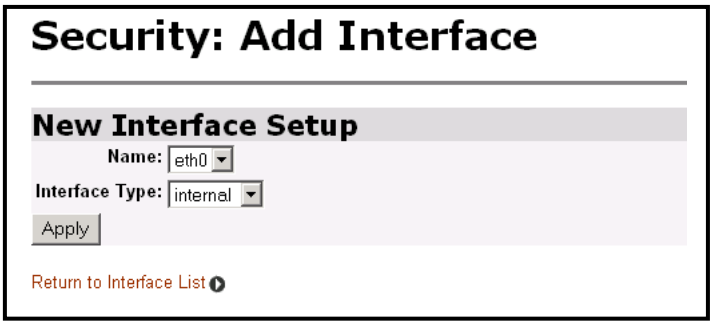


5.7 Security

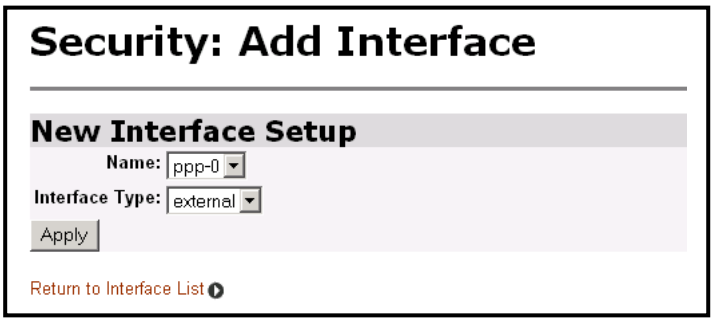
- Click on the **Security** link on the navigation bar. In this section you will be able to configure the Security Interface. This includes the security state, security level, security interfaces, policies, triggers, and intrusion detection.
- Select **Enabled** Security, and then click the **Change State** button



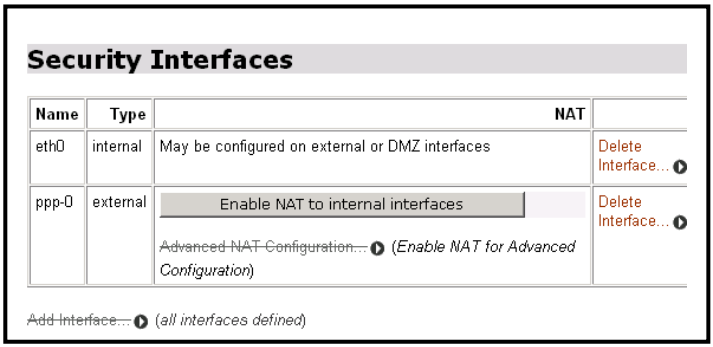
- Under the Security Interfaces menu, click on the **Add Interface** link to add a security interface. You will then see the following screen. Select an interface name (eth0) and interface type (internal), and then click on the **Apply** button. You will then see the added interface on the main page.



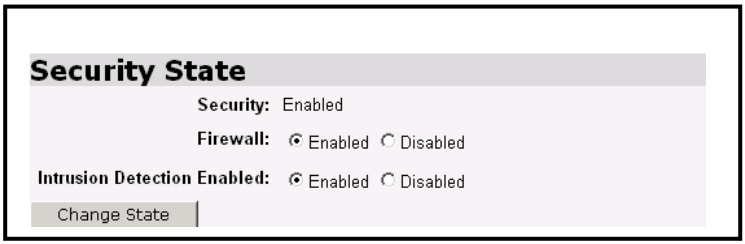
- Once again, click on the **Add Interface** button, to add an external interface.
- Select an interface name (ppp-0) and interface type (external), and then click on the **Apply** button.



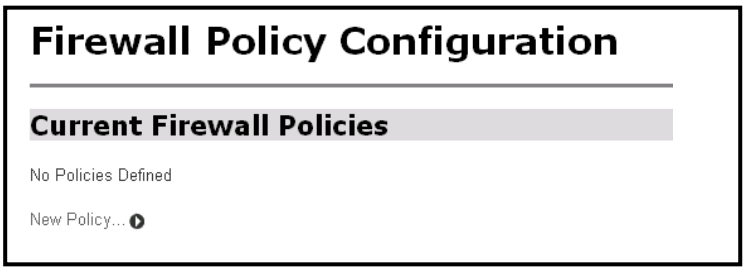
- You will then see the added interface on the main page. Click on the **Enable NAT to internal interfaces** button to enable Network Address Translation (NAT).



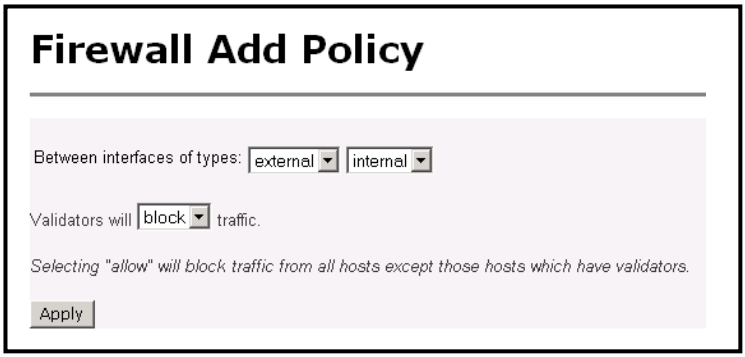
- Scroll back up to the Security State section; select **Enabled** for both **Firewall** and **Intrusion Detection**. Then click on the **Change State** button.



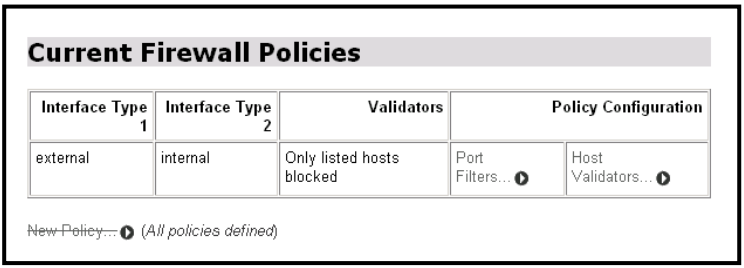
- Scroll down and click on the Firewall **Policy Configuration** link under the **Policies, Triggers and Intrusion Detection** section. You will then see the following screen. Currently, there are no policies set. Click on **New Policy** to add a firewall policy.



- On this page you will be able to select your firewall interface between internal, external, and dmz. Based on those validations, you may choose to allow or block traffic. Selecting **allow** will block traffic from all hosts except those hosts, which have validators. Click on the **Apply** button when completed.



- The policy has been added to the table. You may now edit the port filters or host validators on this interface.



Port Filters: The following port filters may be added:

Field Name	Description
TCP Filter	Requires port range (start/end IP) and direction (inbound/outbound)
UDP Filter	Requires port range (start/end IP) and direction (inbound/outbound)
Raw IP Filter	Requires protocol type (TCP/UDP) and direction (inbound/outbound)

Host Validators: The following host validators may be added:

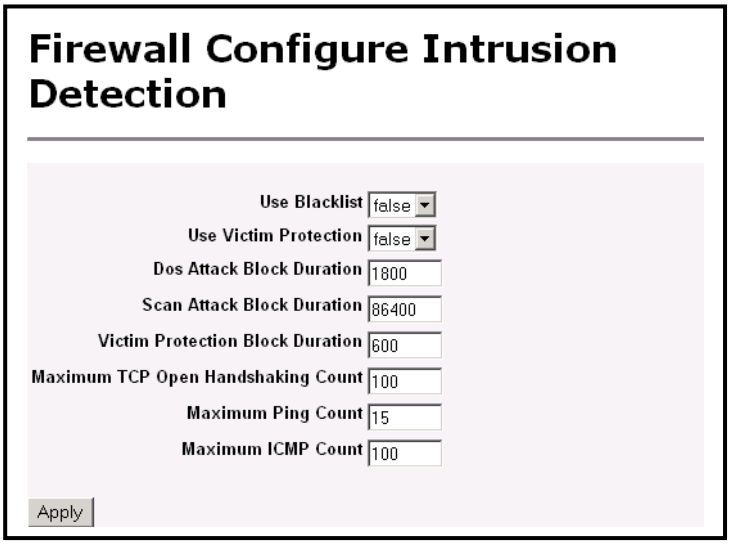
Field Name	Description
Host IP address	IP address of the host, for example 1.1.1.1
Host Subnet mask	Subnet mask of the above host, for example 255.255.255.255
Direction	Select Inbound, Outbound, or Both

- Return to the **Interface List** and click on the **Firewall Trigger Configuration** link. A trigger is the term used to describe what happens when a secondary port is opened dynamically to allow protocols such as FTP and NetMeeting to pass data through the Firewall. Click on **New Trigger** to add a new firewall trigger.

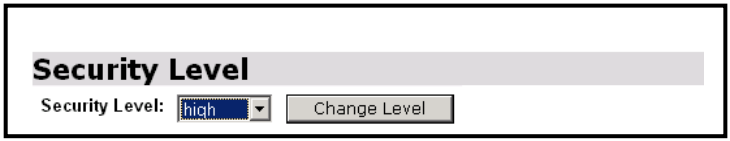
Firewall Add Trigger: The following fields are required for adding a firewall trigger.

Field Name	Description
Transport type	Choose between TCP or UDP
Port number start	Enter the starting port number, for example 21 for FTP
Port number end	Enter the ending port number, for example 21 for FTP
Allow multiple hosts	Choose between allow or block
Max Activity Interval	Enter the activity interval per second.
Enable Session Chaining	Choose between allow or block
Enable UDP Session Chaining	Choose between allow or block
Binary Address Replacement	Choose between allow or block
Address Translation Type	Choose between TCP, UDP, both, or none.

- Click on **Configure Intrusion Detection** link under the **Policies, Triggers and Intrusion Detection** section. On this page you will be able to select whether you would like to use a black list and victim protection. You can also set values for Dos attack block duration, scan attack block duration, Victim protection block duration, maximum TCP open handshaking count, maximum ping count, and maximum ICMP count.
- Click on the **Apply** button once you have set/changed these values.

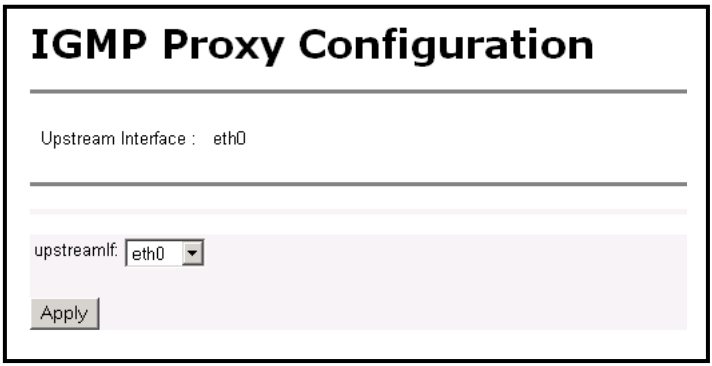


- To automatically set up **Policies, Triggers and Intrusion Detection** settings. Select a security level (none, high, medium, or low) and then click on the **Change Level** button. This will automatically set up values for firewall policy, firewall trigger and intrusion detection.

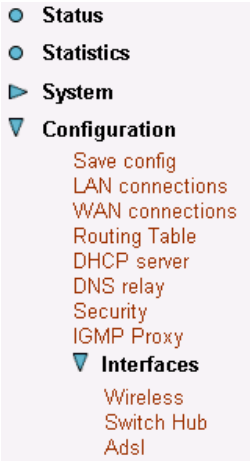


5.8 IGMP Proxy

Click on the **IGMP Proxy** link on the navigation bar. On this page you will be able to select an Upstream interface for the IGMP proxy. Select and interface from the drop down list, and then click on the **Apply** button.



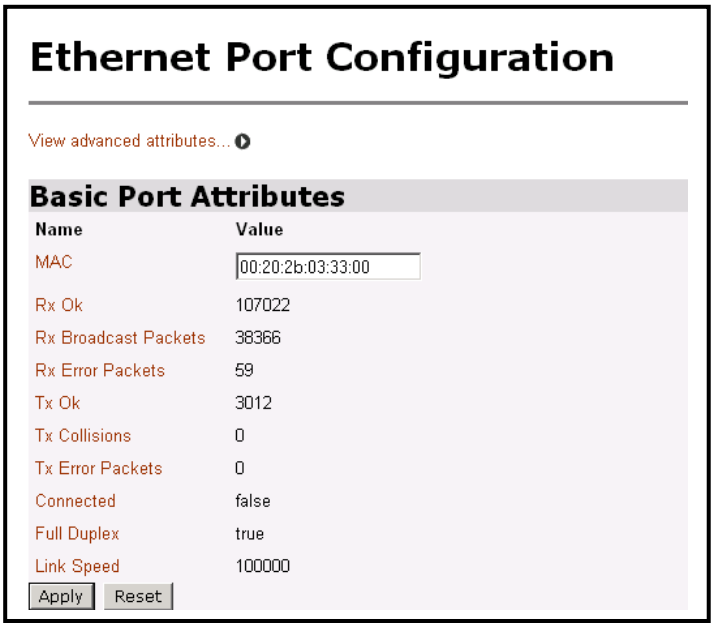
6. Interfaces



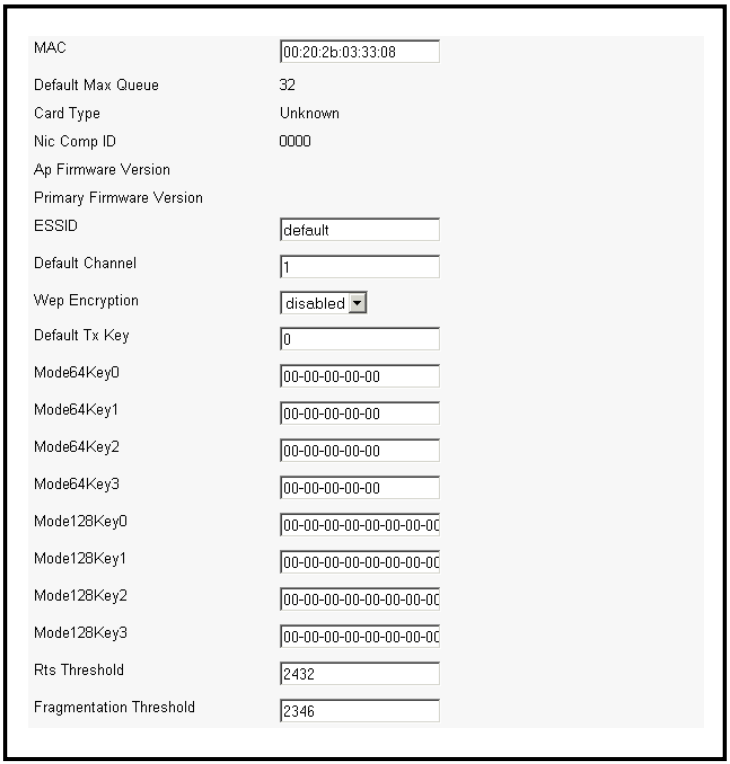
The **Interfaces** section includes **Wireless**, **Switch Hub** and **ADSL** links. Each link is described in detail below.

6.1 *Wireless*

- Click on the **Wireless** link on the navigation bar. This page displays the wireless port configurations. You may change the MAC address on this page, then click on the **Apply** button when completed.

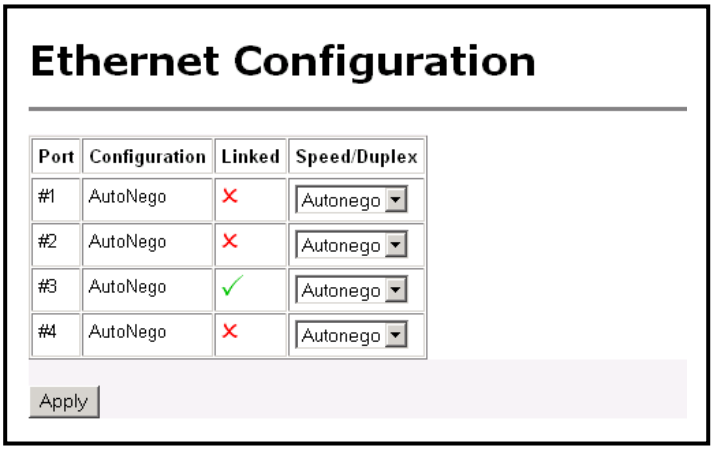


- Click on the **View advanced attributes** link to view a detailed page of the Wireless Interface configuration. This page displays the advanced wireless port attributes. You may change the MAC address, and WEP Encryption options. In order to configure WEP encryption, fill in the following fields:
  a) *WEP Encryption*: Select between 64-bit, 128-bit, or disable if you do not want to use web encryption.
  b) *Default Tx Key*: Enter an option 0~3 depending on the previous WEP encryption selection. For example, if you selected 64-bit as the WEP encryption, and entered 3 into this text box, then you would need to edit the Mode64Key3 text box.
  c) You may edit the rest of the text boxes, depending on the type configuration you are trying to set up.
- The image below only depicts the area described above. Click on the **Apply** button when completed.



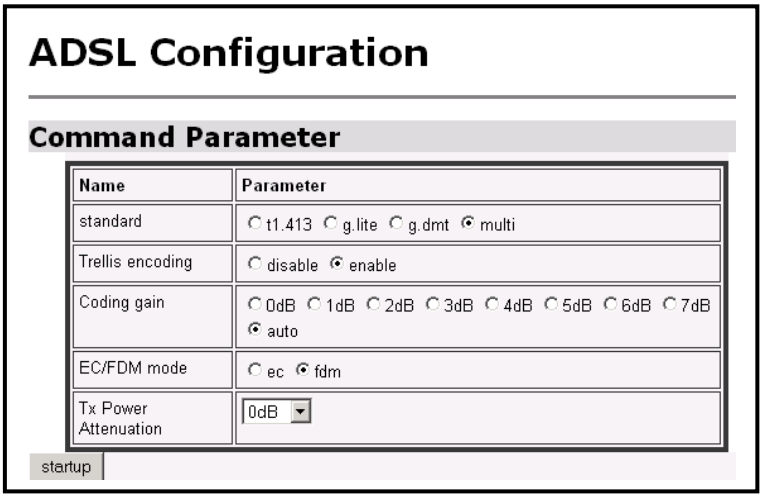
6.2 *Switch Hub*

- Click on the **Switch Hub** link on the navigation bar. This page displays a table of the port configurations. Included are the port numbers, configuration type, link, and speed/duplex.
- You may select a speed/duplex rate from the drop down list. Click on the **Apply** button when completed.



6.3 *ADSL*

Click on the **ADSL** link on the navigation bar. This page displays a table of the default ADSL settings. This includes standard, trellis coding, coding gain, EC/FDM mode, and Tx power attenuation. You may change the default settings in order to accommodate your needs, click on the **Startup** button when completed.



Appendix A – Specifications

A1. Hardware Specifications

- **Local Interface**
  - Four 10/100BaseT Ethernet ports, IEEE 802.3, RJ-45 connector
  - Integrated 802.11b WLAN Access Point

- **WAN ADSL Line Interface**
  - Compliant with ADSL ITU G.992.1 (G.dmt) Annex A and ITU G.992.2 (G.lite) and ANSI T1. 413 issue 2
  - Compliant with ADSL ITU G.992.1 (G.dmt) Annex B, ADSL ETSI ITS 101388 and Deutsche Telekom U-R2
  - Automatic-rate adaptation or programmable in step of 32Kbps
  - Line Impedance: 100 Ω
  - Connector: RJ-11

- **OAM&P**
  - Remote: Telnet or Web browser
  - Local: UART port

- **Memory capacity**
  - SDRAM: 128Mbytes
  - Flash Rom: 16MBytes

- **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 18VAC 600mA
  - Power Consumption: Less than 10 Watts

- **Physical Dimensions**
  - (W x D x H) 239mm x 158mm x 42mm

- **Certificates**
  - CE, CB, FCC Part 15 Class B, UL

A2. Software Specifications

■ **ATM**
- ATM Cell over ADSL, AAL5
- Support UBR, CBR, & VBR-nrt
- VPI Range (0-4095) and VCI range (1-65535)
- Supports up to 8 PVCs in Bridge mode and 5 PVCs in Router mode
- Supports OAM F4/F5 loopback
- 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, and PPPoE packets filter function

■ **Routing**
- TCP/IP with RIP1, RIP2 routing, or static IP routing
- NAT/PAT – RFC1631
- RFC2684 (RFC1483) Routed
- DNS relay

■ **Configuration and Network Management**
- DHCP server for IP management
- Telnet for local or remote management
- TFTP for firmware upgrade
- WEB configuration

■ **Firewall**
- C NAT
- Port filter
- IP filter
- IDS

Appendix B – Warranties

B1. Product Warranty

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.

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.

XAVi Technologies' liability shall be limited to either repair or replacement of the defective goods, at XAVi Technologies' option.

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 DOCUMETATION. 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, used, 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.

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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