BT Versatility

Communication without complication

Broadband Module/ Broadband Module Plus

Table of Contents

INTRODUCTION

The BROADBAND MODULE and the BROADBAND MODULE PLUS are BT Versatility system modules that provide multi-user high-speed Internet access as well as VoIP (Voice over IP) connectivity. It also provides a LAN (Local Area Network) that allows users to network PCs and share printers and other resources within the office.

The BROADBAND MODULE has the following features:

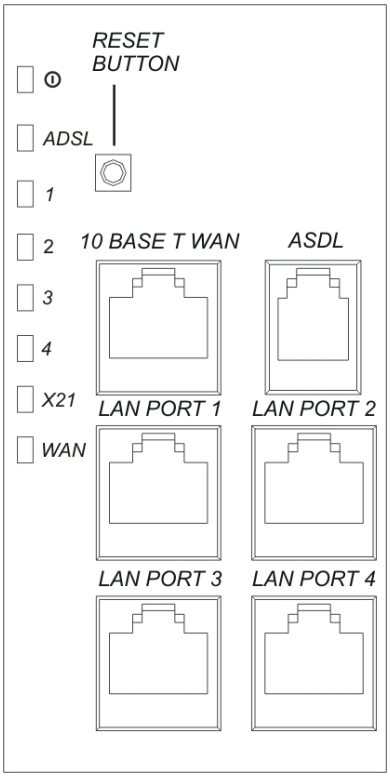
- Wide Area Networking
- Local Area Networking
- Wireless Local Area Networking
- Multi-user Internet Access
- DSL/Broadband
- ISDN
- Firewall
- VoIP Gateway supporting 2 IP trunks
- Management

The BROADBAND MODULE PLUS has all the above features but includes a VoIP Gateway with 12 endpoints that can be configured as IP trunks, IP extensions, or any combination of both. It also supports Unified Messaging.

CONNECTIONS

The following connectors are located under the top cover

- ADSL RJ-11
- 10 Base-T WAN (ETH/DMZ Port) RJ-45
- LAN Port 1 RJ-45
- LAN Port 2 RJ-45
- LAN Port 3 RJ-45
- LAN Port 4 RJ-45



INDICATORS

There are six indicators (LEDs) on the MDF cover.

- Heartbeat – steady to indicate normal processor activity
- ADSL - a solid light indicates ADSL line synchronisation – flashes with activity
- LAN 1 - a solid light indicates an Ethernet connection – flashes with activity
- LAN 2 - a solid light indicates an Ethernet connection – flashes with activity
- LAN 3 - a solid light indicates an Ethernet connection – flashes with activity
- LAN 4 - a solid light indicates an Ethernet connection – flashes with activity

An additional two indicators (LEDs) on the MDF indicate:-

- Not used – permanently lit
- WAN (ETH/DMZ) - a solid light indicates an Ethernet connection

RESET BUTTON

The MDF is equipped with a white reset button. When this button is pressed, the moduleresets.

LOCAL AREA NETWORK

The module is equipped with a 4-port LAN with the following characteristics.

Feature	*Description*
Speed	10/100 Mb/s switched Ethernet
Mode	The LAN device can operate in FDX (Full Duplex) or HDX (Half Duplex) mode.
MDI/ MDI-X	The port will automatically detect whether a straight or crossover cable is used to connect the LAN device and will adjust itself accordingly.
Autosensing	The port will automatically adapt to the speed and mode of the device that is connected to it.
Connectors	RJ-45

WIDE AREA NETWORK

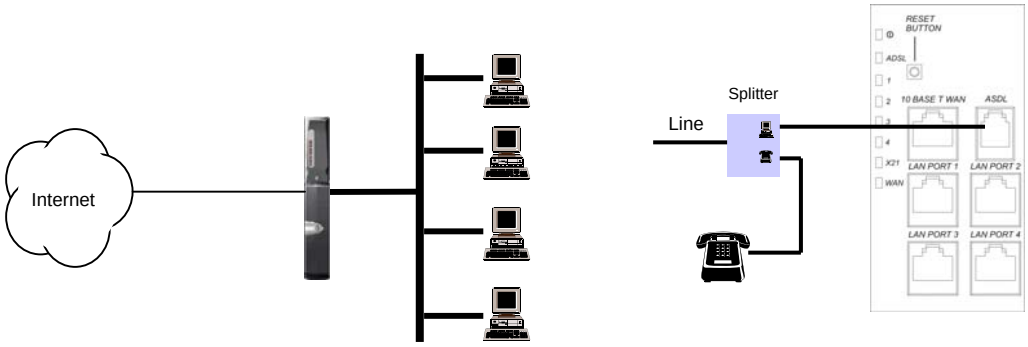
PORTS

The module is equipped with the following ports for Wide Area Networking.

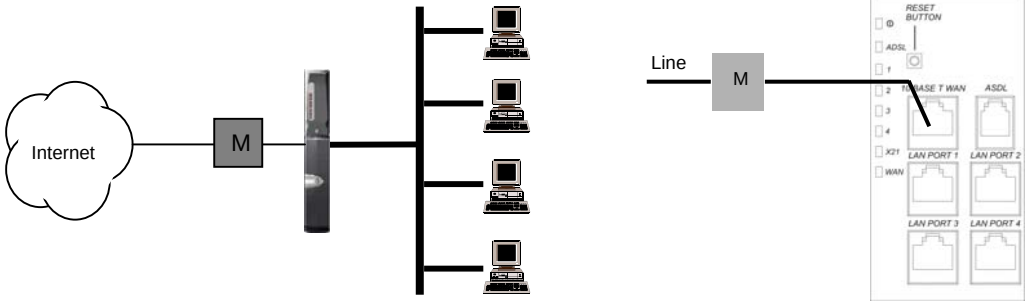
Port	*MDF Interface*	*Description*
ADSL	RJ-11	This is for "wires only" ADSL service. ITU-T G.992.1 Annex A (G.DMT) and ITU-T 992.2 (G.Lite) are supported.
ETH/DMZ Port	RJ-45	This port supports10/100 Ethernet, FDX/HDX, and is used to connect to an external broadband gateway or DMZ host. It does not support MDI/MDI-X
ISDN	N/A	A single 64 kb/s dial-up connection can be established over any ISDN line connected to the PBX.

EXAMPLES

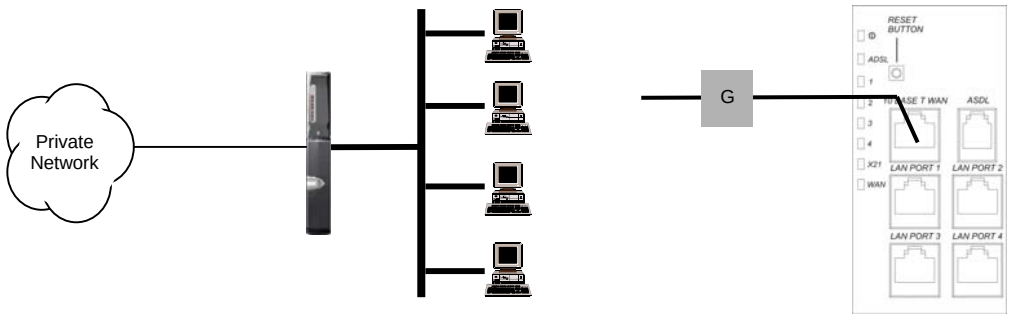
The on-board ADSL modem is used to connect to the Internet using a "wires only" service. See page 10.



The ETH/DMZ port is used to connect to an external SDSL or Cable modem. See page 27.



The ETH/DMZ port is used to connect to a Gateway into a private network. See page 27.



ROUTES

A single route using PPP (including PPPoE and PPPoA) and a second route using static or dynamic IP are concurrently supported. The following combinations of ports and protocols are possible.

Port	*Protocol*		*Port*	*Protocol*
ADSL Modem	PPPoE/PPPoA	and	ETH/DMZ	IP
ISDN	PPP	and	ETH/DMZ	IP

For example, the ADSL Modem could be used to connect to the Internet for web browsing and the ETH/DMZ port could be connected to a gateway into a private wide area network.

FIREWALL

The module is equipped with a firewall that has the following features:

- Stateful Inspection
- Packet Filter Definition
- Network Address Translation
- Intrusion Detection
- Security Logging

VOIP

The BROADBAND MODULE is equipped with a VoIP gateway with the following features:

- 2 endpoints which support IP trunks
- Proxy server registration
- Codecs - G.711, G.729
- Quality of Service

The BROADBAND MODULE PLUS is equipped with a VoIP gateway with the following features:

- 12 endpoints which support trunks, extensions, unified messaging or any combination of all three
- Proxy server registration
- Codecs - G.711, G.729
- Quality of Service

BANDWIDTH REQUIREMENTS

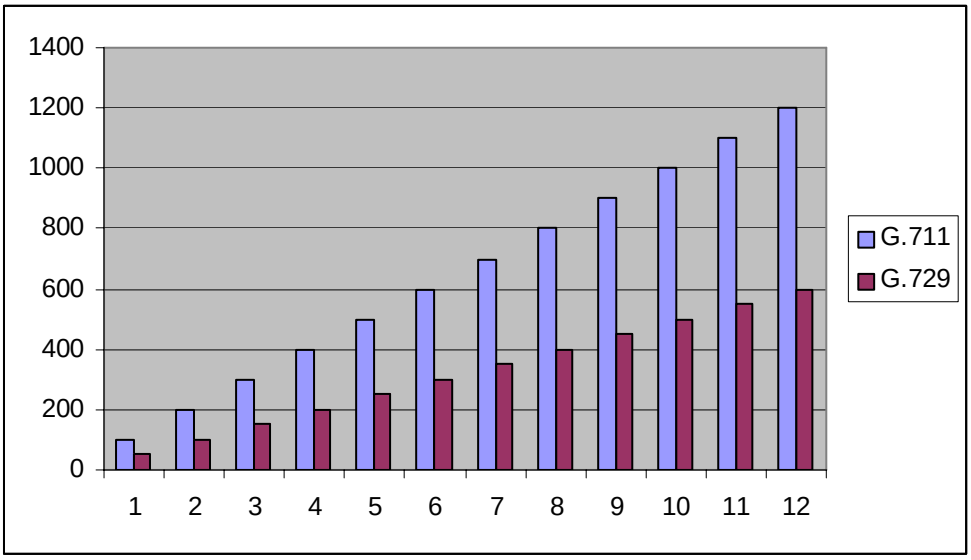
The BROADBAND MODULE and BROADBAND MODULE PLUS support two different codecs, each with different bandwidth requirements. In addition to the bandwidth used by a codec, there is also an overhead imposed by the various protocols used in transporting the IP packets as well as signalling. When this is taken into account, the actual bandwidth required for each codec increases significantly.

In order to ensure good voice quality, it is recommended that the following bandwidth is available on the broadband connection for IP trunks and extensions

Codec	*IP Trunk or Extension*
G.711	100 kb/s
G.729	50 kb/s

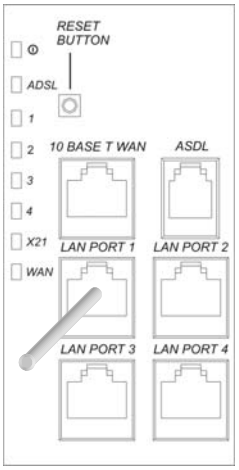
NUMBER OF VOIP CHANNELS

The following chart shows the bandwidth required to support up to 12 VoIP channels. When calculating the number of VoIP channels that can be used over ADSL, always use the lower (upload) data rate. Note that data applications for browsing etc., will require additional bandwidth.



QUICK SETUP

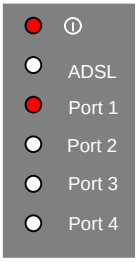
CONNECTING A PC TO THE LAN



❶ Power up the PC

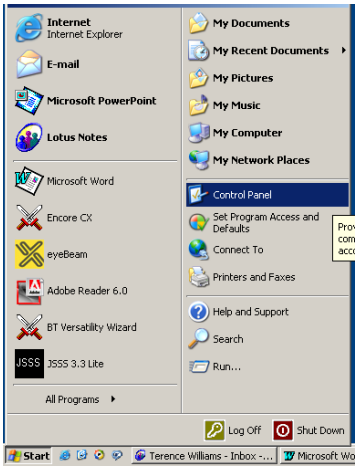
❷ Connect the Ethernet port on the PC to any LAN port (1 - 4) on the MDF using a Cat 5 cable/patch cord.

❸ Check that the LED on the MDF cover for the port the PC is connected to, is lit permanently. This indicates a good Ethernet connection between the PC and the Broadband Module

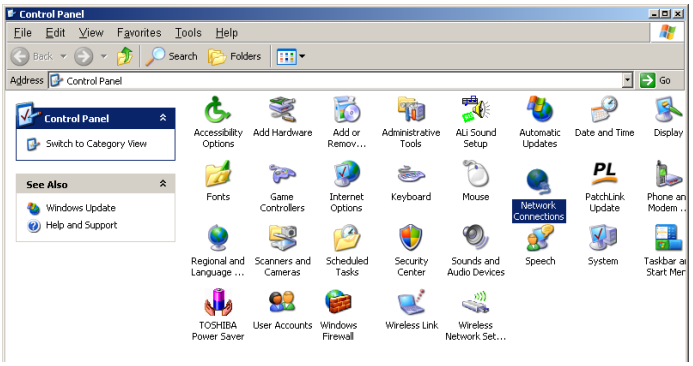


SET UP THE PC TO AUTOMATICALLY OBTAIN AN IP ADDRESS

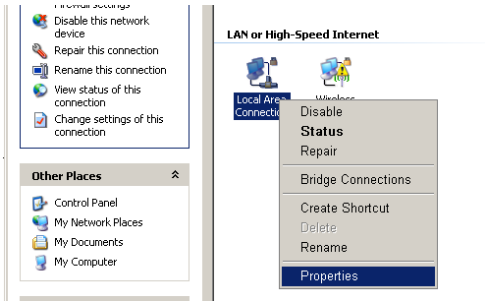
❶ Click **Start** and **Control Panel**



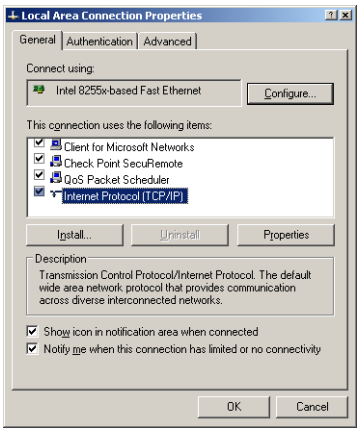
❷ Click **Network Connections**



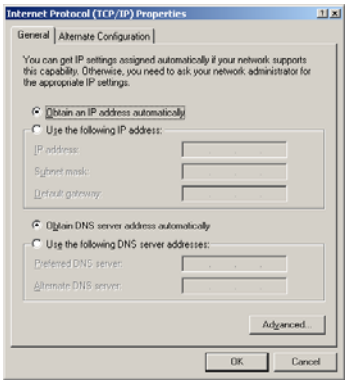
❸ Right click **Local Area Connection**, Click **Properties**



❹ Select **Internet Protocol (TCP/IP)**, click **Properties**



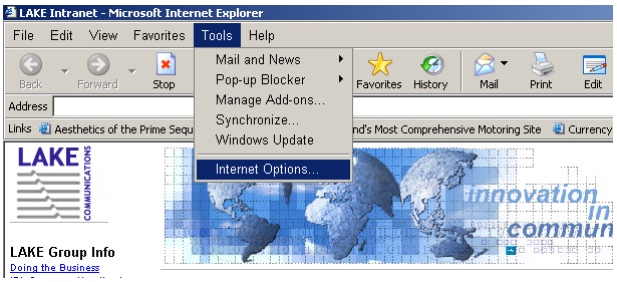
❺ Select **Obtain an IP address automatically**, **Obtain DNS server address automatically**, click **OK**



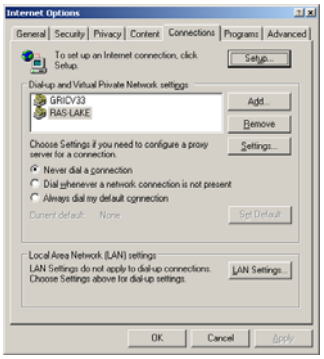
The PC is now set up to automatically obtain an IP address.

SETTING UP THE BROWSER

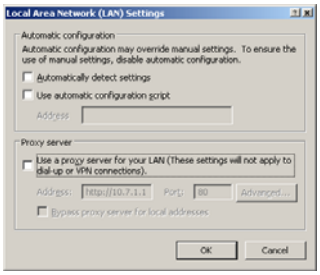
❶ Click **Tools, Internet Options**



❷ Select **Connections**, click **LAN Settings**



❸ Uncheck **"Use a proxy server for your LAN"**, click **OK**



The browser is now set up.

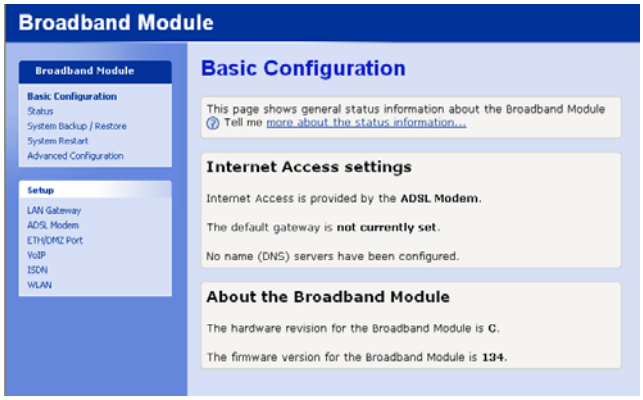
CONNECTING TO THE PROGRAMMING INTERFACE

In order to provide maximum security, PCs connected to the WLAN are not allowed to program the module via the web interface. If programming from a wireless network PC is required, the WLAN interface should be changed to LAN (page 51).

❶ Launch the browser on any PC connected to the LAN, enter 0Hhttp://192.168.1.1 in the address field, press return

❷ Enter **User name** (admin) and **Password** (admin)

❸ The Basic Configuration screen is displayed

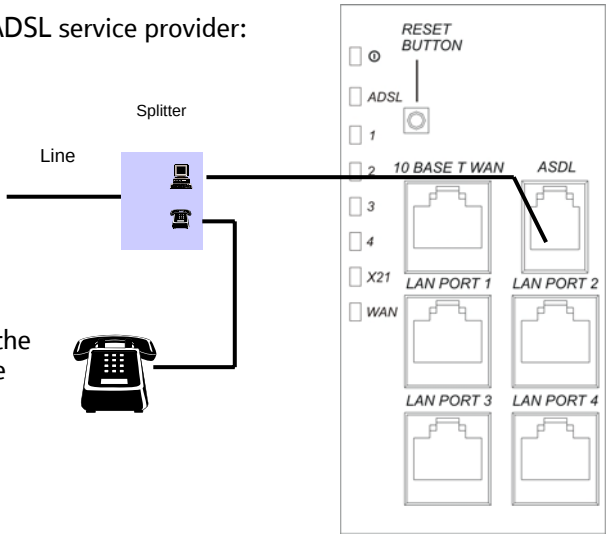


SETTING UP ADSL

The module contains an on-board ADSL modem. The connection to the modem is via an RJ-11 connector on the MDF.

Obtain the following information from your ADSL service provider:

Username
Password
Type of Access
VPI and VCI values

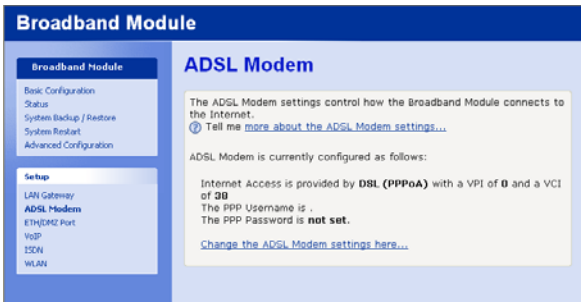


❶ Connect the data port on the splitter to the ADSL RJ-11 port on the MDF. Connect the telephone port on the splitter to a telephone or fax machine

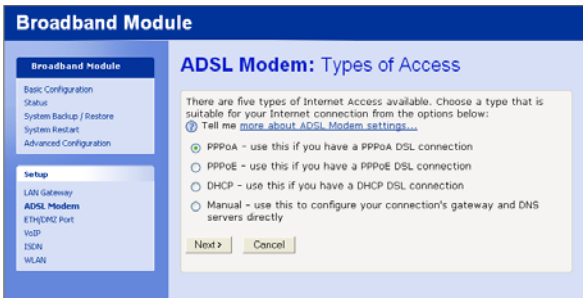
❷ Enter the programming menu

Click **ADSL Modem** in the Setup menu

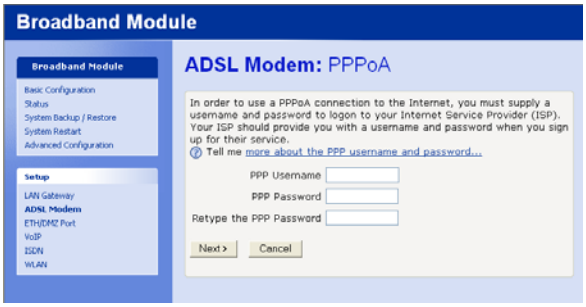
Click **Change the ADSL Modem settings here …**



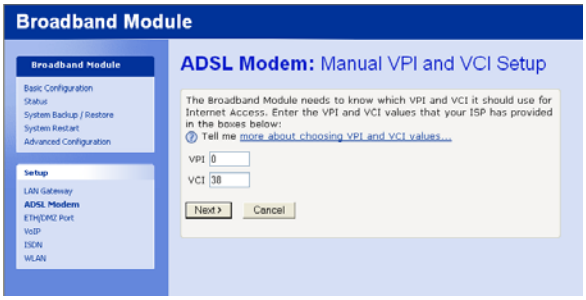
❸ **PPPoA** is selected by default, click **Next >**



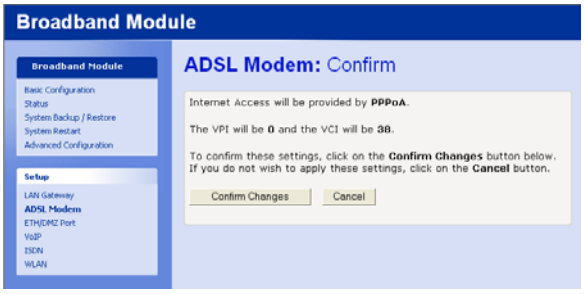
❹ Enter the **PPP Username** and **PPP Password**, retype the password, click **Next >**



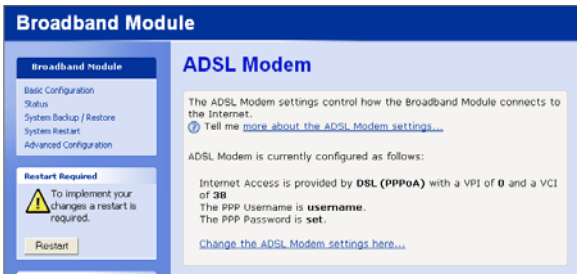
❺ The default **VPI** and **VCI** values (0/38) are shown, if different values are required, enter them here, click **Next >**



❻ Click **Confirm Changes**



❼ The new settings are displayed, Restart the module



The ADSL setup is now complete.

SETTING UP IP TRUNKS

The following procedure is used to set up the BROADBAND MODULE and the BROADBAND MODULE PLUS to operate with the BT Broadband Voice service.

A broadband connection must first be established before VoIP can be programmed. Refer to the VoIP section (page 6) to find out how many IP trunks can be supported on your broadband connection.

When you subscribe to the BT Broadband Voice service, you will be given a URL to link to and a username and password. Connect to the URL from any PC on the LAN and enter the username and password. The VoIP trunks will then be automatically configured.

To verify that the trunks have registered with the BT Broadband Voice service

- Select “Status” from the main menu, scroll down to VoIP and verify that each trunk has registered as indicated by ✓.

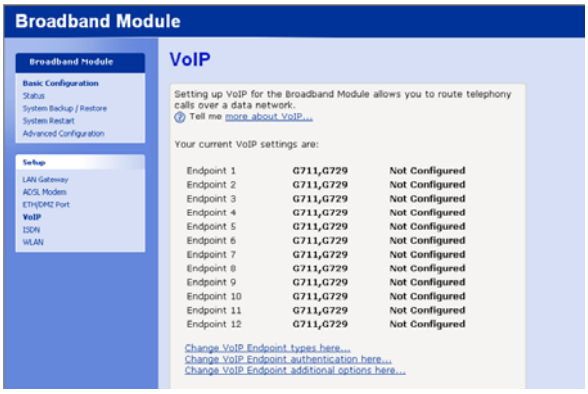
SETTING UP IP EXTENSIONS

The BROADBAND MODULE PLUS supports up to twelve IP endpoints which can be configured as either trunks, extensions, or a combination of both. Note that when Unified Messaging Service is required, one endpoint must be permanently assigned to it.

V-IP Featurephones must be used as local or remote extensions. (Note that other manufacturers IP phones will not work with the system). Refer to the V-IP Featurephone Quick Reference User Guide for setting up and connecting the phone.

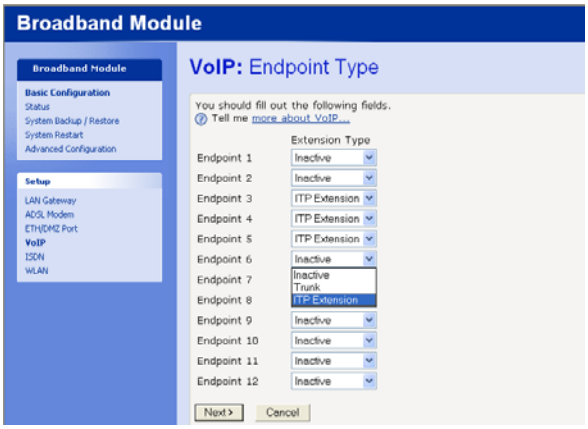
❶ Select “VoIP” from the Setup menu

❷ Select Change VoIP Endpoint types here …

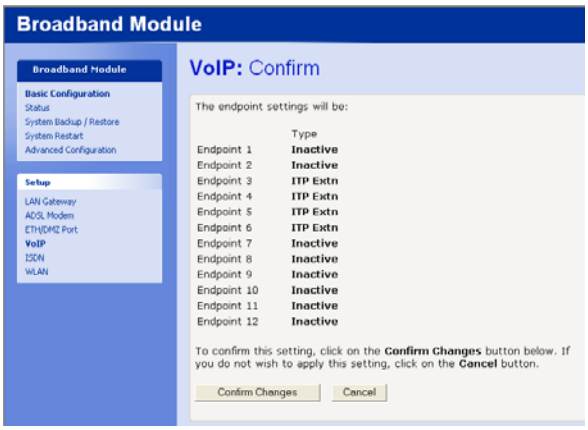


❸ Select ITP Extension for each endpoint to be configured as an extension

Select Next >

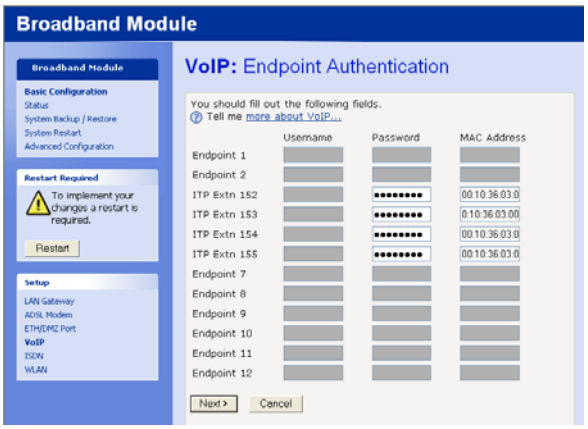


❹ Select Confirm Changes



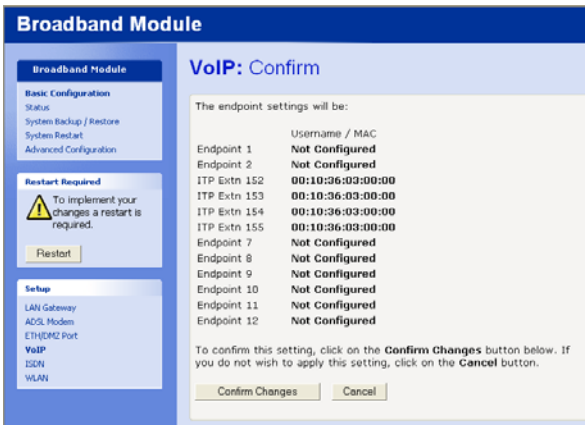
❺ Enter the Password and MAC address for each extension. The MAC address is printed on a label on the base of the V-IP Featurephone.

Select Next>



❻ Select Confirm Changes

Restart the module



The IP Extension programming is now completed.

The following extension numbers are assigned to each endpoint. These are the default settings. The extension numbers can be changed in the PBX Flexible Numbering option.

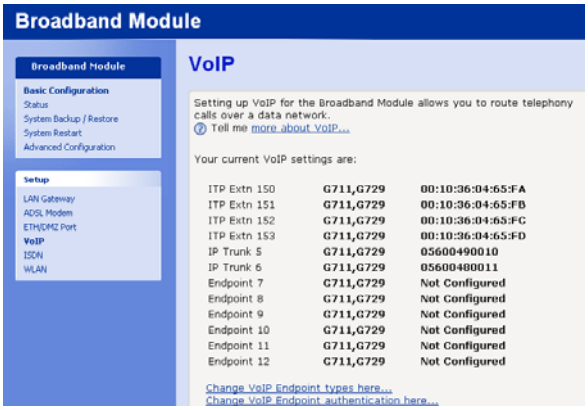
Extension	Endpoint
150	1
151	2
152	3
153	4
154	5
155	6
156	7
157	8
158	9
159	10
160	11
161	12

SETTING UP UM SERVICE

Unified Messaging provides email notification of voicemail messages left in the PBX voicemail system. One IP endpoint must be permanently assigned to UM.

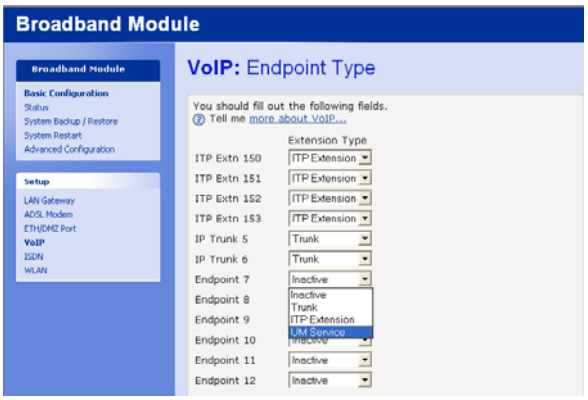
❶ Select "VoIP" from the Setup menu

❷ Select Change VoIP Endpoint types here …



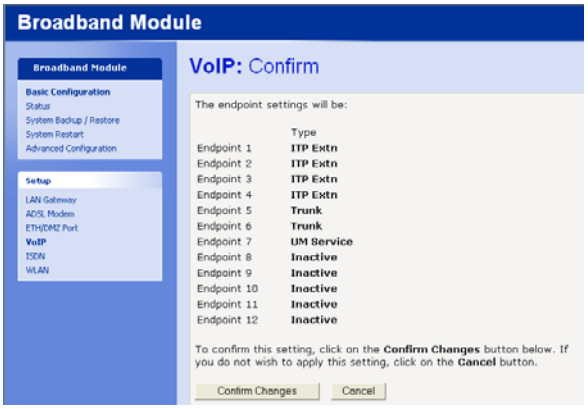
❸ Select a free endpoint and select UM Service

Select Next >



❹ Select Confirm Changes

Restart the module

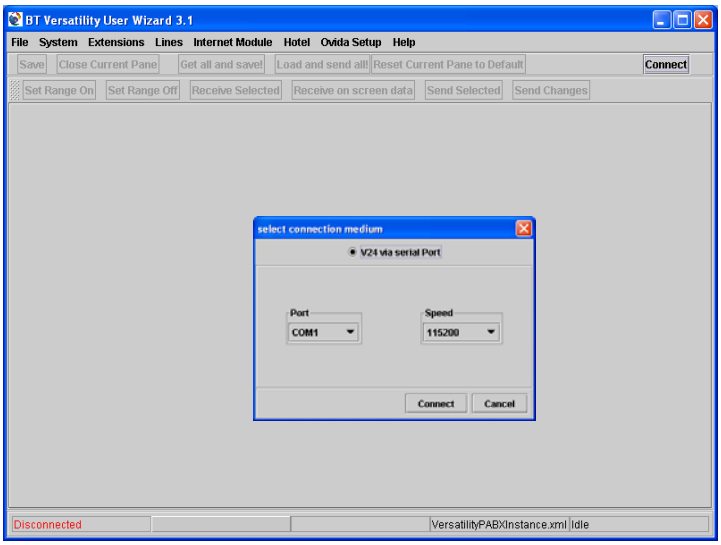


PROGRAMMING

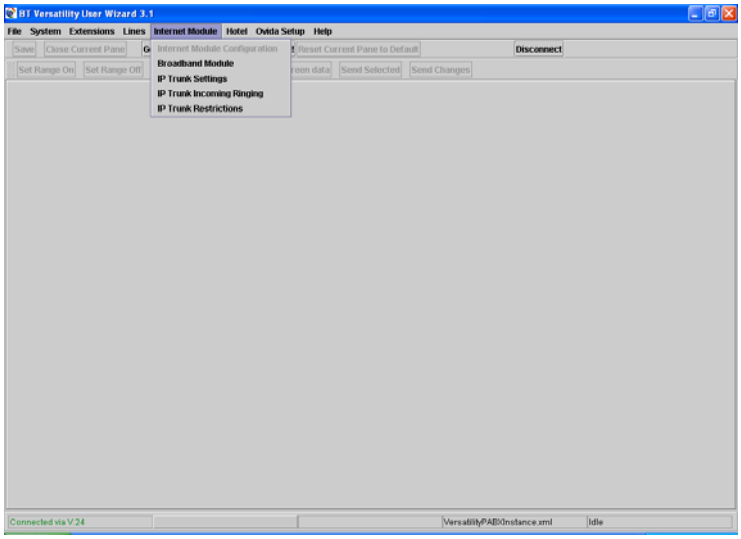
All BROADBAND MODULE AND BROADBAND MODULE PLUS parameters can be programmed using BT Versatility Wizard or via a browser on any PC connected to the LAN. The Welcome screen and all subsequent screens presented are identical for both methods of access.

Programming from BT Versatility Wizard

Connect the PC with BT Versatility Wizard directly to the V.24 interface on the PBX and launch BT Versatility Wizard.



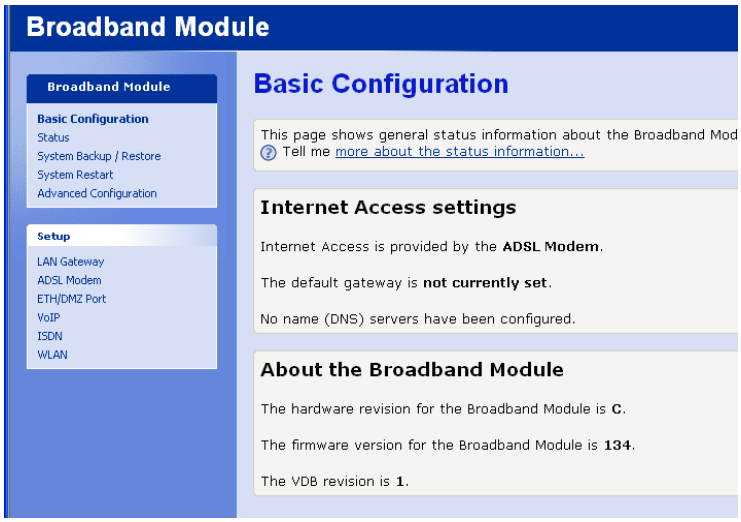
- Select “Connect”
- On the pop-up menu select the COM port and speed. The default setting for the speed is 115,200 bps. This can be changed if required.
- Select “Connect”
- When the connection is established, select "Broadband Module" on the main menu



The Basic Configuration screen is displayed

BASIC CONFIGURATION

The Basic Configuration screen shows the current Internet access settings as well as the hardware and firmware versions.



SETUP MENU

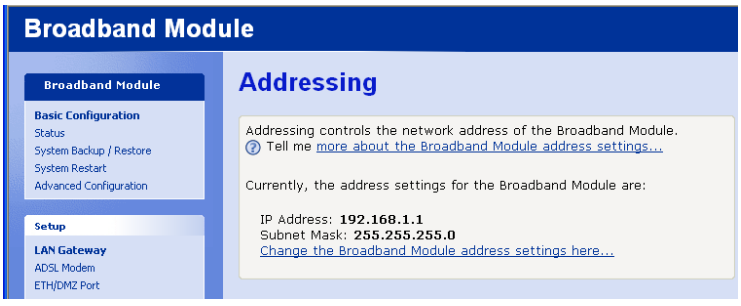
The **Setup** menu contains the following:

LAN Gateway

The LAN Gateway address is set by default to 192.168.1.1.
The following procedure is used to change this setting.

- Select “LAN Gateway” in the Setup menu.

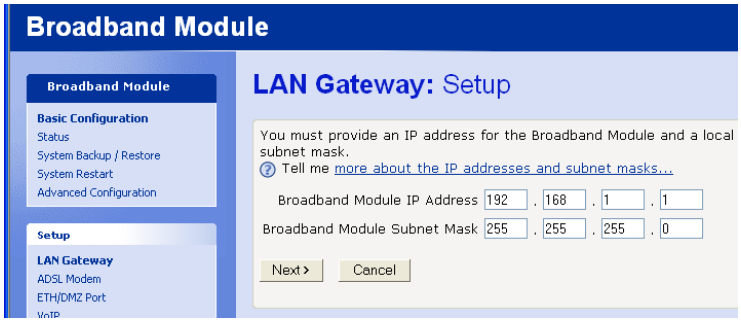
The following screen is displayed:



The current settings are shown.

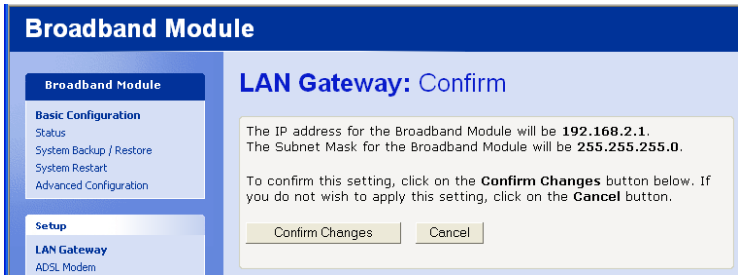
- Select “Change the Broadband Module address settings here …”

The following screen is displayed: -



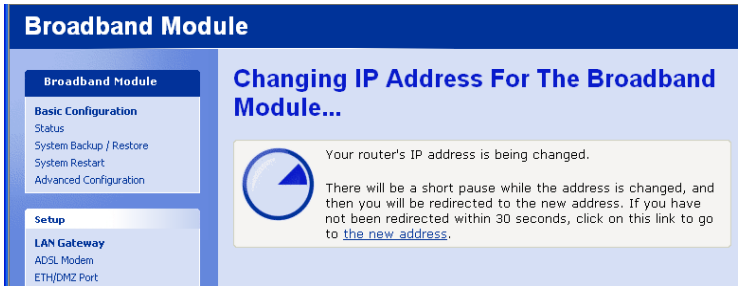
- Enter the new IP address and Subnet Mask.
- Select “Next”

The following screen is displayed

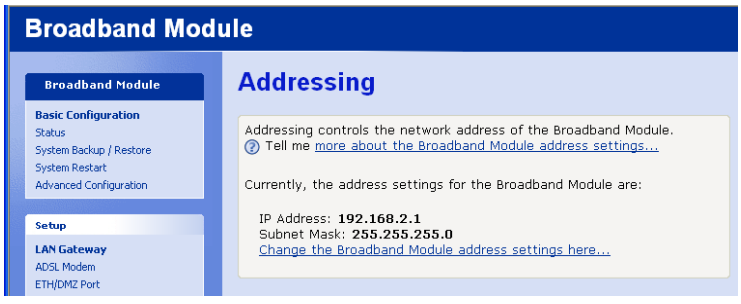


- Select “Confirm Changes”

The following screen is displayed



When the new parameters have been saved, the following screen is displayed showing the new settings



Note that the DHCP Server address range for LAN hosts will automatically change in the Advanced Configuration settings to reflect the new address range.

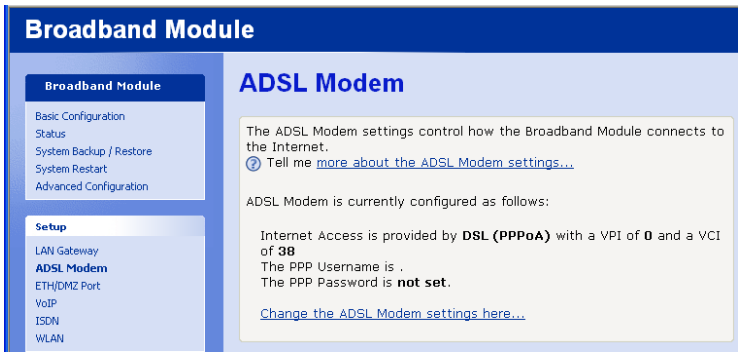
ADSL MODEM

To set up the ADSL modem, obtain the following information from your service provider.

- Type of Access
- Username
- Password
- VPI/VCI

- Select “ADSL Modem” from the Setup menu.

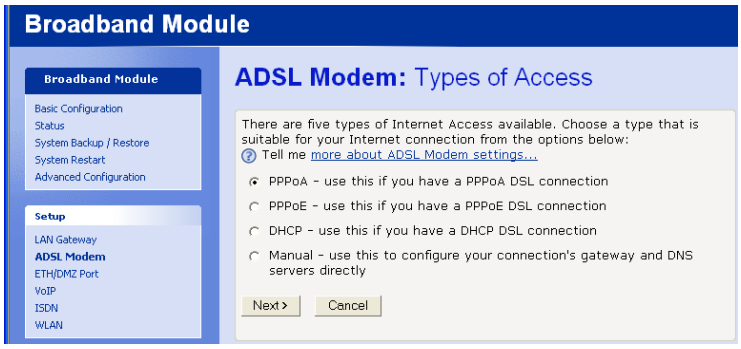
The following screen is displayed



This screen shows the current settings.

- Select “Change the ADSL Modem settings here …”

The following screen is displayed



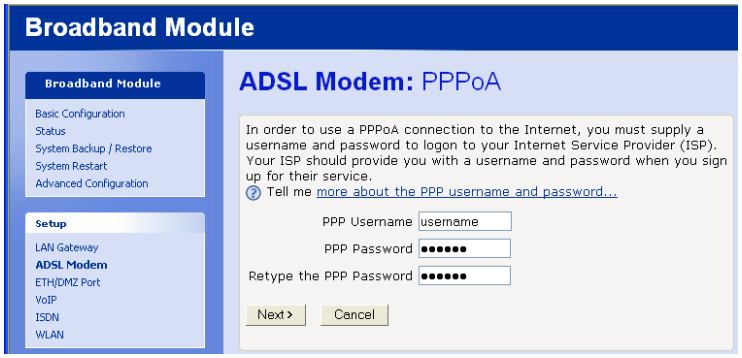
Four options are presented for Type of Access:-

(1) PPPoA

This option uses Point-to-Point Protocol over ATM

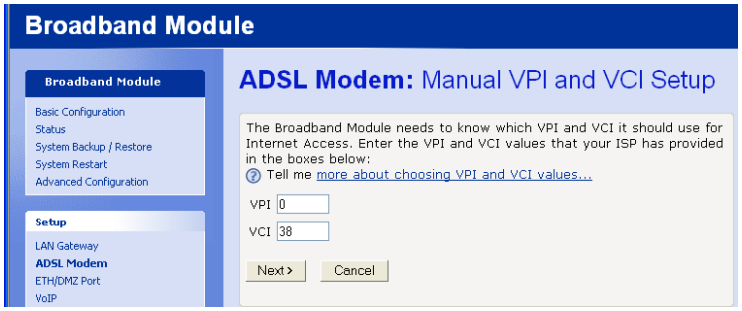
- Select “PPPoA” from the “ADSL Modem: Types of Access” screen
- Select “Next”

The following screen is displayed



- Enter a Username and Password. Retype the Password.
- Select “Next”

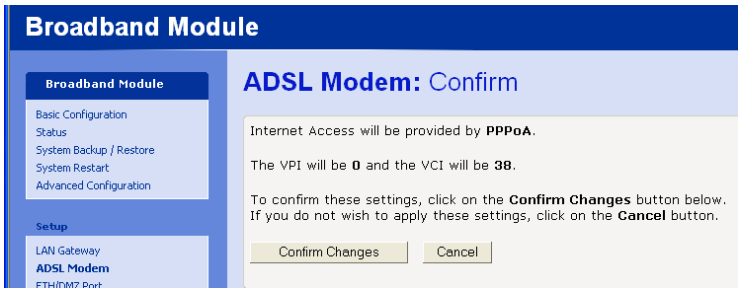
The following screen is displayed.



VPI/VCI
VPI/VCI (Virtual Path Identifier/Virtual Circuit Identifier) specify the ATM connection between the ADSL modem and the service provider. The VPI range is 0 – 4095. The VCI range is 0 – 65535. The default values are 0/38

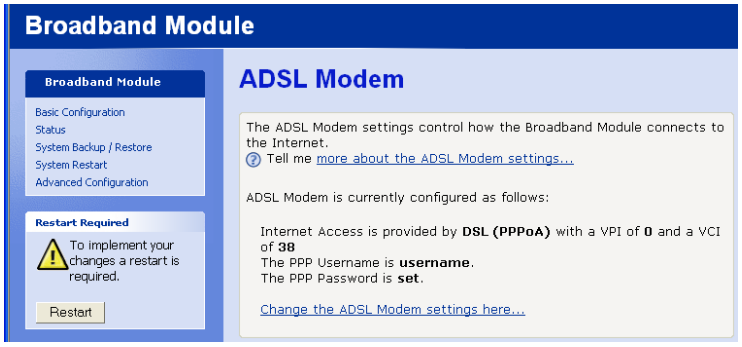
- Enter the VPI and VCI values if they are different from the default values
- Select “Next”.

The following screen is displayed



- Select “Confirm Changes”

The new parameters are saved and the new ADSL Modem settings are displayed.



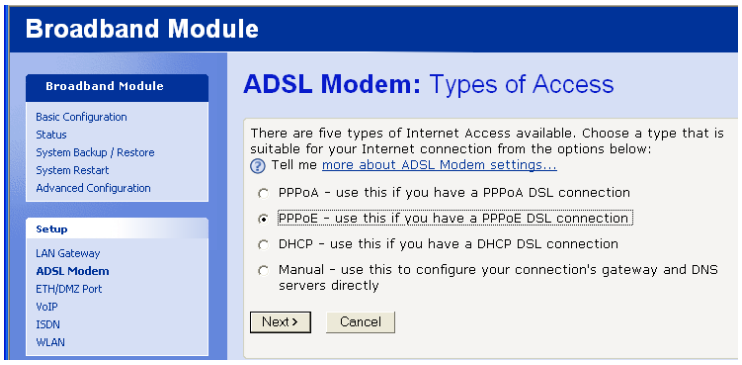
- Restart the module.

The ADSL Modem setup is now complete.

(2) PPPoE

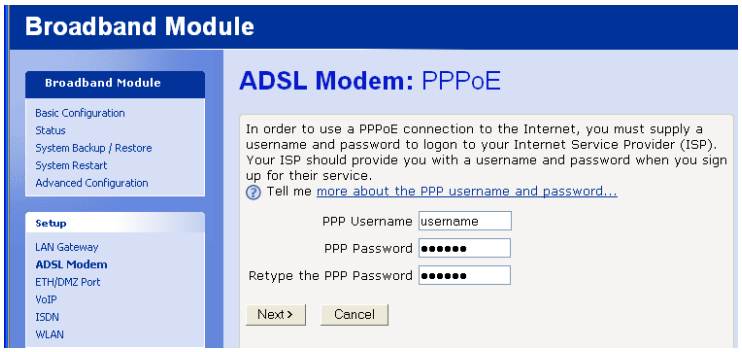
This option uses Point-to-Point Protocol over Ethernet.

- Select "PPPoE" from the "ADSL Modem: Types of Access" screen



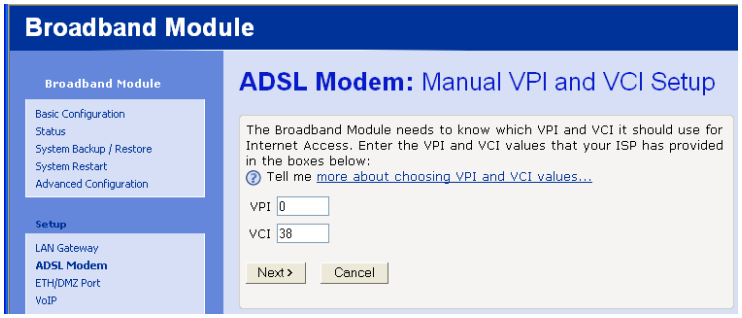
- Select "Next"

The following screen is displayed



- Enter a Username and Password. Retype the Password.
- Select "Next"

The following screen is displayed.

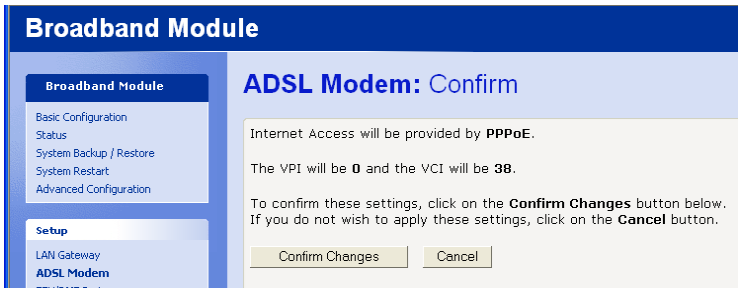


VPI/VCI

VPI/VCI (Virtual Path Identifier/Virtual Circuit Identifier) specify the ATM connection between the ADSL modem and the service provider. The VPI range is 0 – 4095. The VCI range is 0 – 65535. The default values are 0/38

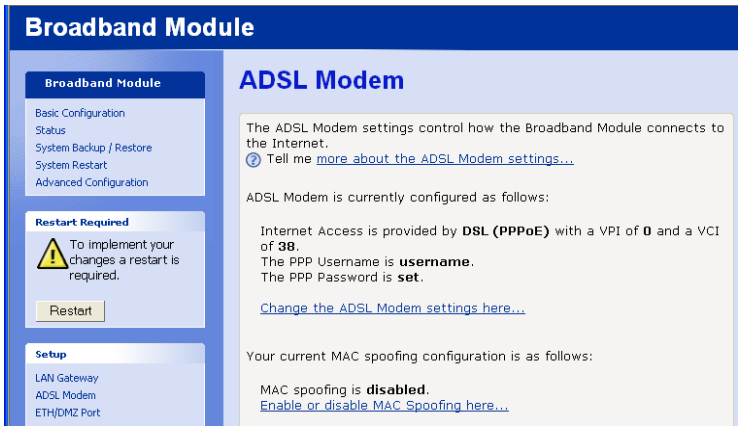
- Enter the VPI and VCI values if they are different from the default values
- Select “Next”

The following screen is displayed



- Select “Confirm Changes”

The following screen is displayed



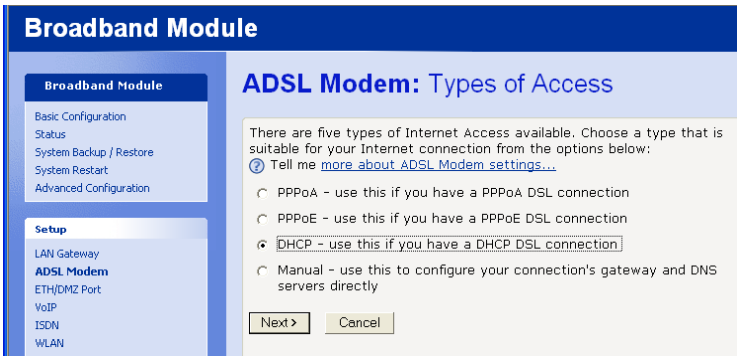
- Restart the module

The ADSL Modem setup is now complete.

(3) DHCP

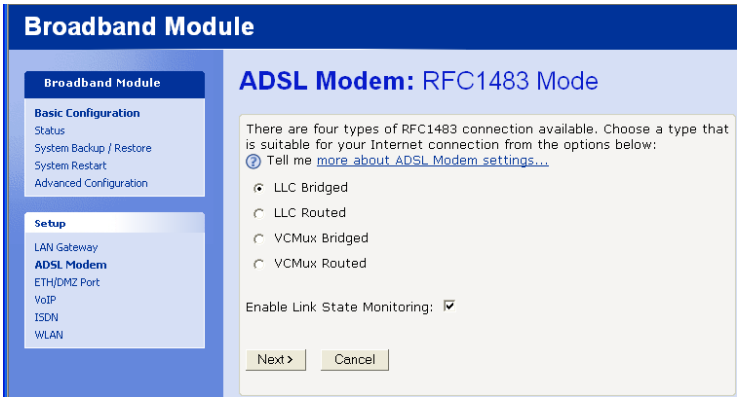
This option uses RFC 1483 Routed. DHCP (Dynamic Host Configuration Protocol) is used to automatically obtain the IP addresses.

- Select “DHCP” from the “ADSL Modem: Types of Access” screen



- Select “Next”

The following screen is displayed

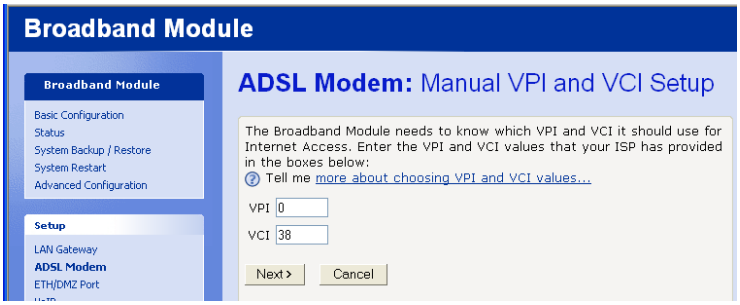


- Select one of the following modes. Your service provider will advise you on the mode to be selected

  LLC Bridged
  LLC Routed
  VCMux Bridged
  VCMux Routed

  “Enable Link State Monitoring” should be ON

- Select “Next”

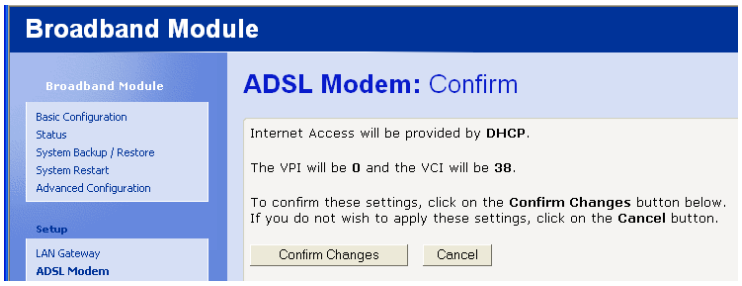


VPI/VCI

VPI/VCI (Virtual Path Identifier/Virtual Circuit Identifier) specify the ATM connection between the ADSL modem and the service provider. The VPI range is 0 – 4095. The VCI range is 0 – 65535. The default values are 0/38

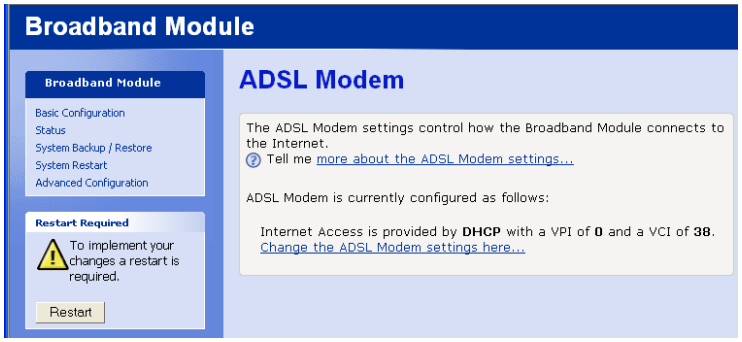
- Enter the VPI and VCI values if they are different from the default values
- Select “Next”

The following screen is displayed



- Select “Confirm Changes”

The following screen is displayed



- Restart the module

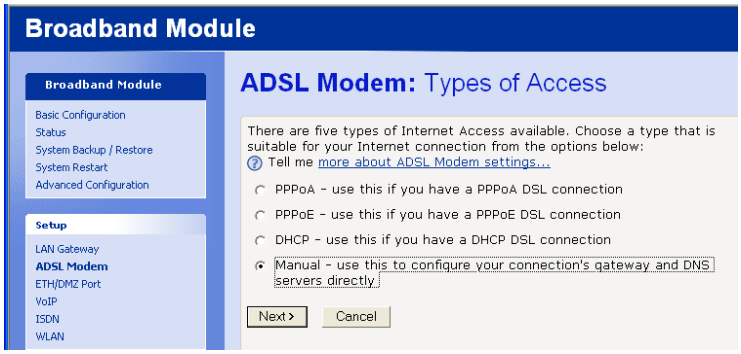
The ADSL Modem setup is now complete.

(4) Manual

This option uses RFC 1483 Routed. Static IP addresses will be provided by the service provider and are manually entered.

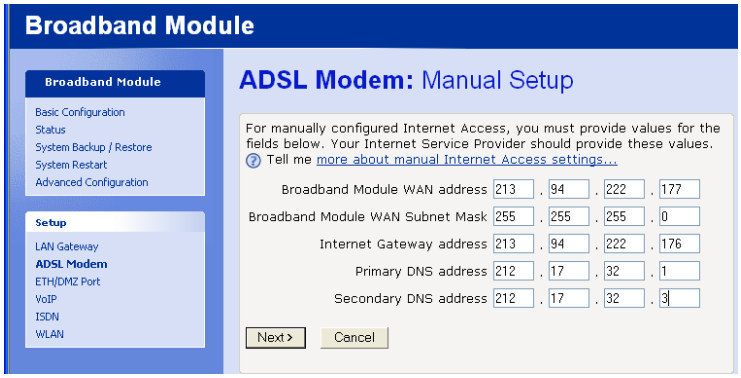
- Select “Manual” in the “ADSL Modem: Types of Access” screen.
- Select “Next”

The following screen is displayed



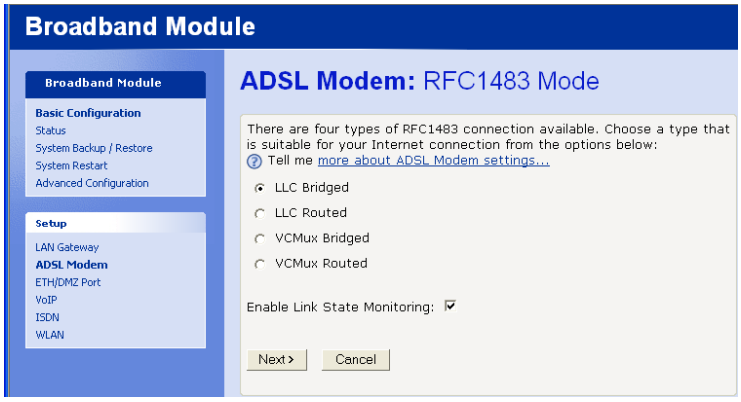
- Select “Next”

The following screen is displayed



- Enter the required IP addresses and Subnet mask.
- Select “Next”

The following screen is displayed



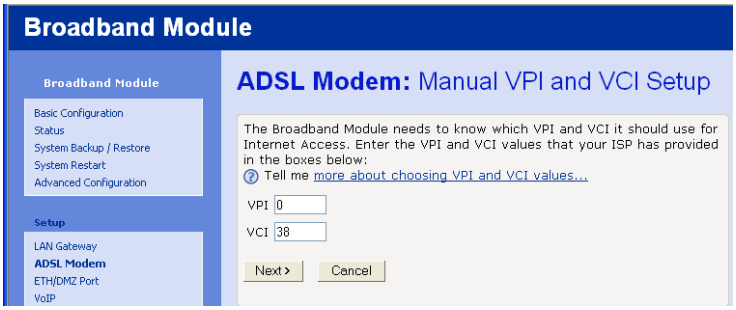
- Select one of the following modes. Your service provider will advise you on the mode to be selected

  LLC Bridged
  LLC Routed
  VCMux Bridged
  VCMux Routed

“Enable Link State Monitoring” should be ON

- Select “Next”

The following screen is displayed

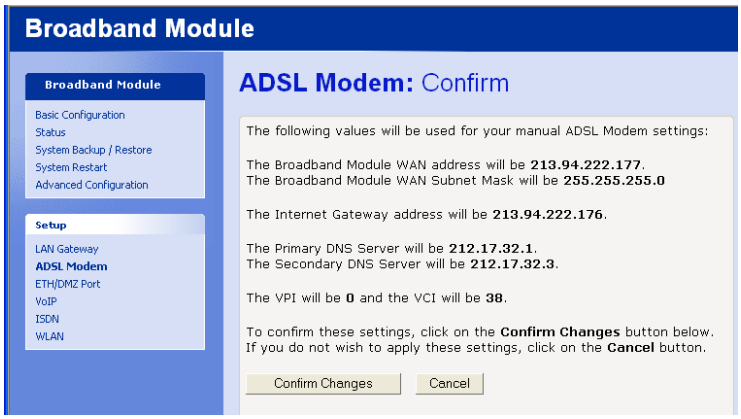


VPI/VCI

VPI/VCI (Virtual Path Identifier/Virtual Circuit Identifier) specify the ATM connection between the ADSL modem and the service provider. The VPI range is 0 – 4095. The VCI range is 0 – 65535. The default values are 0/38

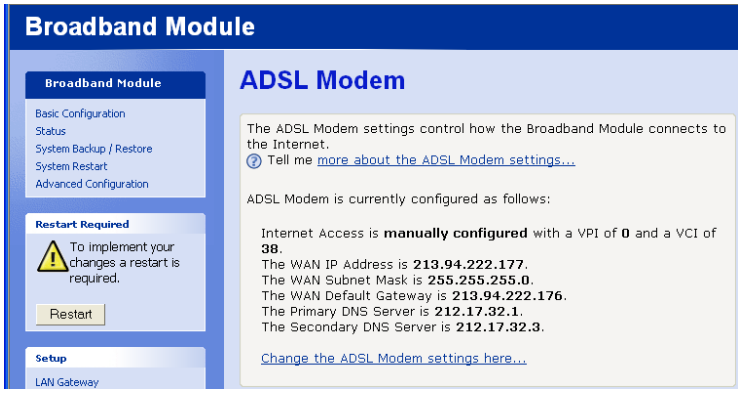
- Enter the VPI and VCI values if they are different from the default values
- Select “Next”

The following screen is displayed



- Select “Confirm Changes”

The following screen is displayed



- Restart the module

The ADSL Modem setup is now complete.

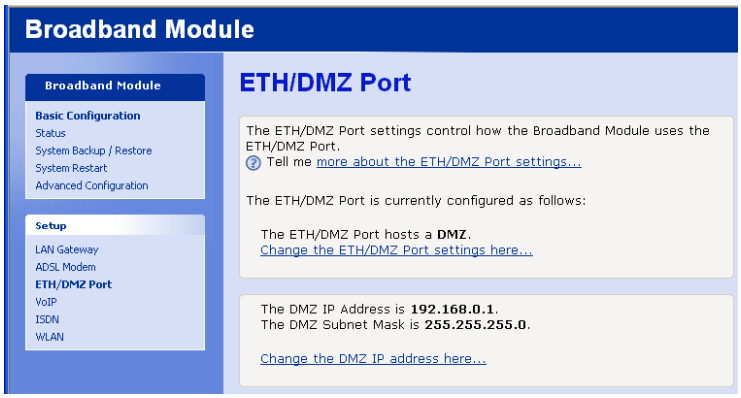
ETH/DMZ PORT

By default this port is set up as a DMZ with an IP address of 192.168.0.1 and a subnet mask of 255.255.255.0. The DHCP server is enabled on this and provides addresses in the same subnet range.

The ETH/DMZ port can also be used to connect to an external broadband modem, a LAN or a WAN, or to add a host to the DMZ. To do this, follow the following procedure:

- Select "ETH/DMZ Port"

The following screen is displayed



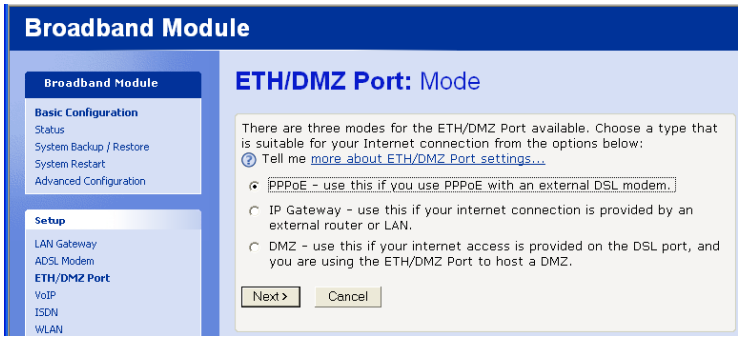
- Select the "Change the ETH/DMZ settings here …"

(To Change the DMZ IP address here …, see page 31)

Three options are presented

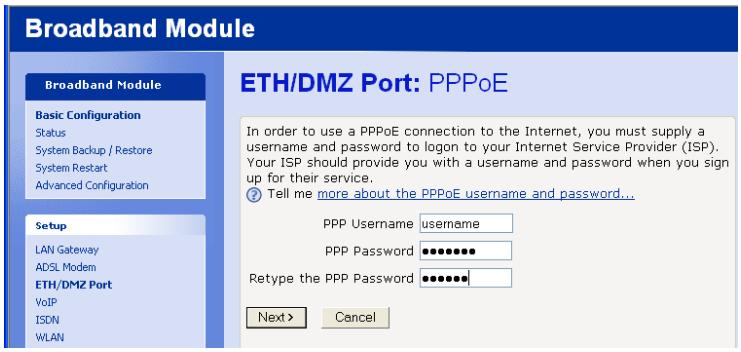
(1) PPPoE

PPPoE is used when connecting to an external broadband modem



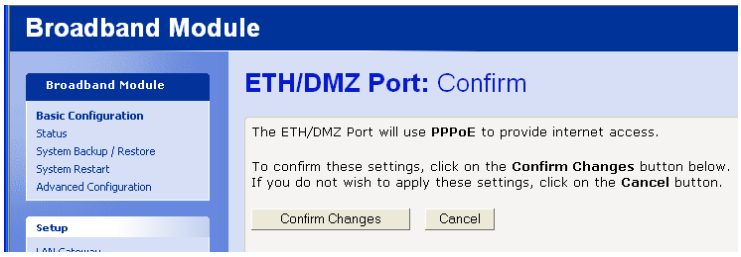
- Select "PPPoE" from the "ETH/DMZ Port: Mode" screen
- Select "Next"

The following screen is displayed



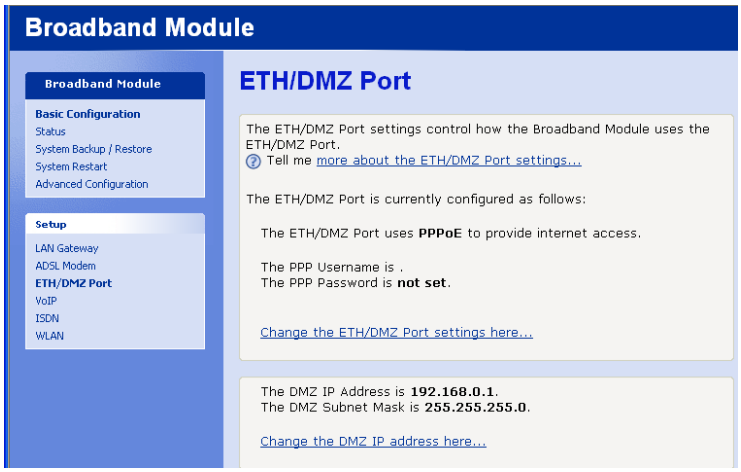
- Enter a Username and Password. Retype the Password.
- Select “Next”

The following screen is displayed



- Select “Confirm Changes”

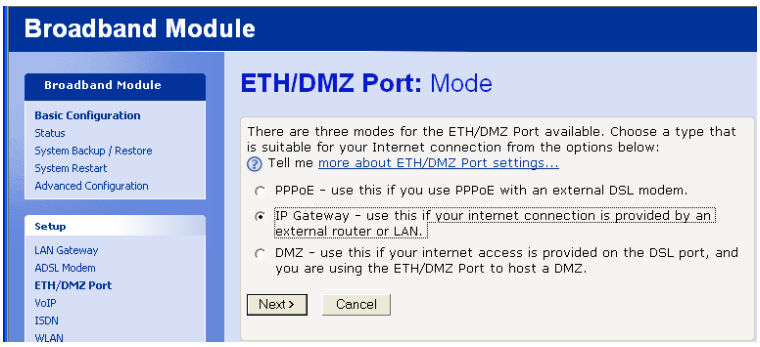
The following screen is displayed



The ETH/DMZ port is now set up to connect to an external ADSL modem.

(2) IP Gateway

IP Gateway is used when connecting to another LAN or WAN via an external router.

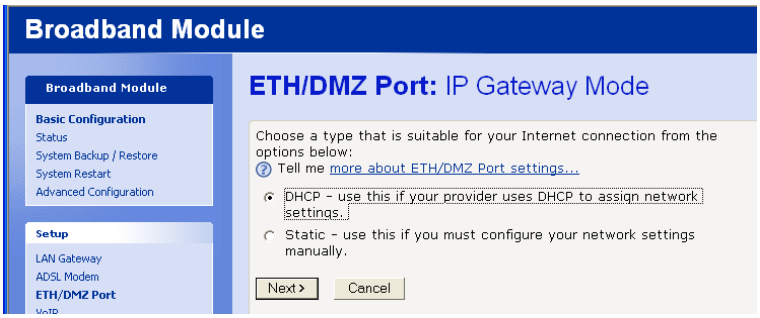


- Select “IP Gateway” from the “ETH/DMZ Port: Mode” screen
- Select “Next”

Two options are presented :-

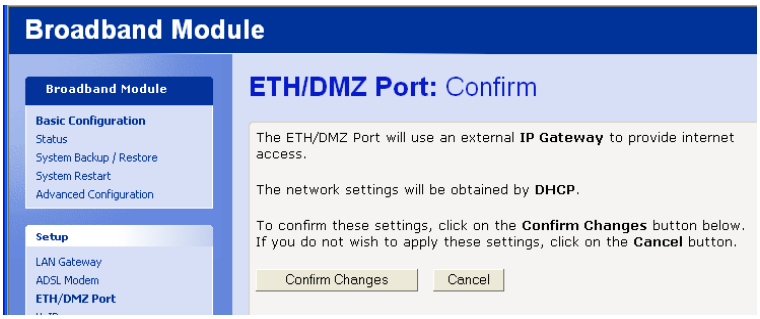
(a) DHCP

The IP address is automatically assigned by DHCP



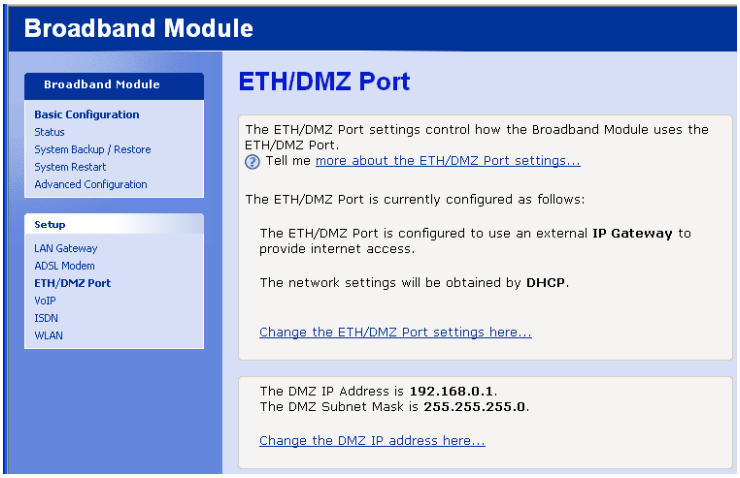
- Select “DHCP” from the “ETH/DMZ Port: IP Gateway Mode” screen
- Select “Next”

The following screen is displayed



- Select “Confirm Changes”

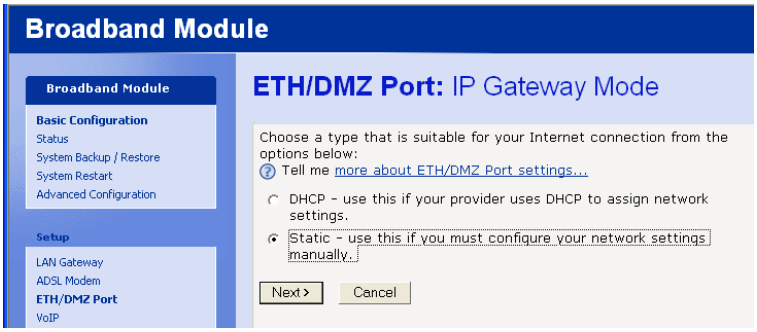
The following screen is displayed



The setup is now complete.

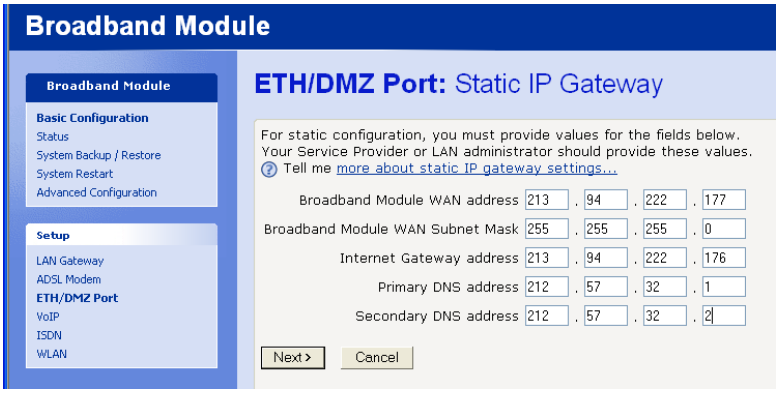
(b) Static

Static IP addresses will be provided by the network administrator



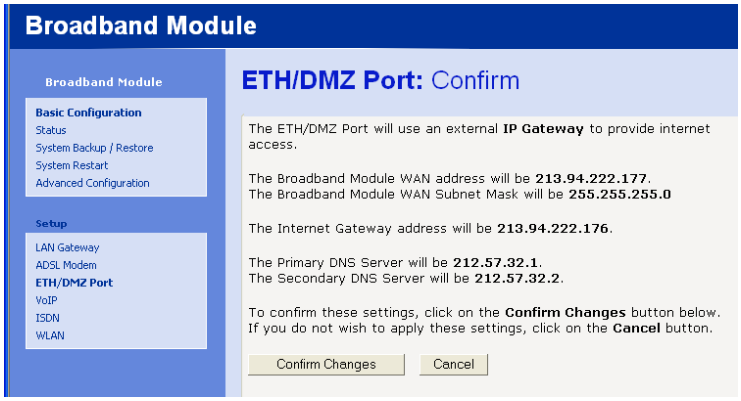
- Select “Static” from the “ETH/DMZ Port: IP Gateway Mode” screen
- Select “Next”

The following screen is displayed.



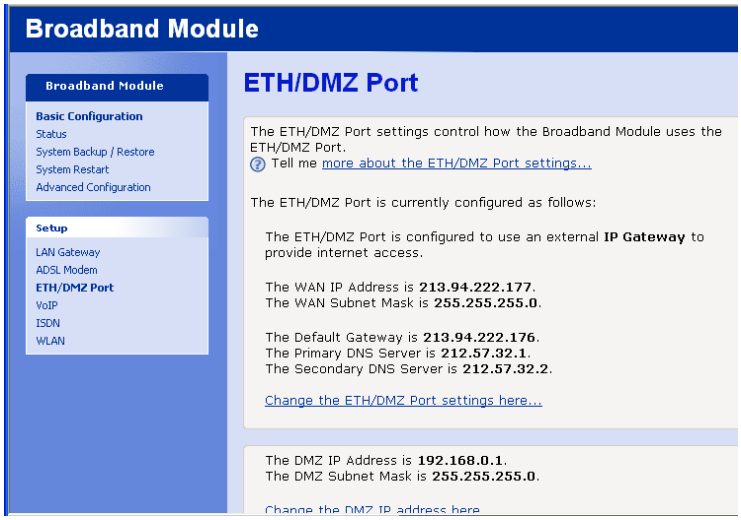
- Enter the required IP addresses and Subnet mask
- Select “Next”

The following screen is displayed



- Select “Confirm Changes”

The following screen is displayed

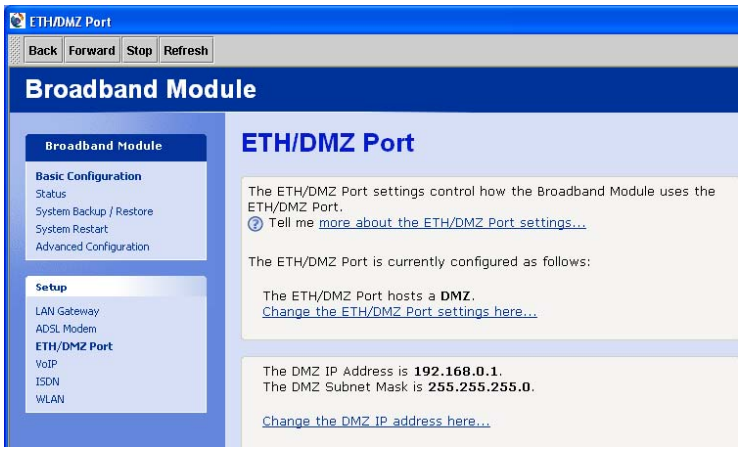


The setup is now complete.

(3) DMZ

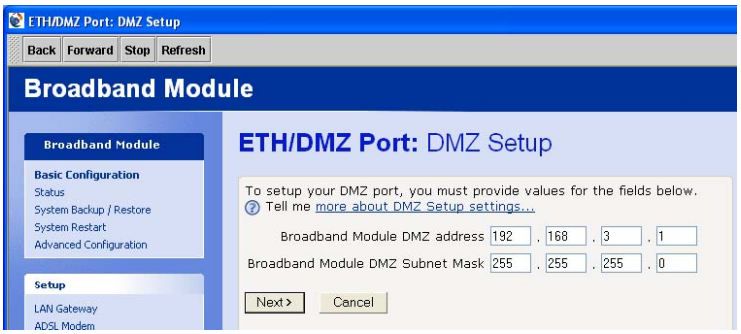
The default setting of the port is DMZ.

To change the DMZ IP address



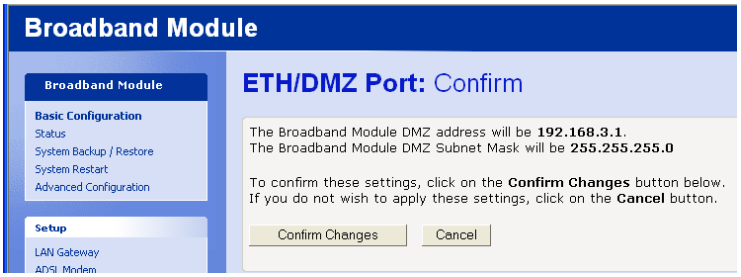
- Select Change the DMZ IP address here …

The following screen is displayed

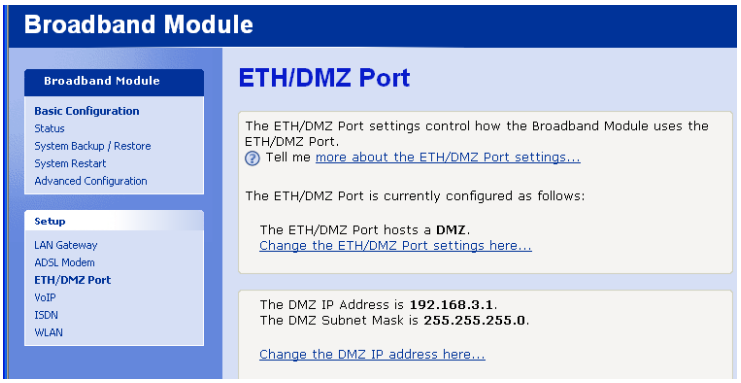


- Enter the new IP address and subnet mask
- Select “Next”

The following screen is displayed



- Select “Confirm Changes”



The new address settings are displayed.

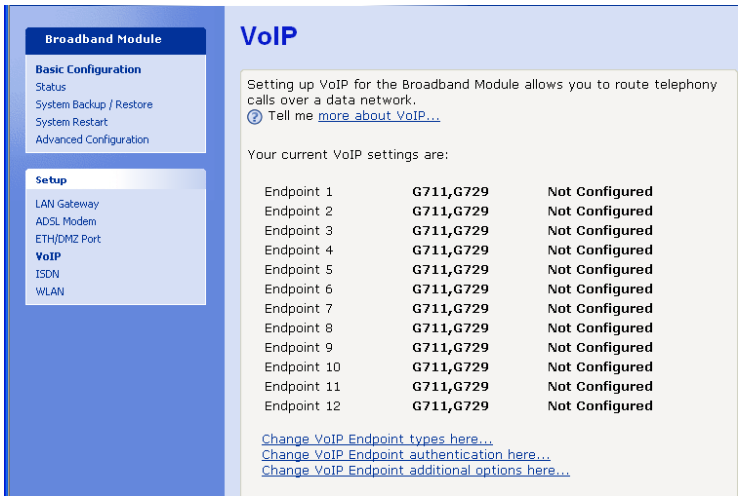
VoIP

Manually Configuring IP trunks

A broadband connection must first be established before the IP Endpoints can be programmed.

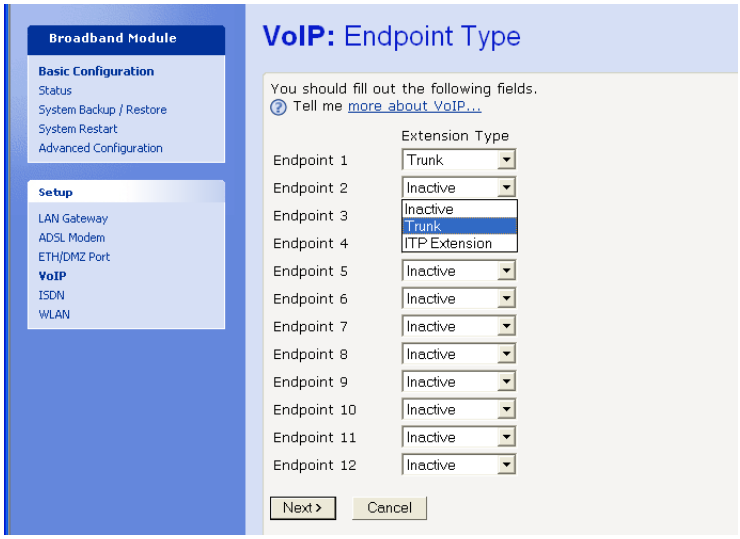
- Select VoIP from the Setup menu

The following screen is displayed



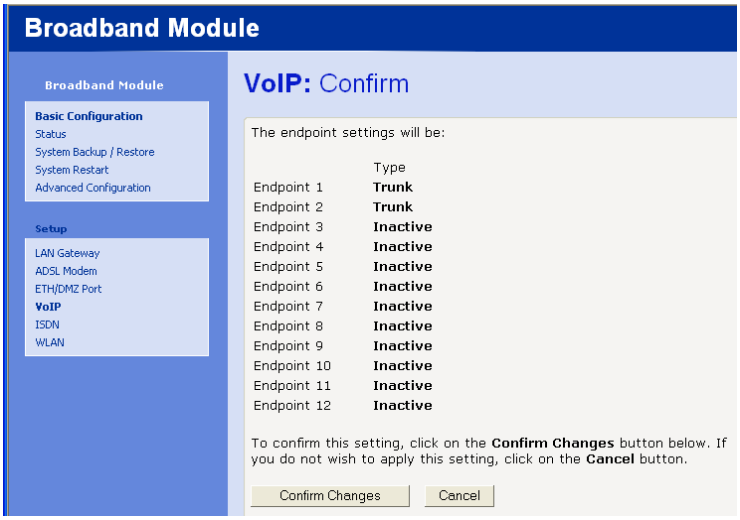
- Select Change VoIP Endpoint types here …

The following screen is displayed



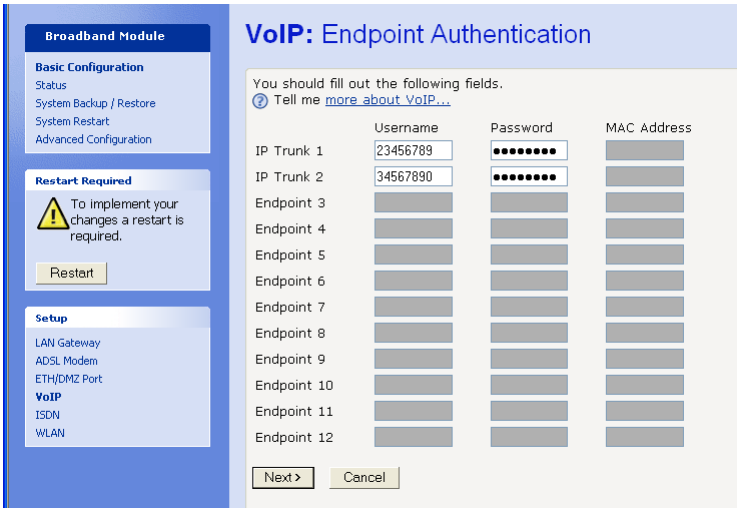
- Add - Trunk from the drop down menu for every endpoint to be configured as a trunk
- Select Next

The following screen is displayed



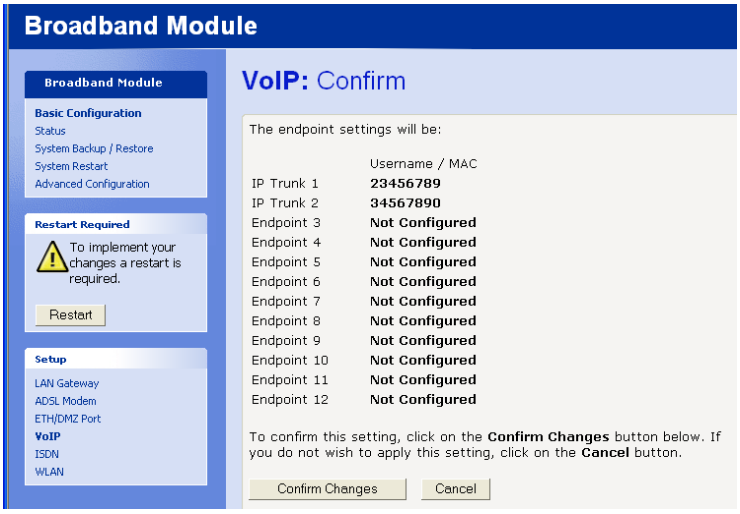
- Select Confirm Changes

The following screen is displayed



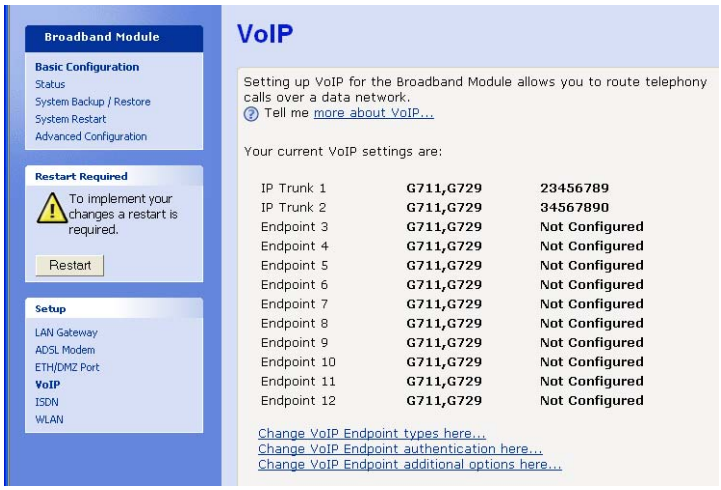
- Enter the Username and Password for each trunk
- Select Next

The following screen is displayed



- Select Confirm Changes

The following screen is displayed

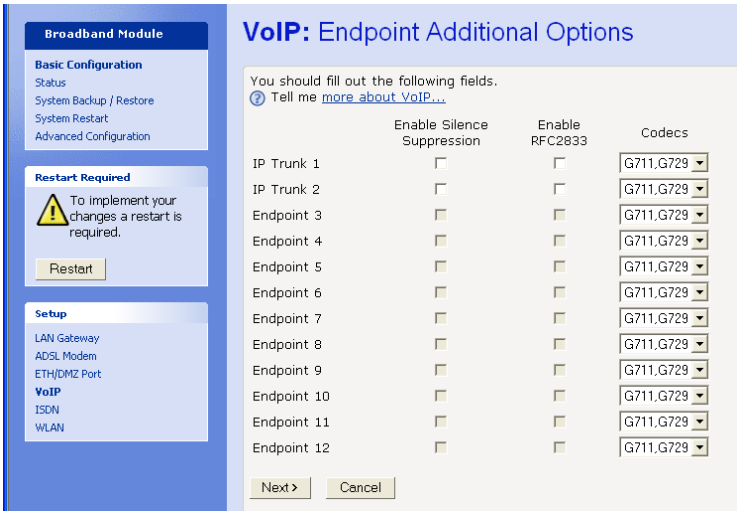


Restart the module.

Additional Endpoint Options

There are three additional parameters for each IP Endpoint:

Change VoIP Endpoint additional options here …



Enable Silence Suppression

This applies to IP trunks only, is disabled by default and should not be changed.

Enable RFC2833

On the BROADBAND MODULE this applies only to IP trunks, is disabled by default and should not be changed.
On the BROADBAND MODULE PLUS it will be automatically enabled by the BBV Service on registration and should not be changed.

Codecs

On the BROADBAND MODULE, G.711 will be automatically enabled by the BBV Service on registration and should not be changed.

On the BROADBAND MODULE PLUS, G.729 will be automatically enabled by the BBV Service on registration and should not be changed.
For IP extensions, when the V-IP Featurephone is initially installed, the codec will be set by the BT engineer.

Advanced VoIP Settings

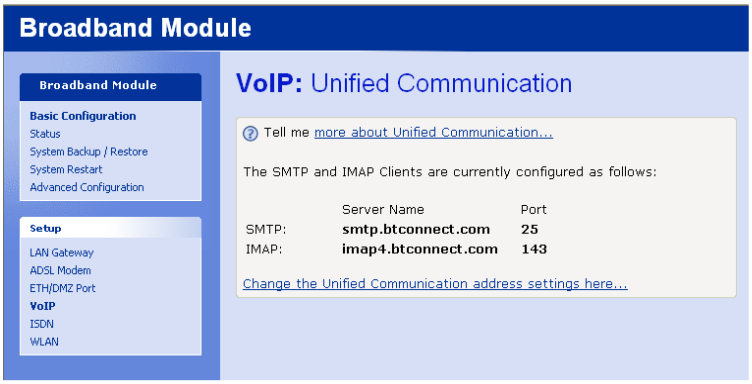
These parameters are pre-configured and should not be changed.

Unified Messaging Settings

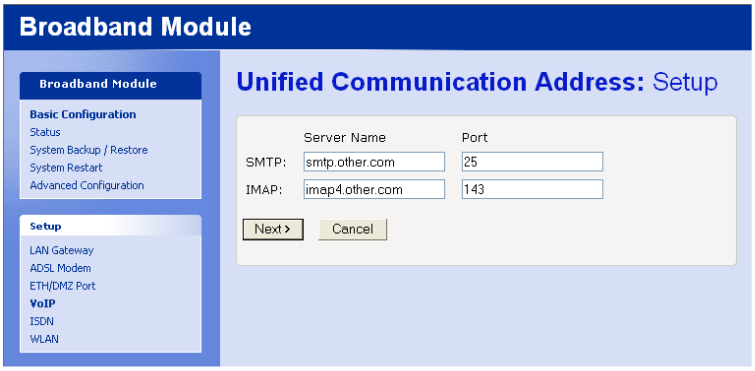
These parameters are pre-configured for use with BT e-mail services.

If you wish to use a different e-mail service provider, carry out the following.

Go to the main VoIP screen, scroll down and select the link Change Unified Communications Settings here …



Select the link Change the Unified Communications address settings here …

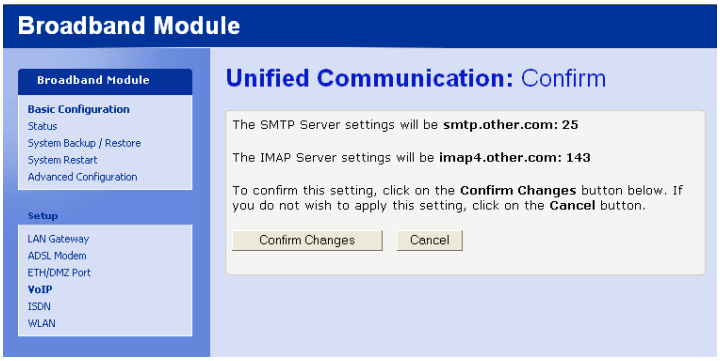


Enter the following:

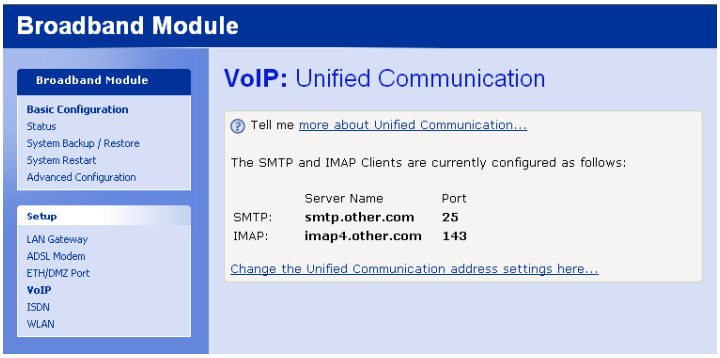
SMTP server name and port number
IMAP server name and port number

Your email service provider will provide the above information.
If synchronization is not provided by your service provider, leave the IMAP server name and port number at their default settings (these fields must not be left blank).

Select Next >



Select Confirm Changes



The new settings are displayed.

ISDN

Where the PBX is equipped with ISDN line(s), ISDN can be used to automatically back up the on-board ADSL modem in the event of line failure. In the case where no broadband service is available, ISDN can be used for Internet access. The default setting is that ISDN is disabled.

Obtain the following information from your Internet Service Provider

Phone number to connect to the ISP
Username
Password

- Select "ISDN" from the Setup menu

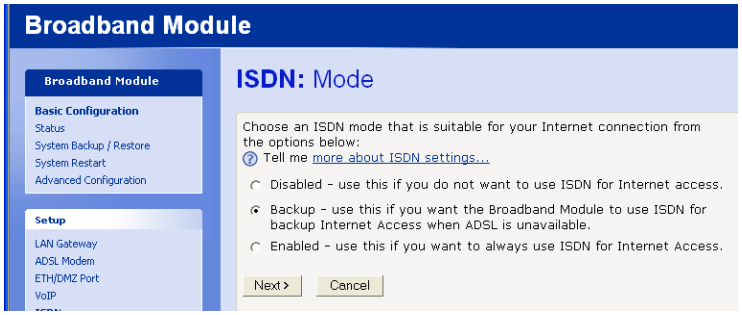
The following screen is displayed

- Select "Change the ISDN settings here …"

Three options are presented for using ISDN :-

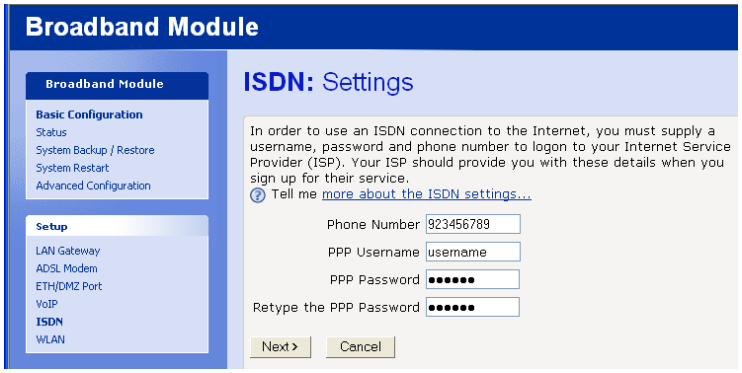
(1) Disabled
With this option, ISDN is never used to establish an Internet connection. This is the default setting.

(2) Backup
When this option is enabled, ISDN is used to automatically backup the on-board ADSL modem in the event of line failure. When a line failure is detected, ISDN will wait 60 seconds before backing up ADSL. When the ADSL line is restored, the ISDN call will be automatically disconnected and browsing resumed over ADSL.



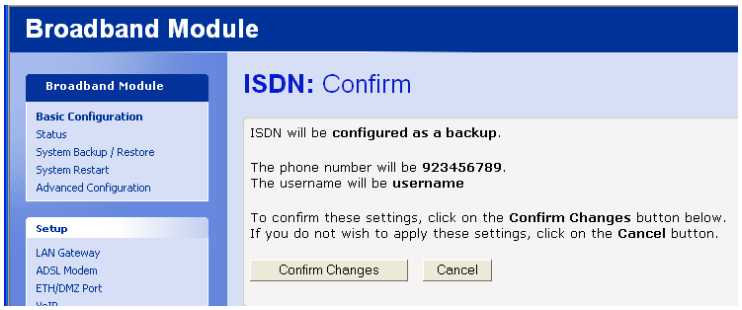
- Select Backup
- Select “Next”

The following screen is displayed



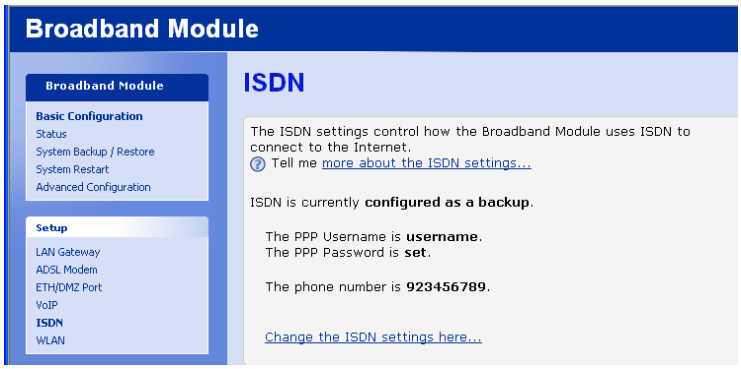
- Enter the external line access digit (default is 9) followed by the Phone Number.
- Enter the Username and Password. Retype the Password.
- Select “Next”

The following screen is displayed



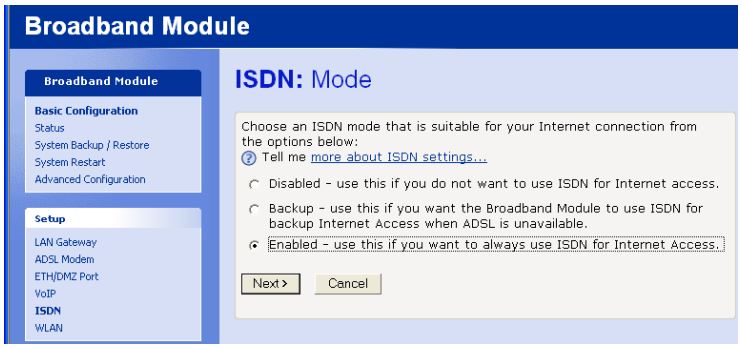
- Select "Confirm Changes"

The following screen is displayed



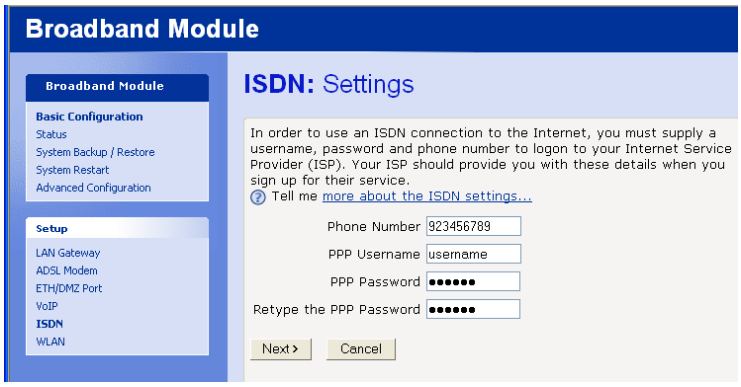
(3) Enabled

This option is used where no broadband service is available, and ISDN is always used to connect to the Internet. When the browser is launched on any PC connected to the local LAN, an ISDN call is automatically established to connect to the Internet.



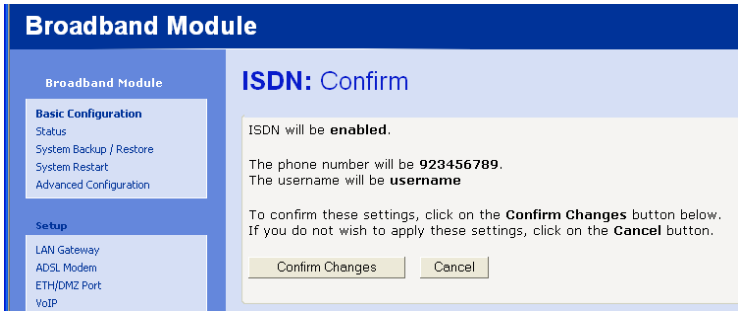
- Select “Enabled”
- Select “Next”

The following screen is displayed:-



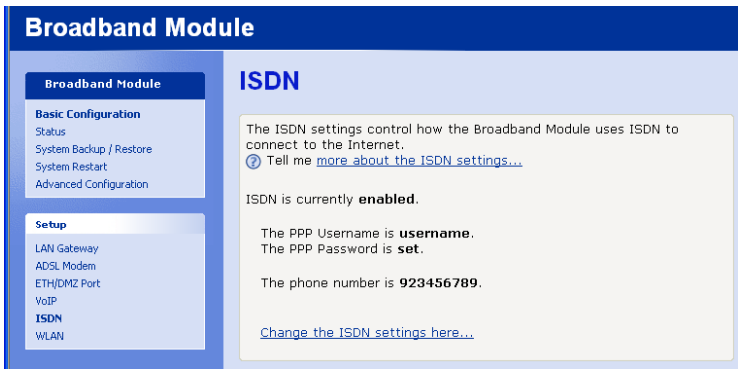
- Enter the external call access digit (default is 9) followed by the Phone Number.
- Enter the Username and Password. Retype the Password.
- Select “Next”

The following screen is displayed



- Select "Confirm Changes"

The following screen is displayed



The ISDN setup is now complete.

WLAN

This allows users to set up wireless PC connections and to configure their security settings.

The WLAN provides coverage at a range of up to 100 metres. This assumes clear line-of-sight between a remote PC and the BBM. As the coverage is distance dependent, any obstruction caused by walls etc will reduce the operating range.

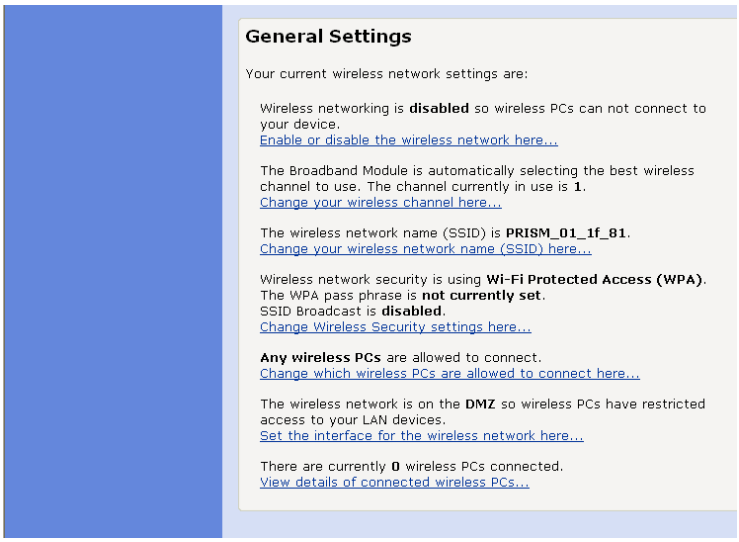
Quick Setup to WLAN without security

This procedure should only be used to setup and test WLAN connectivity. When this procedure has been completed and WLAN connectivity has been established, go to the next section "Setting up WLAN with Security" and complete the process.

- Select "WLAN" in the Setup menu

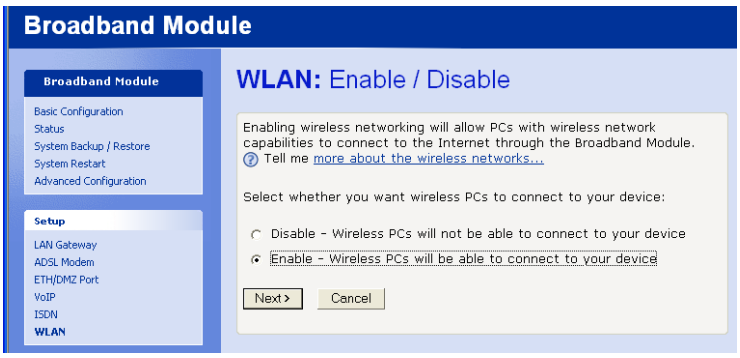
The following screen is displayed

Scroll down to General Settings



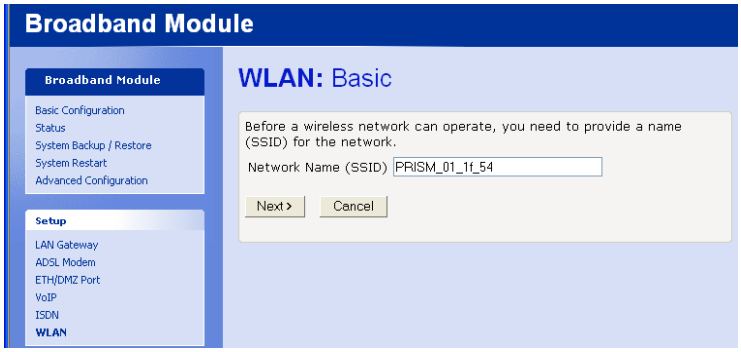
- Select Enable or disable the wireless network here …

The following screen is displayed



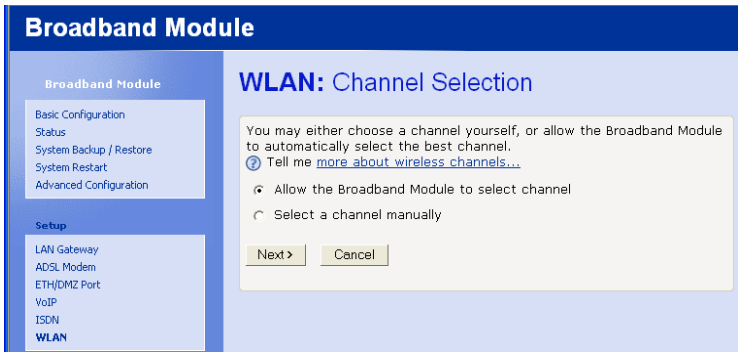
- Select "Enable"
- Select "Next"

The following screen is displayed



- Note the SSID
- Select “Next”

The following screen is displayed

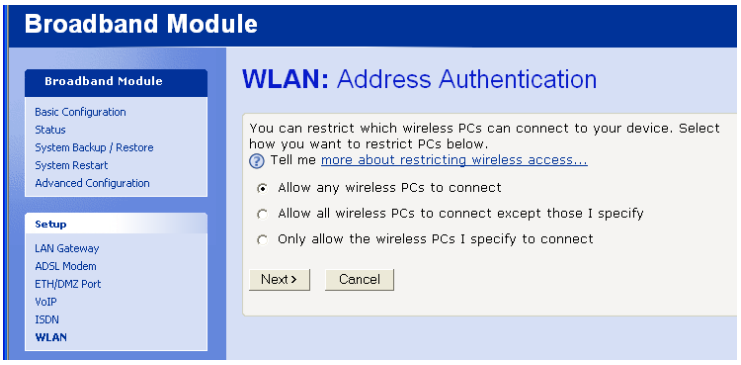


- Select “Allow the Broadband Module to select a channel”
- Select “Next”

The following screen is displayed

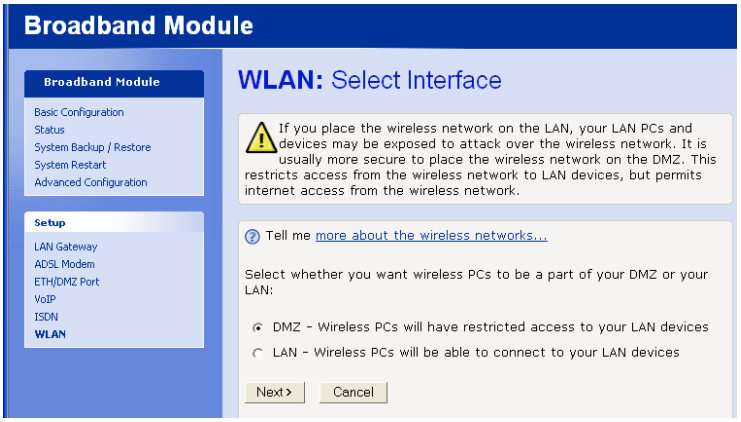
- Select “Off”
- Check “Enable SSID Broadcast”
- Select “Next”

The following screen is displayed



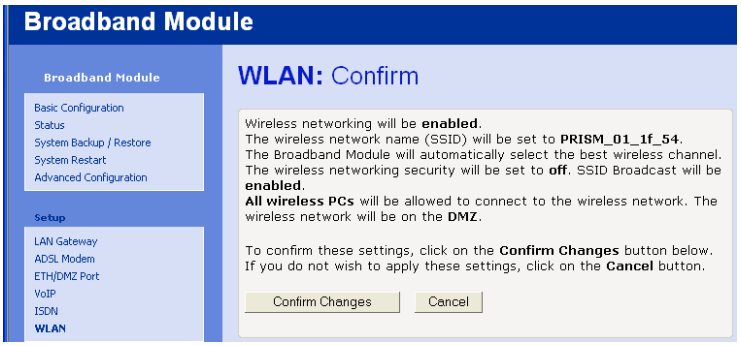
- Select “Allow any Wireless PCs to connect”
- Select “Next”

The following screen is displayed



- Select “DMZ”
- Select “Next”

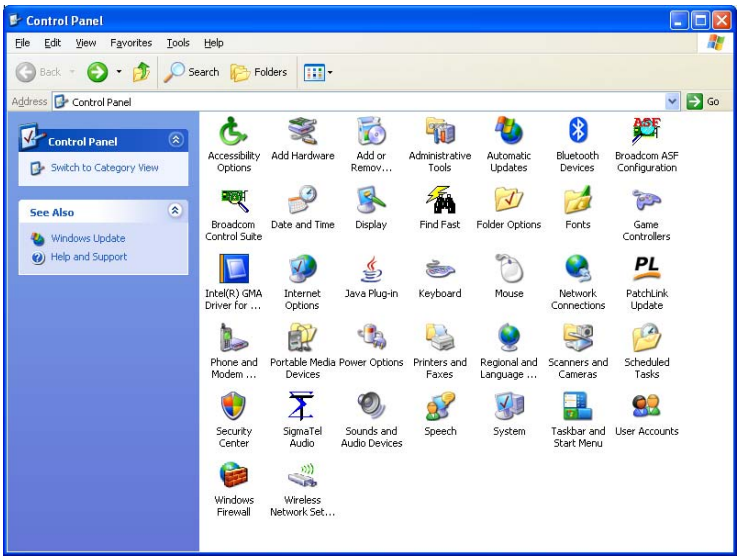
The following screen is displayed



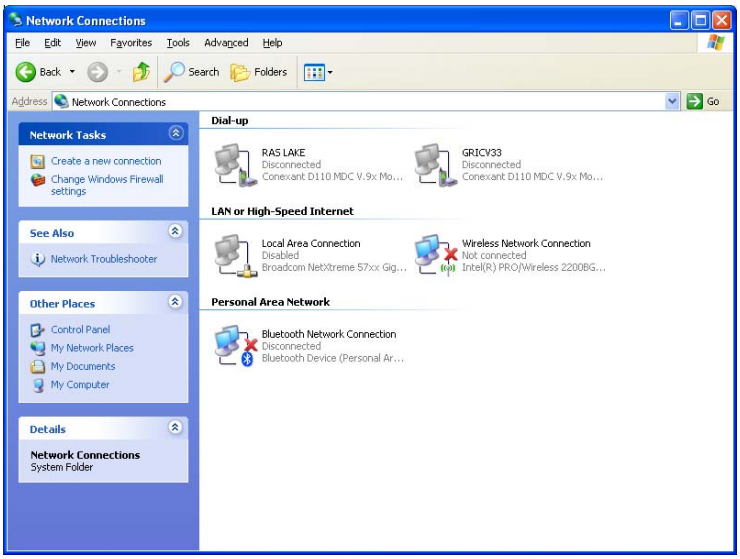
- Select “Confirm Changes”
- Restart the module

Connecting your PC to the Wireless Network

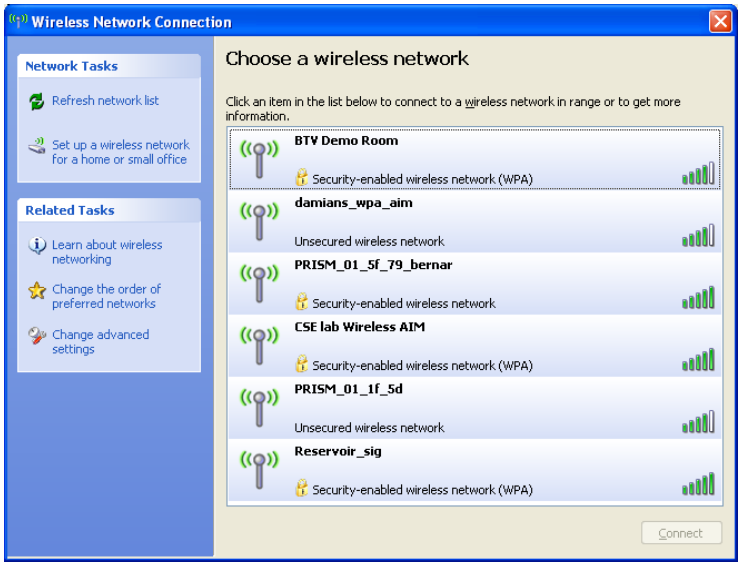
- Click *Start*
- Click *Control Panel*



- Double click the *Network Connections* icon



- Double click the *Wireless Network Connection* icon



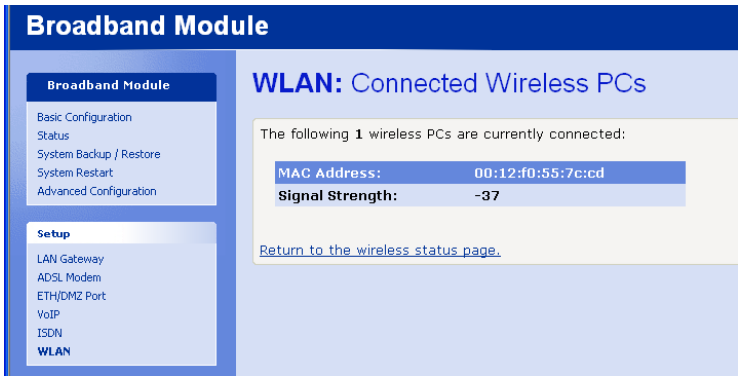
A list of wireless networks is displayed.

- Select the SSID being broadcast by the module
- Click “Connect”

You will now connect to the Wireless LAN.

Connected wireless PCs

Selecting the View details of connected wireless PCs … link under General Settings takes you to the following screen which shows details of PCs connected to the WLAN



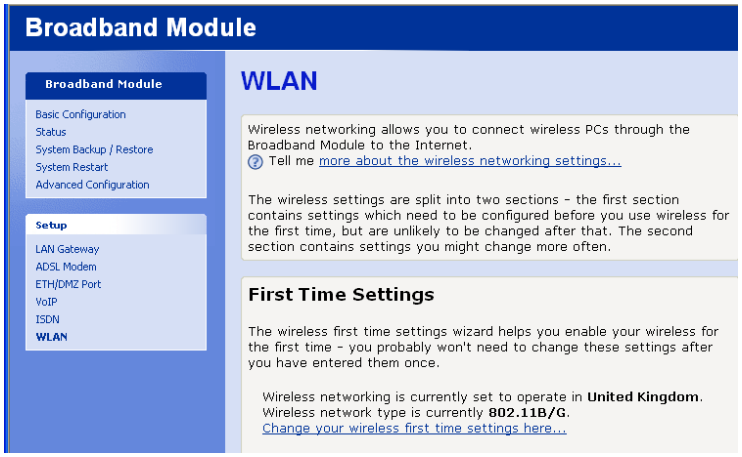
Setting up WLAN with Security

The recommended settings to provide maximum security are indicated as ***Recommended.***

Where instructed, enter the relevant information in the table provided in Appendix A as this information is required when setting up PCs for wireless networking.

- Select “WLAN”

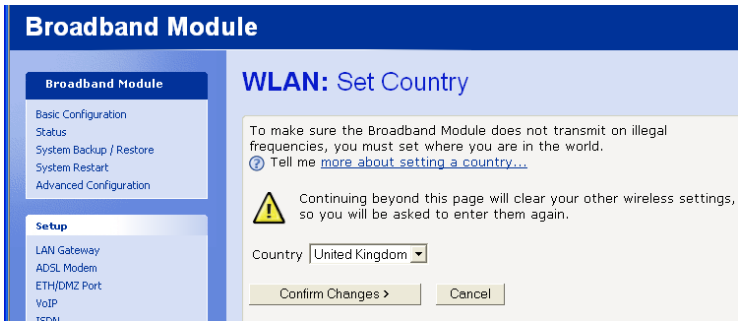
The following screen is displayed



First Time Settings
This automatically takes you through the configuration screens necessary for setting up the wireless network for the first time.

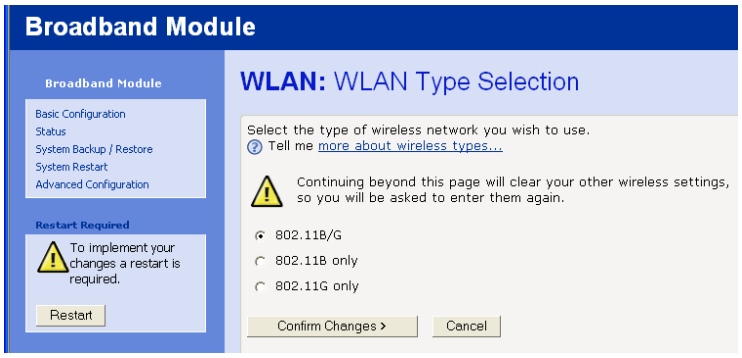
- Select "Change your wireless first time settings here …"

The following page is displayed



- Select "United Kingdom" (default setting) from the drop-down menu
- Select "Confirm Changes"

The following screen is displayed



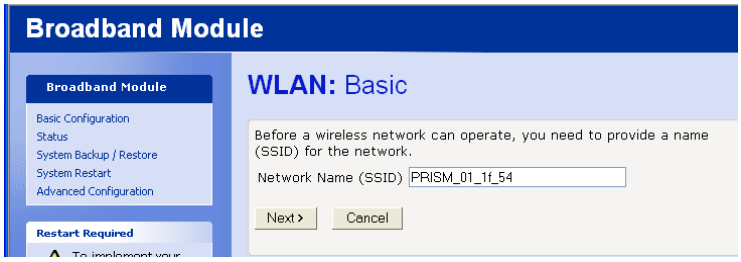
Three WLAN Type options are presented:-

- 802.11 B/G (operates at 11 Mb/s or 54 Mb/s) **Recommended*
- 802.11 B only (operates at 11 Mb/s)
- 802.11 G only (operates at 54 Mb/s)

- Select an option

- Select “Confirm Changes”

The following screen is displayed

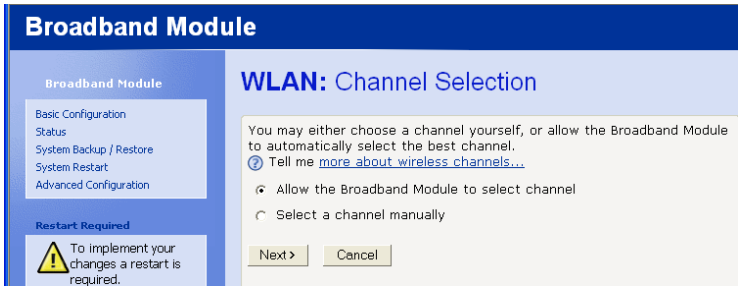


The default Network Name (SSID) is displayed.
This name can be changed if required.

Enter the Network Name (SSID) in the table provided in Appendix A as it is required when setting up PCs for wireless networking.

- Select “Next”

The following screen is displayed



Two options are presented for selecting a channel :-

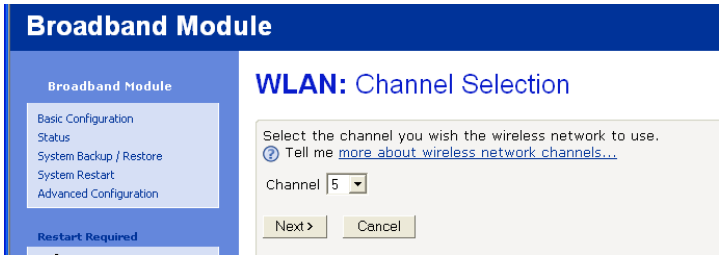
(1) Allow Internet Module to select channel **Recommended*

- Select “Next”, this takes you to Security (page 47)

(2) Select a channel manually

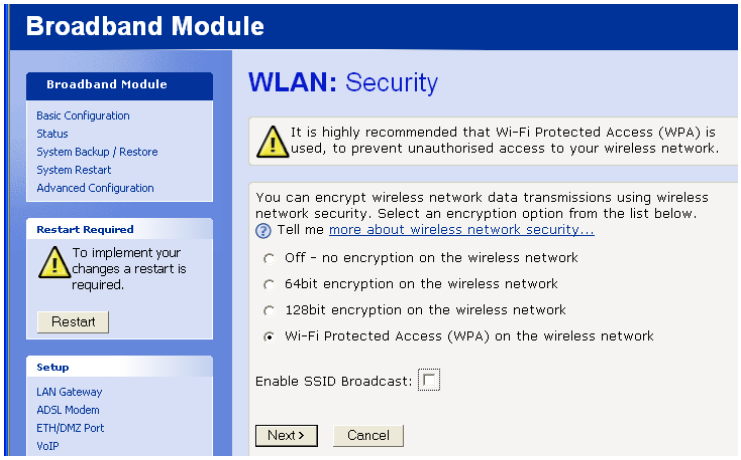
- Select “Next”

The following screen is displayed



- Select a channel from the drop down menu
- Select “Next”

The following screen is displayed



Enable SSID Broadcast

- Allow the WLAN to broadcast it's network name (SSID)
- Do not allow the WLAN to broadcast it's network name (SSID) ***Recommended***

Four options are presented for security:-

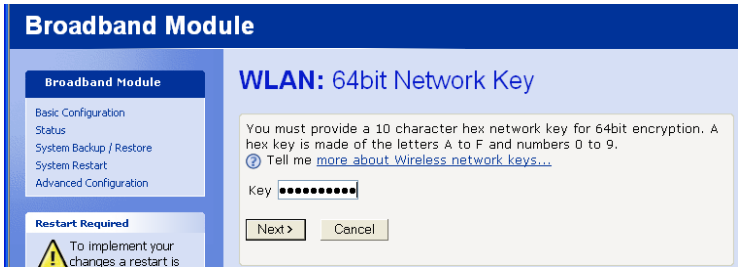
(1) Off

- Select "Next", this takes you to Address Authentication (page 50)

(2) 64-bit encryption on the wireless network

- Select "Next"

The following screen is displayed

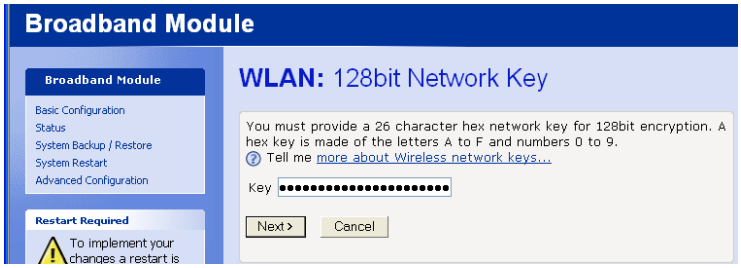


- Enter a 10 hexadecimal character key (hexadecimal characters consist of the characters A – F, and the numbers 0 – 9).
  Make a note of this key, as it must be entered into every PC that connects to the WLAN
- Select "Next", this takes you to Address Authentication (page 48)

(3) 128-bit encryption on the wireless network

- Select "Next"

The following screen is displayed

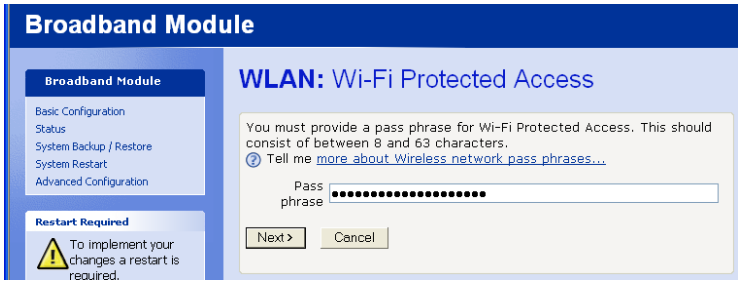


- Enter a 26 character hexadecimal key (hexadecimal characters consist of the characters A – F, and the numbers 0 – 9)
  Make a note of this key as must be entered into every PC that connects to the WLAN
- Select "Next", this takes you to Address Authentication (page 48)

(4) Wi-Fi Protected Access (WPA) on the wireless network **Recommended*

- Select "Next"

The following screen is displayed

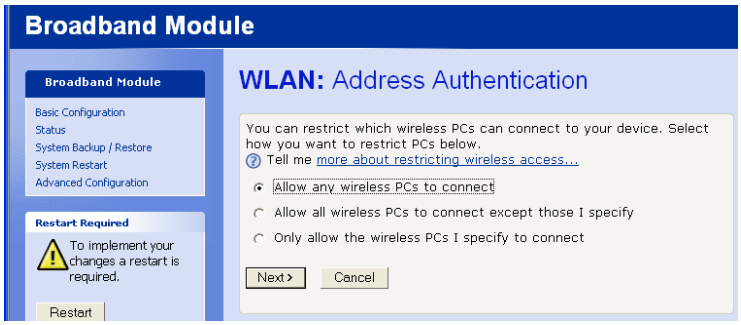


- Enter a pass phrase of between 8 and 63 characters

  Enter the Pass Phrase in the table provided in Appendix A as it is required when setting up PCs for wireless networking.

- Select "Next"

The following screen is displayed



Three options are presented for Address Authentication:-

(1) Allow any wireless PCs to connect

- Select "Next", this takes you to Select Interface (page 51)

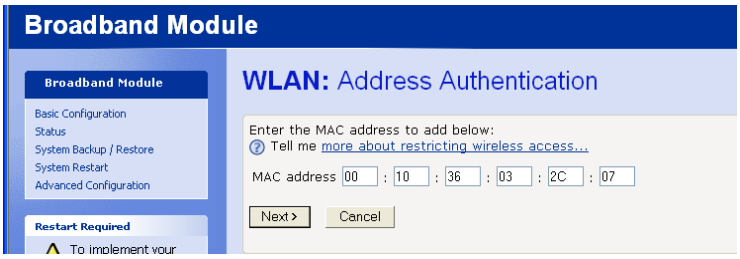
(2) Allow all wireless PCs to connect except those I specify

- Select "Next"

The following screen is displayed

- Select Add an address here …

The following screen is displayed



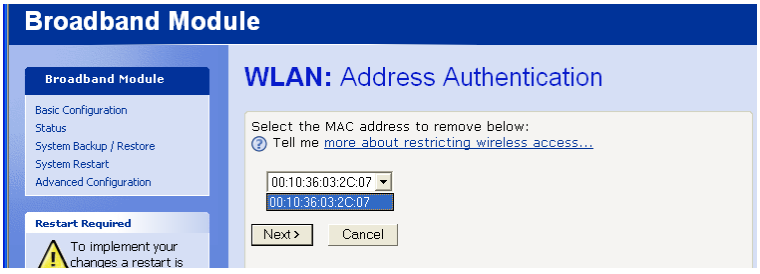
- Enter the MAC address of the PC which is to be excluded from the wireless network
- Select “Next”

The following screen is displayed

The entered MAC address is displayed

Add an address here … takes you back to the previous screen to enter another MAC address

Remove an address here … takes you to the following screen



- Select the address to remove from the drop down menu

- Select “Next”, this takes you back to the “**Allow all wireless PCs to connect except those I specify”** option

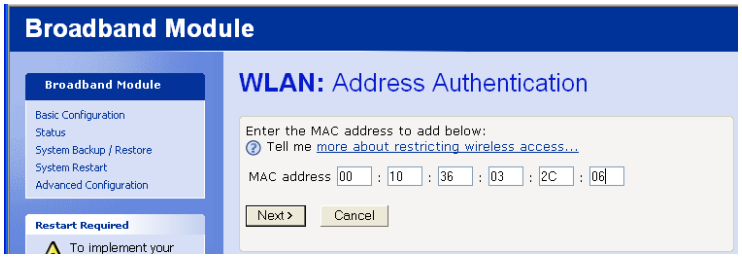
(2) **Only allow the wireless PCs I specify to connect **Recommended***
Refer to Appendix B to find out the MAC address of a PC
Enter the MAC Addresses in the table provided in Appendix A

- Select “Next”

The following screen is displayed

- Select add an address here …

The following screen is displayed

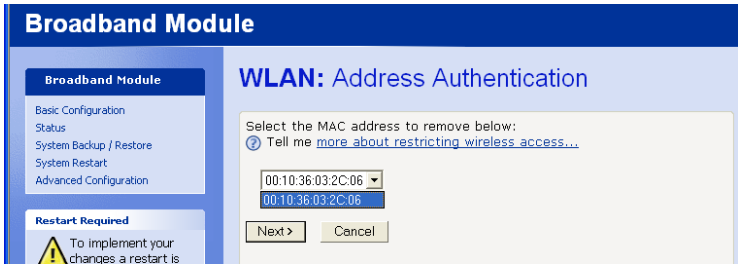


- Enter the MAC address of the PCs to be allowed to connect to the wireless network
- Select “Next”

The following screen is displayed

Add an address here … takes you back to the previous screen to enter another MAC address

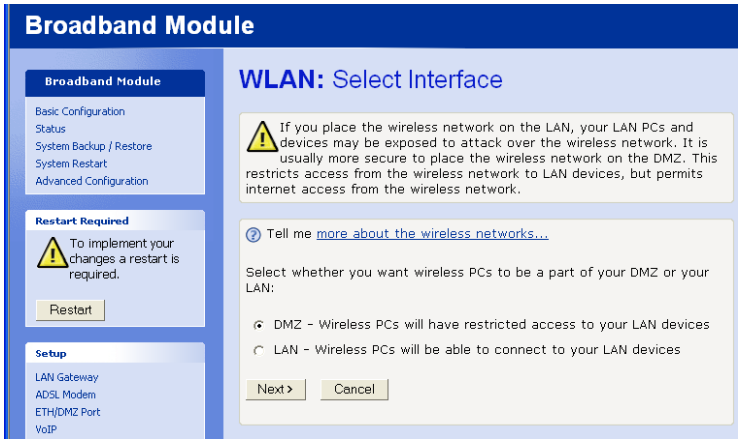
Remove an address here … takes you to the following screen



- Select the address to remove from the drop down menu
- Select “Next”, this takes you back to the “**Only allow the wireless PCs I specify to connect** “option

Two options are presented for the WLAN Interface:-

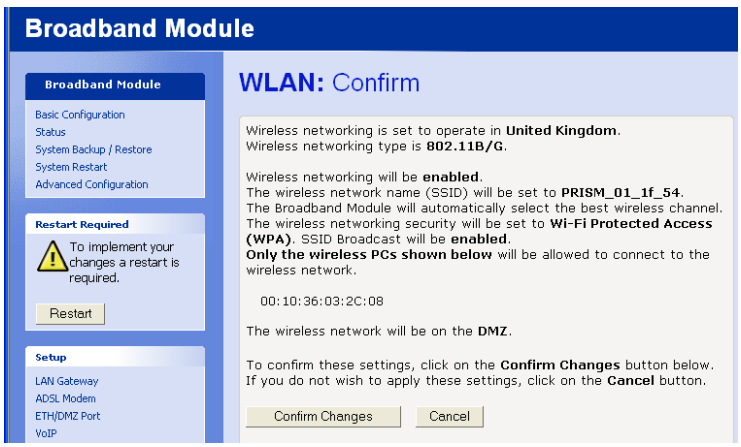
- DMZ (this is the default setting where the WLAN normally resides on the DMZ) *Recommended
- LAN (see screen warning re security)



In order to provide maximum security, PCs connected to the WLAN are not allowed to program the module via the web interface. If programming from a wireless network PC is required, the WLAN interface should be changed from DMZ to LAN.

- Select an option
- Select “Next”

The following screen is displayed



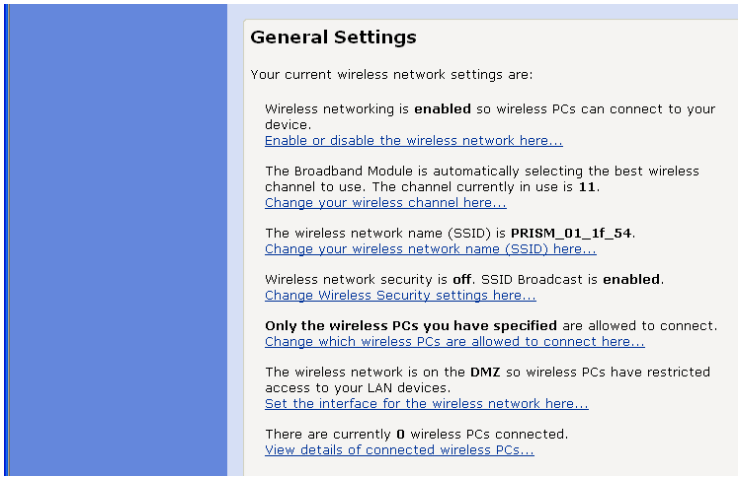
The WLAN parameters are displayed

- Select “Confirm Changes”
- Restart the module

Go to Appendix A when setting up PCs for wireless networking

General Settings

These are used to change individual settings after the wireless network has been initially set up.



The links listed below allow you to change individual network settings used in the initial setup as previously described

Change your wireless channel here …

Change your wireless network name here …

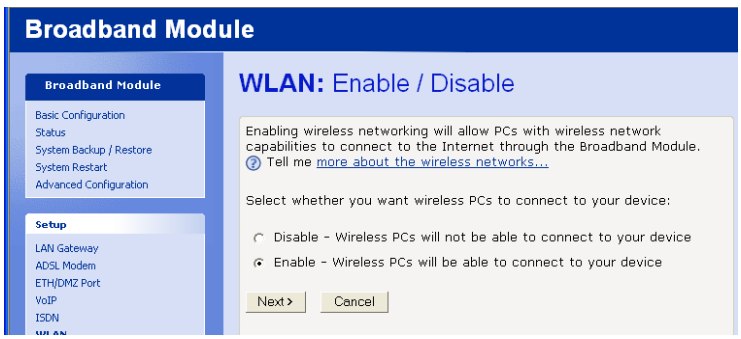
Change your wireless security settings here …

Change which wireless PCs are allowed to connect here …

Set the interface for the wireless network here …

Enable / Disable

Enable or disable the wireless network here …takes you the following screen



Two options are presented:-

(1) Disable

- Select “Next”

The following screen is displayed

- Select “Confirm Changes”
- Restart the module

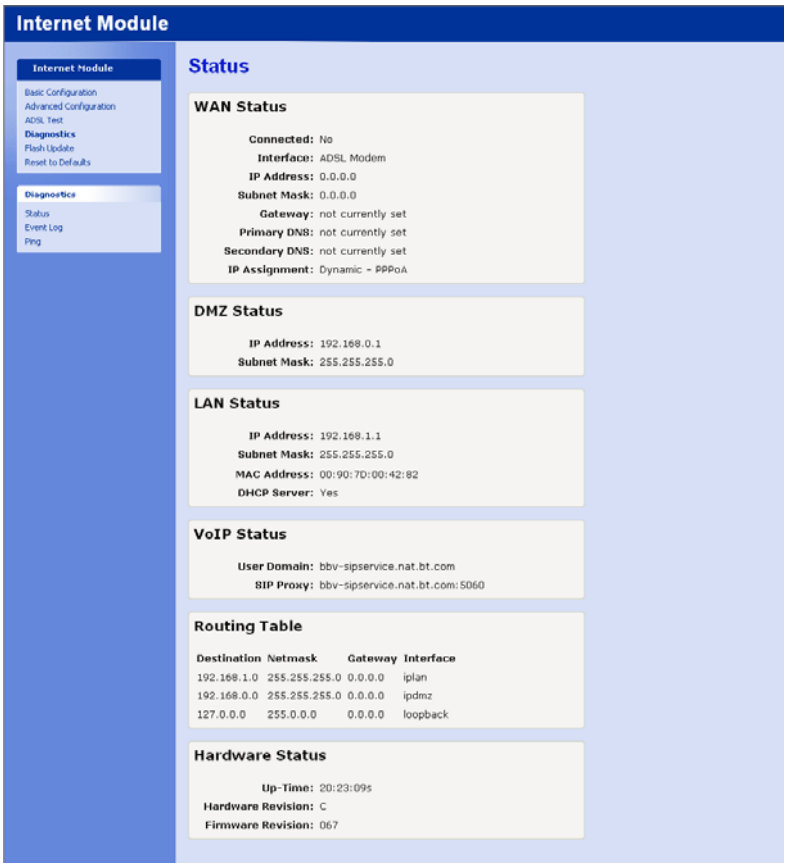
(2) Enable

- Select “Next”

This takes you through the procedure as described in **First Time Settings**

STATUS

This displays the current status of the main system parameters.



SYSTEM BACKUP/RESTORE

This allows you to backup the module settings to your PC and also to restore the settings.

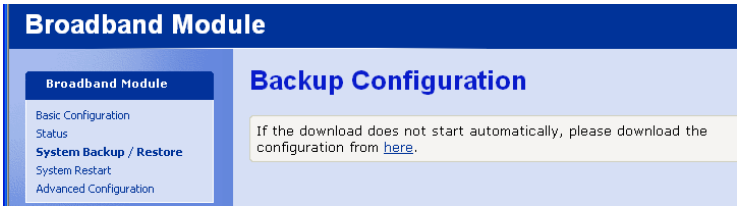
- Select System Backup/Restore

The following page is displayed

Backup Configuration

- Select Backup

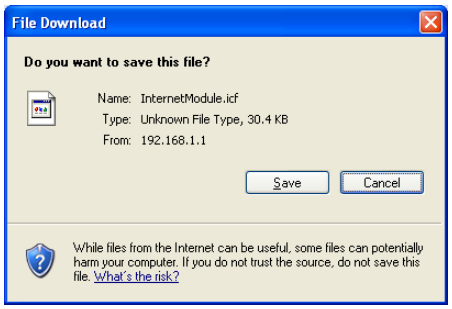
The following screen is displayed

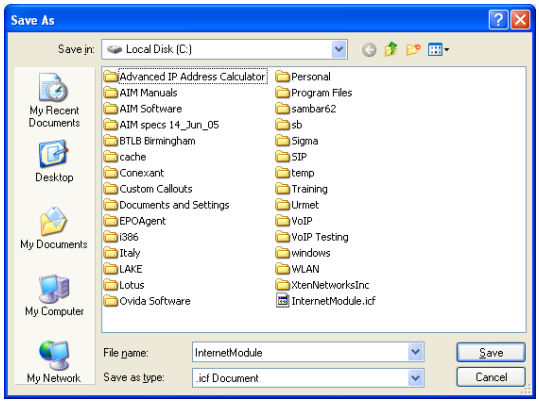


Some browsers will start the backup automatically. If your browser does not start automatically, then

- Select the link “Please download the configuration from here.”

A Windows File download screen is then displayed.

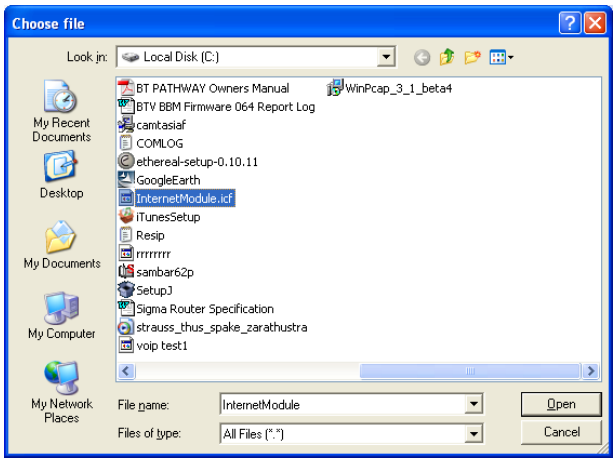




- Select “Save”
- Select the folder where the file is to be saved
- Save the file

Restore Configuration

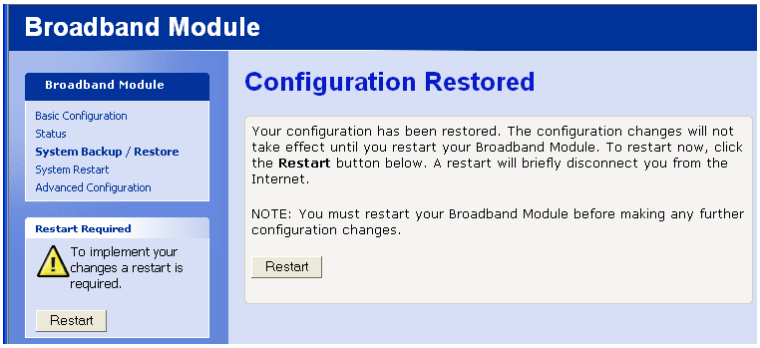
- Browse for the configuration file



- Select Open

- Select Restore

When the configuration has been restored, the following screen is displayed



- Restart the system

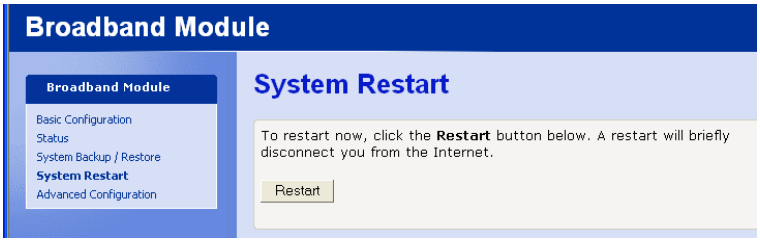
The module restarts and the Basic Configuration is displayed.

SYSTEM RESTART

This allows you to restart the module.

- Select System Restart from the menu

The following page is displayed



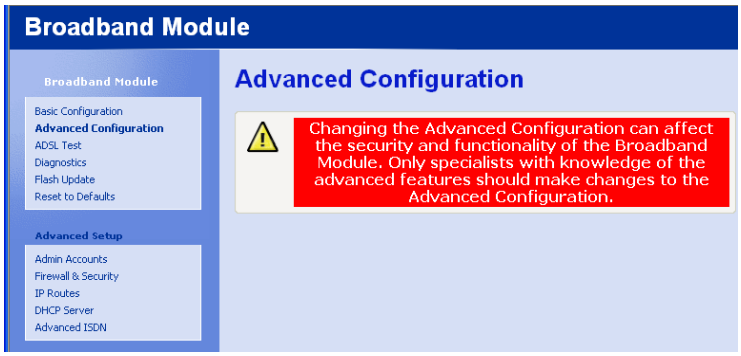
- Select “Restart”

The module restarts and the Basic Configuration page is displayed.

ADVANCED CONFIGURATION

- Select “Advanced Configuration” from the main menu

The following screen is displayed, note the warning.



The following menu items are displayed under Advanced Configuration:-

ADMIN ACCOUNTS

Access to the browser programming interface is controlled by two username/password pairs which provide the user with identical programming privileges. The default username/password pairs are:

Username	*Password*
Admin	Admin
Engineer	Engineer

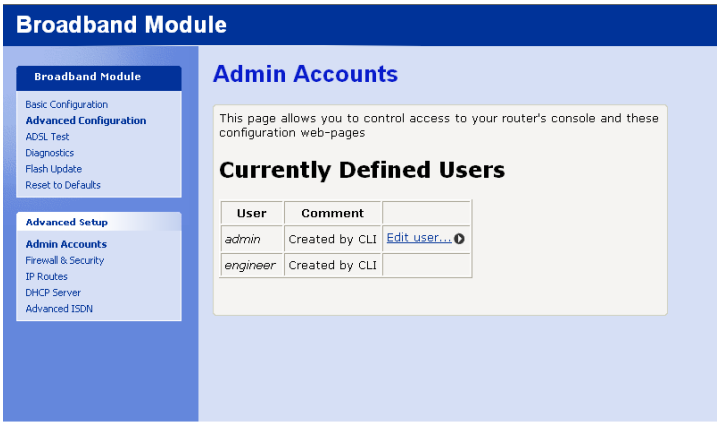
To change the passwords, carry out the following procedure using the browser programming interface.
When changing the passwords from their default settings, it is recommended that both passwords are changed.

To change the Admin password

Log in to the browser programming interface using the default username/password “admin, admin”.

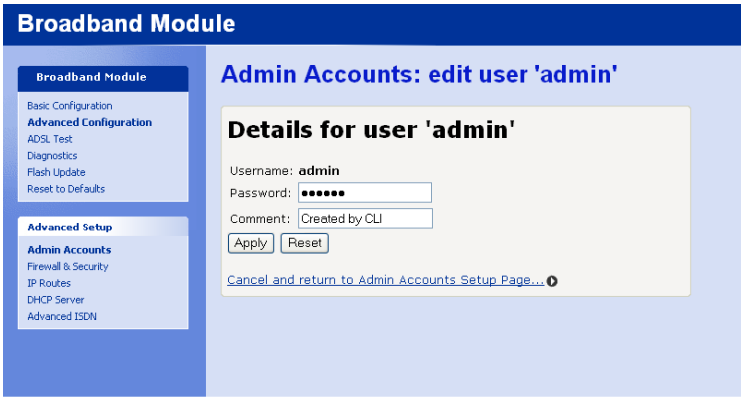
- Go to Advanced Settings
- Select “Admin Accounts”

The following screen is displayed



- Select Edit user …

The following screen is displayed



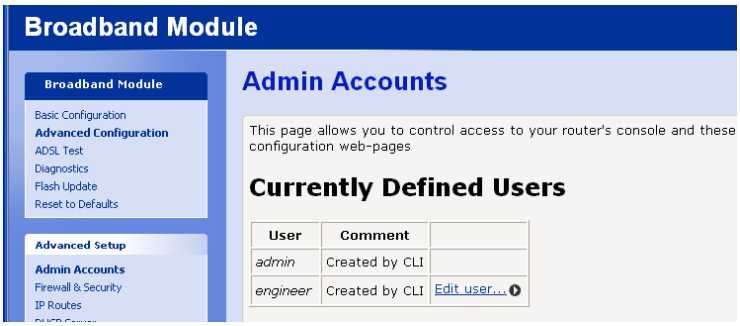
- Enter a new password
- Select “Apply”

To change the Engineer password

Log in to the browser programming interface using the default username/password “engineer, engineer”.

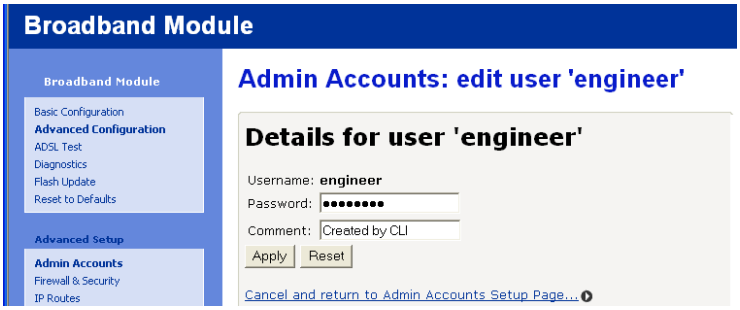
- Go to Advanced Setting
- Select “Admin Accounts”

The following screen is displayed



- Select “Edit user”

The following page is displayed



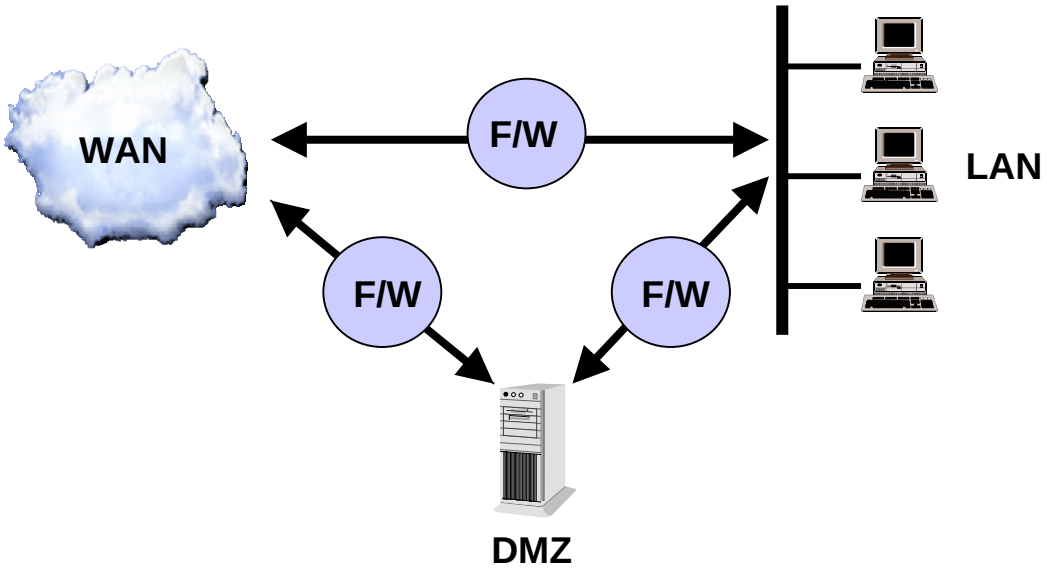
- Enter a new password
- Select “Apply”

FIREWALL & SECURITY

The BROADBAND MODULE and BROADBAND MODULE PLUS are equipped with a stateful inspection firewall.

The firewall resides on the interfaces between

- WAN and LAN (External and Internal)
- WAN and DMZ (External and DMZ)
- DMZ and LAN (DMZ and Internal)

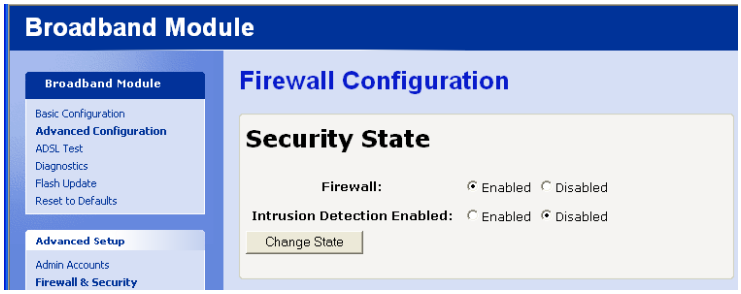


- Select “Firewall & Security”

The “Firewall Configuration” screen is displayed

Security State

The Firewall is enabled by default



To disable the Firewall

- Select “Disabled”
- Select “Change State”

Intrusion Detection is disabled by default.

To enable Intrusion Detection

- Select “Enabled”

- Select “Change State”

Security Level

There are four pre-defined security levels (high, medium, low and none) that contain different security filters for each interface (WAN/LAN, WAN/DMZ, DMZ/LAN). When None is selected, all traffic is blocked. Additional filters can be added to each security level as required.

The default setting is High Security Level.
The Medium Security level has additional filters. For example it is set up to allow access to a web server or a mail server on the DMZ from the External interface.
The Low Security level adds more filters. For example, as well as allowing access to a web server or a mail server on the DMZ, it also allows Telnet and FTP access from the External interface.

The pre-defined security configurations are:

High Security Level (from any source IP address or any source port)			External <> Internal		External <> DMZ		DMZ <> Internal	
Service	Destination Port		In	Out	In	Out	In	Out
ICMP	N/A	N/A	F	T	F	T	F	T
Any	TCP	0 -65535	F	T	F	T	F	T
Any	UDP	0 - 65535	F	T	F	T	F	T
RMCP	TCP	50	F	T	F	T	T	F
	TCP	51	F	T	F	T	T	F
ISAKMP	UDP	500	F	T	F	T	T	F
SSL	TCP	443	F	T	F	T	T	F
Kerberos	TCP	88	F	T	F	T	T	F
Kerberos	UDP	88	F	T	F	T	T	F
HTTP	TCP	80	F	T	T	T	F	T
DNS	UDP	53	F	T	T	T	T	T
Telnet	TCP	23	F	T	F	T	F	T
SMTP	TCP	25	F	T	F	T	F	T
POP3	TCP	110	F	T	F	T	F	T
FTP	TCP	21	F	T	F	T	F	T
SSH	TCP	22	F	T	T	T	T	F
SIP	UDP	5060 - 6000	T	T	T	T	T	T
IPT	TCP	5566	T	T	T	T	T	T

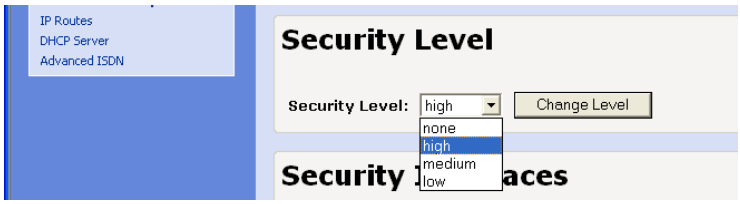
Medium Security Level (from any source IP address or any source port)			External <> Internal		External <> DMZ		DMZ <> Internal	
Service	Destination Port		In	Out	In	Out	In	Out
ICMP	N/A	N/A	F	T	F	T	F	T
Any	TCP	0 - 65535	F	T	F	T	F	T
Any	UDP	0 - 65535	F	T	F	T	F	T
RMCP	TCP	50	F	T	F	T	T	F
	TCP	51	F	T	F	T	T	F
ISAKMP	UDP	500	F	T	F	T	T	F
SSL	TCP	443	F	T	F	T	T	F
Kerberos	TCP	88	F	T	F	T	T	F
Kerberos	UDP	88	F	T	F	T	T	F
HTTP	TCP	80	F	T	T	T	F	T

DNS	UDP	53	F	T	T	T	T	T
Telnet	TCP	23	F	T	F	T	F	T
SMTP	TCP	25	F	T	T	T	F	T
POP3	TCP	110	F	T	T	T	F	T
FTP	TCP	21	F	T	F	T	F	T
SSH	TCP	22	F	T	T	T	T	F
SIP	UDP	5060 - 6000	T	T	T	T	T	T
IPT	TCP	5566	T	T	T	T	T	T

Low Security Level (from any source IP address or any source port)			**External <> Internal**		**External <> DMZ**		**DMZ <> Internal**	
Service	**Destination Port**		**In**	**Out**	**In**	**Out**	**In**	**Out**
ICMP	N/A	N/A	F	T	T	T	T	T
Any	TCP	0 - 65535	F	T	F	T	F	T
Any	UDP	0 -65535	F	T	F	T	F	T
HTTP	TCP	80	F	T	T	T	T	T
FTP	TCP	21	F	T	T	T	T	T
SSH	TCP	22	F	T	T	T	T	F
Telnet	TCP	23	F	T	T	T	T	T
SMTP	TCP	25	F	T	T	T	F	T
RMCP	TCP	50	F	T	F	T	T	F
	TCP	51	F	T	F	F	T	F
POP3	TCP	110	F	T	T	T	F	T
ISAKMP	UDP	500	F	T	F	T	T	F
SSL	TCP	443	F	T	F	T	T	F
Kerberos	TCP	88	F	T	F	T	T	F
Kerberos	UDP	88	F	T	F	T	T	F
DNS	UDP	53	F	T	T	T	T	T
SIP	UDP	5060 - 6000	T	T	T	T	T	T
IPT	TCP	5566	T	T	T	T	T	T

Changing the security level deletes the previous security level and any filters set, and replaces them with the new configuration.

To change the security level



- Select the required level from the drop-down menu
- Select “Change Level”

To add a filter

See section on Security Policy Configuration (see page 64)

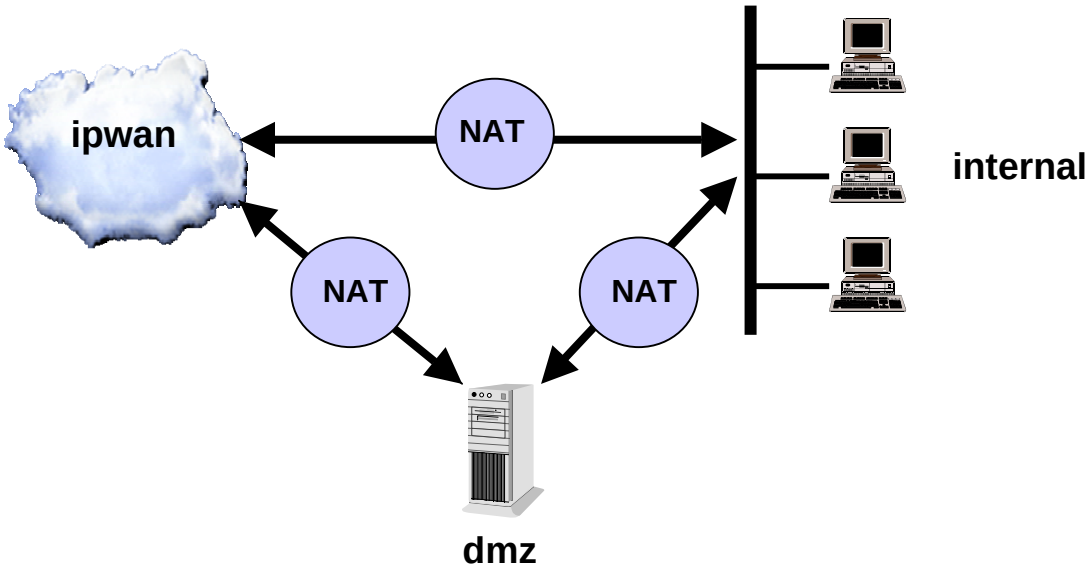
Security Interfaces

Three security interfaces are defined by default

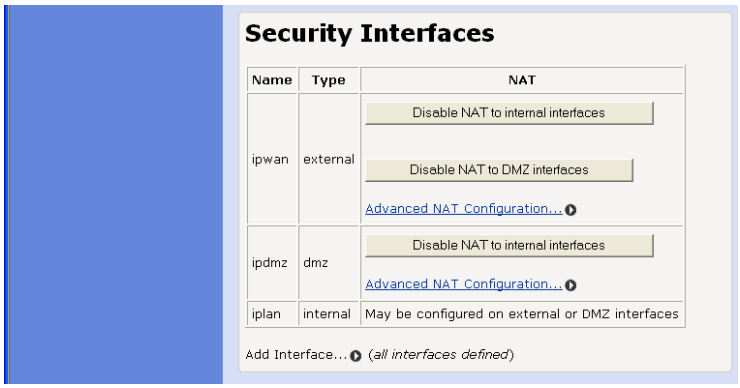
- ipwan (external) to internal
- ipwan (external) to dmz

- ipdmz (dmz) to internal

NAT (Network Address Translation)
NAT operates independently on each interface and is enabled by default on each of the three interfaces.



To disable NAT



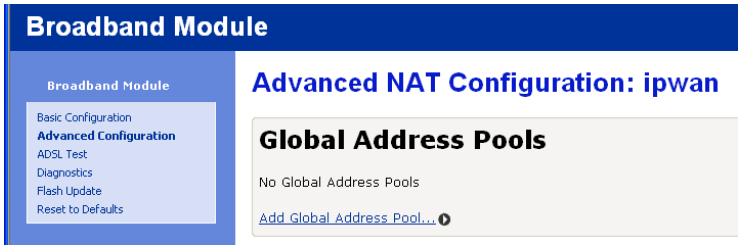
- Select "Disable NAT to … (Interface)"
- Restart the module.

Global Address Pools

A global address pool is used to assign a range of public IP addresses to a WAN interface. This can be used in conjunction with Reserved Mapping to associate the public IP addresses on the WAN interface with specific servers/applications on the DMZ or LAN.

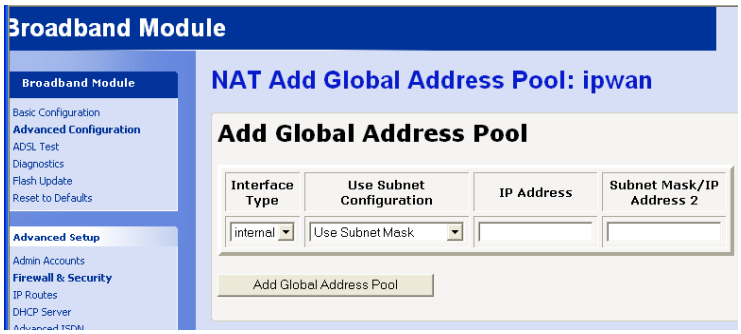
- Select "Advanced NAT Configuration …"

The following screen is displayed



- Select "Add Global Address Pool …"

The following screen is displayed.



- Select an interface from the drop down list
- Enter an IP address and subnet mask, or enter the first and last IP addresses in the range
- Select "Add Global Address Pool"

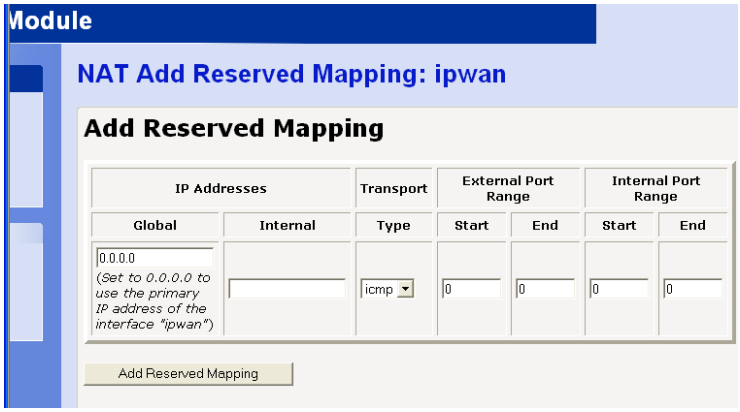
Reserved Mappings

Reserved mappings are used to create exceptions to the normal NAT rules to allow incoming access to a specific server or application on the DMZ or LAN. A static route is defined between an external IP address and internal IP addresses. Reserved mapping is also called Port address Translation or Port Forwarding.

- Select "Advanced NAT Configuration …"

- Select "Add Reserved Mapping … "

The following screen is displayed



- Enter the following parameters:

Global IP address	This is the public IP address assigned to the WAN interface
Internal IP Address	This is the internal IP address of the server on the LAN
Transport Type	Select a protocol from the drop down list
External Port Range	A port or port range can be defined for the external IP address
Internal Port Range	A port or port range can be defined for the internal IP address

- Select "Add Reserved Mapping"

Policies, Triggers, Intrusion Detection, Logging

The security policy settings, stateful inspection triggers, intrusion policy detection and logging settings can be displayed and changed.

Security Policy

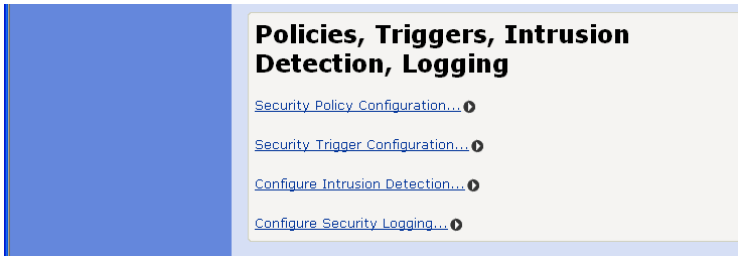
Three types of filters can be defined in the firewall:

Port Filters are used to allow or block a specific TCP/IP application level protocol. The parameters used to specify this filter are source and destination IP address or range of addresses, a transport level protocol TCP/UDP/ICMP), and a port or range of ports which define the application level protocol.

Raw IP Filters are used to allow or block a specific protocol (non TCP/IP) carried within an IP packet. The parameters used to specify this filter are source and destination IP address or range of addresses, and a protocol number which identifies the protocol carried in the IP packet.

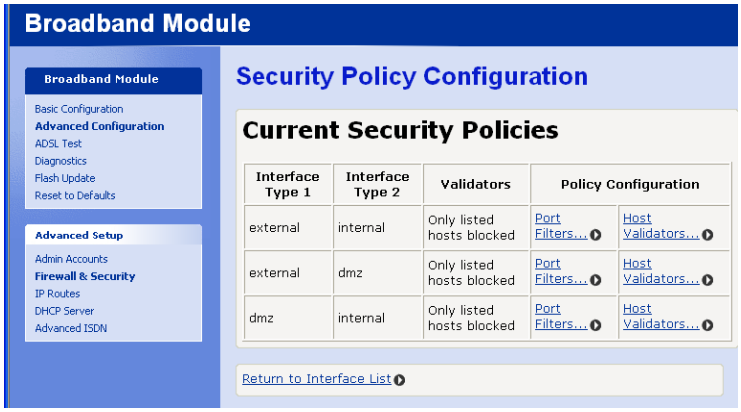
Host Validators are used to block all traffic from a specific host. The parameter used to specify this filter are an IP address or range of addresses.

Note that if invalid filter entries are added, an error message will be displayed when the configuration is saved.



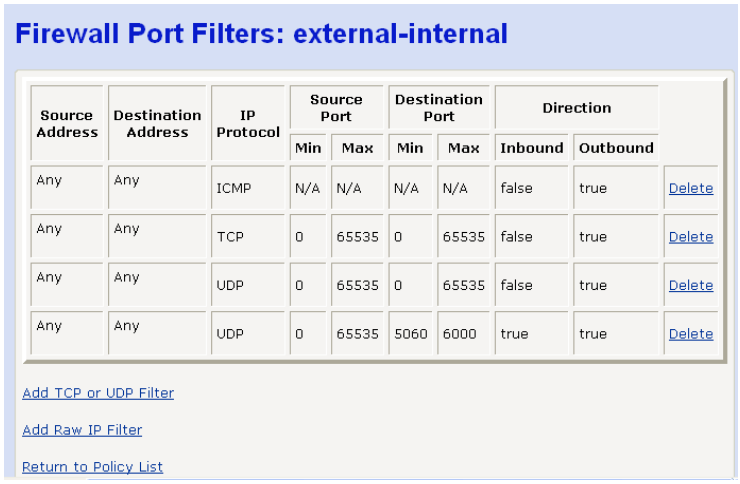
- Select "Security Policy Configuration ..."

The following screen is displayed.



- Select "Port Filters ... " for an interface (external/internal, external/dmz, dmz/internal)

The following screen is displayed for the interface selected

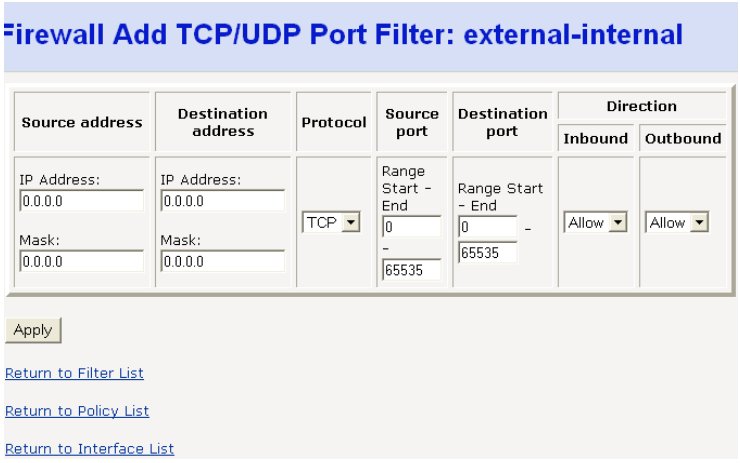


This screen lists the filters currently in effect for that interface.

Adding Port Filters

- Select "Add TCP or UDP Filter"

The following screen is displayed



- Enter the following parameters

- Source address
- Mask is always 255.255.255.255
- IP Destination address
- Mask is always 255.255.255.255
- Protocol, TCP or UDP
- Source port or range of ports (associated with source IP address)
- Destination port or range of ports (associated with destination IP address)
- Direction, Inbound or Outbound

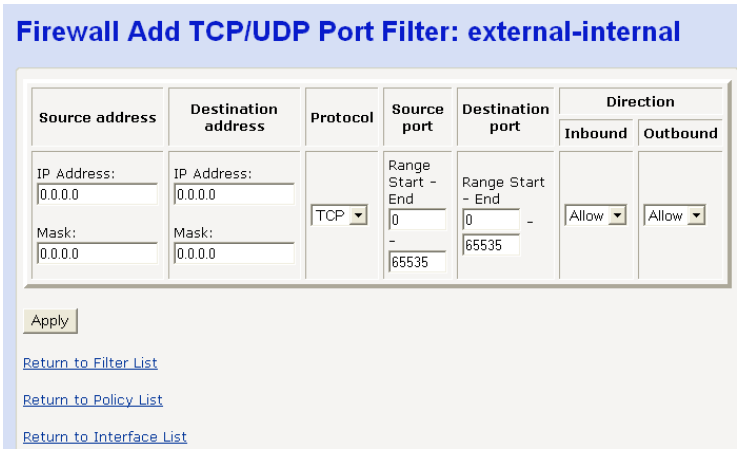
- Select “Apply”
- Save the new configuration
- Restart the module

Adding Raw IP Filters

Filters based on IP address and protocol only can be added to the security level displayed.

- Select “Add Raw Filter”

The following screen is displayed



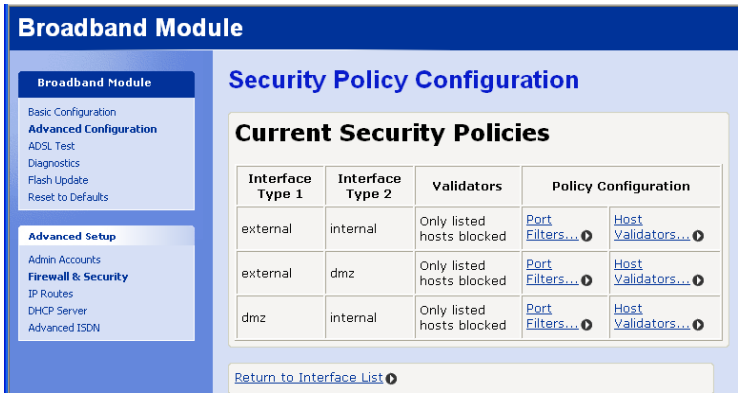
Enter the following parameters

- IP Source address and Subnet Mask
- IP Destination address and Subnet Mask
- IP Protocol
- Direction, Inbound or Outbound

- Select “Apply”
- Save the new configuration
- Restart the module

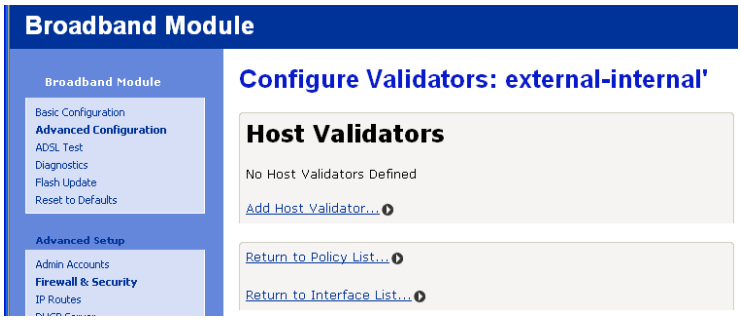
Host Validators

Traffic to or from specific hosts can be blocked by the firewall.



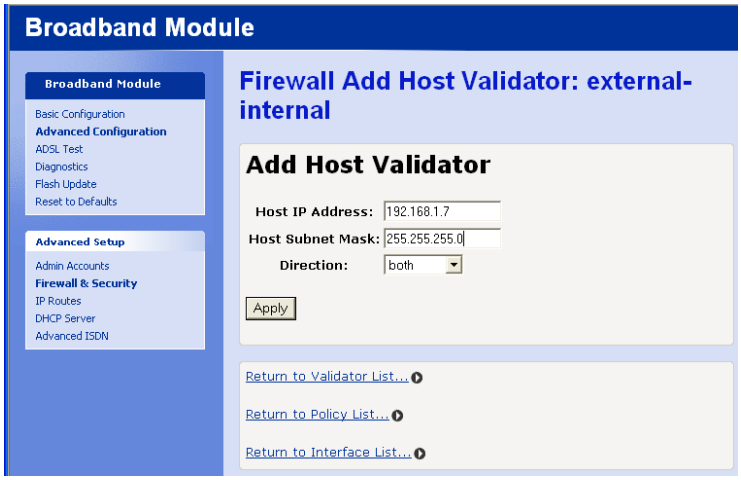
- Select "Host Validators ..." for a particular interface

The following screen is displayed



- Select "Add Host Validator ... " for the selected interface

The following screen is displayed



- Enter the host IP address and Subnet mask
- Select the direction, "Inbound", "Outbound" or "Both"
- Select "Apply"
- Save the new configuration
- Restart the module

Application Level Gateways

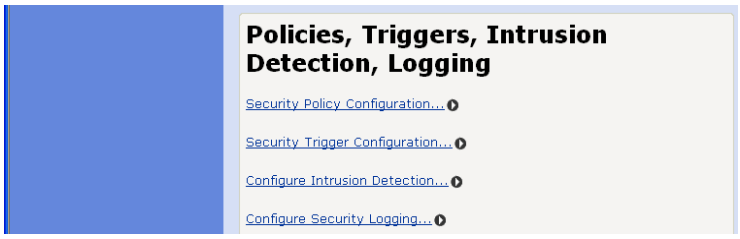
There are certain applications that NAT and Firewall configurations cannot manage. In many cases, ALGs (Application Level Gateways) are needed to translate and transport packets correctly. An ALG provides a service for a specific application such as FTP (File Transfer Protocol). Incoming packets are checked against existing NAT rules or Firewall filters, IP addresses are evaluated and detailed packet analysis is performed. If necessary, the content of a packet is modified, and if a secondary port is required, the ALG will open one. The ALG for each application does not require any configuration.

ALG support is provided for the following applications. If support is required for additional applications, security triggers can be configured for these.

Application	TCP Port	UDP Port
AIM (AOL Instant Messenger)	5190	N/A
FTP (File Transfer Protocol)	21	N/A
IKE (Internet Key Exchange)	N/A	500
ILS (Internet Locator Service)	389 (+1002)	N/A
MSN (Microsoft Networks)	1863	N/A
PPTP (Point-to-Point Tunnelling Protocol)	1723	N/A
RSVP (Resource Reservation Protocol)	N/A	N/A
L2TP (Layer 2 Tunnelling Protocol)	N/A	1701
SIP (Session Initiation Protocol)	5060	5060

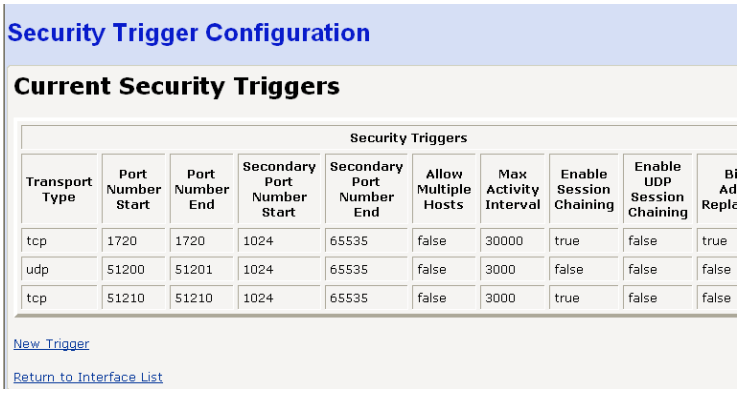
Security Trigger

A security trigger can be defined for applications that are not supported by the ALGs listed above. A security trigger allows the firewall to dynamically open and close secondary ports associated with a particular application and to specify the maximum length of time the port remains open.



- Select "Security Trigger Configuration ..."

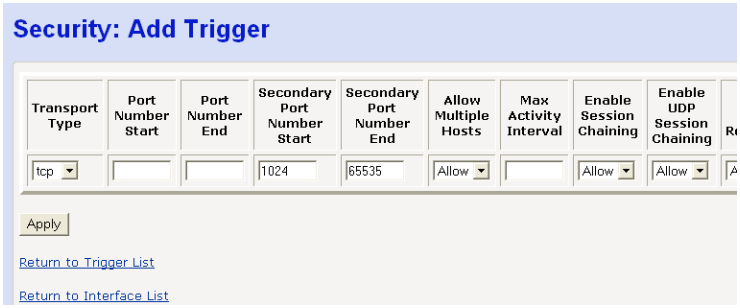
The following screen is displayed



Current security triggers are displayed. There is an option to delete each entry.

- Select "New Trigger"

The following screen is displayed



- Enter the following parameters

Transport Type	Adds a trigger for a TCP or UDP application
Port Number Start	Sets the start of the trigger port range for the control session
Port Number End	Sets the end of the trigger port range for the control session
Secondary Port Number Start	Sets the start port range that the trigger will open
Secondary Port Number End	Sets the end of the port range that the trigger will open
Allow Multiple Hosts	Allow or Block sets whether or not a secondary session can be initiated to/from different remote hosts or the same remote host on an existing trigger
Max Activity Interval	The max interval time in milliseconds between the use of the secondary port sessions. If a secondary port opened by a trigger has not been used for the specified time, it is closed
Enable Session Chaining	If this is enabled, TCP dynamic sessions also become triggering sessions, which allows multi-level session triggering
UDP Session Chaining	If this is enabled, UDP dynamic sessions also become triggering sessions, which allows multi-level session triggering

Binary Address Replacement	Sets whether the destination IP address of the incoming packet is replaced with the associated internal IP address to allow NAT traversal
Address Translation Type	Sets address replacement on a particular packet type.

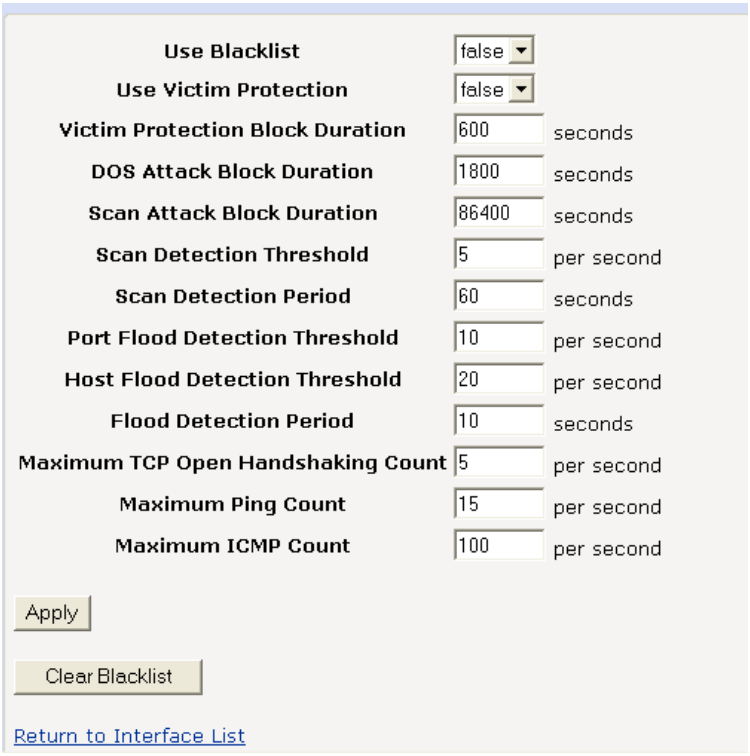
- Select "Apply"

Intrusion Detection

This is used to detect and block incoming attempts to attack or block traffic to the site.

- Select "Configure Intrusion Detection ... "

The following screen is displayed



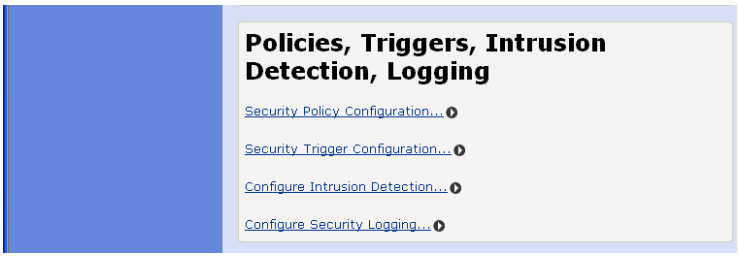
- Enter the following parameters

Use Blacklist	Enables or disables blacklisting of an external host if the firewall has detected an intrusion from that host. Access is denied to that host for 10 minutes.

Use Victim Protection	Enables or disables the blocking of incoming broadcast Ping commands for the period specified in Victim Protection Block duration.
Victim Protection Block Duration	The period for which incoming broadcast Pings are blocked. The default setting is 600 seconds.
DOS Attack Block Duration	If a Denial of Service attack is detected, traffic from that host is blocked for the duration specified here. The default setting is 1800 seconds.
Scan Attack Block Duration	If scan activity from a host attempting to identify open ports is detected, traffic from that host is blocked for the duration specified here. The default setting is 86400 seconds (1 day).
Scan Detection Threshold	If the number of scanning packets counted within the Scan Detection Period exceeds the value set here, a port scan attack is detected. The default setting is 5 per second.
Scan Detection Period	The duration that scanning type traffic is counted for. The default setting is 60 seconds.
Port Flood Detection Threshold	This is the maximum number of SYN packets that can be received by a single port before a flood is detected. The default setting is 10 per second.
Host Flood Detection Threshold	This is the maximum number of SYN packets that can be received from a host before a flood is detected. The default setting is 20 per second.
Flood Detection Period	If the number of SYN floods counted within this duration exceeds either the Port Flood Detection Threshold or the Host Flood Detection Threshold, traffic from the attacker is blocked for the DOS Attack Block Duration. The default setting is 10 seconds.
Maximum TCP Open Handshaking Count	This is the maximum number (per second) of unfinished TCP handshaking sessions that are allowed before a DOS attack is detected. The default setting is 5 per second.
Maximum Ping Count	This is the maximum number of Pings (per second) that are allowed before a DOS attack is detected.
Maximum ICMP Count	This is the maximum number of ICMP packets (per second) that are allowed before a DOS attack is detected.

- Select “Clear Blacklist” if you wish to clear all external hosts from the blacklist.
- Select “Apply”
- Save Configuration
- Restart the module

Security Logging



- Select "Configure Security Logging ..."

The following page is displayed

Logging is enabled by default for Session Logging, Blocking Logging and Intrusion Logging.

To disable all logging:

- Select "Disable Security Logging"

Session Logging, Blocking Logging and Intrusion Logging.

To disable any of the above

- Select "Disable"
- One of eight logging levels for reporting can be selected from the drop down menu

  Emergency
  Alert
  Critical
  Error
  Warning
  Notice

Informational
Debug

- The output can be directed to the Console or the Event Log.

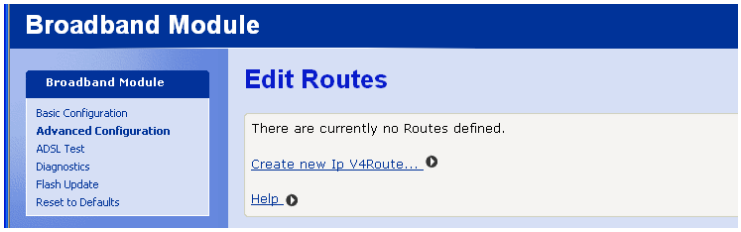
IP ROUTES

This allows static IP routes to be defined.

Existing routes are listed. To change the parameters on an existing route

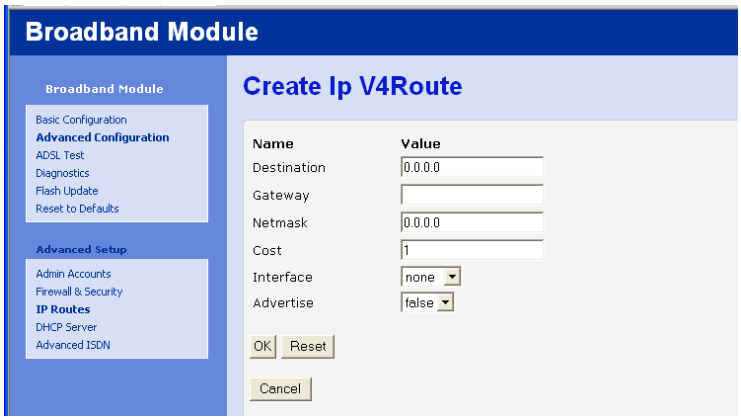
- Select “IP Routes” in Advanced Configuration menu

The following screen is displayed



- Select “Create new IP V4 route …”

The following page is displayed



- Enter the following parameters:

  - Destination IP address
  - Gateway IP address
  - Netmask
  - Cost – this sets the number of hops counted as the cost of the route.
  - Interface – choose from the following:
    - ipwan
    - ipdmz
    - iplan
    - None
  - Advertise – true or false

- Select “OK”

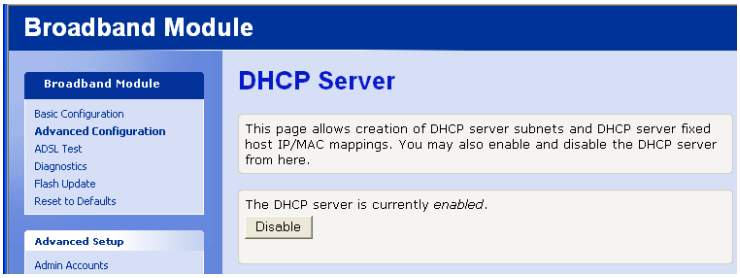
The list of routes is displayed again.

DHCP SERVER

- Select “DHCP Server” in the Advanced Configuration menu

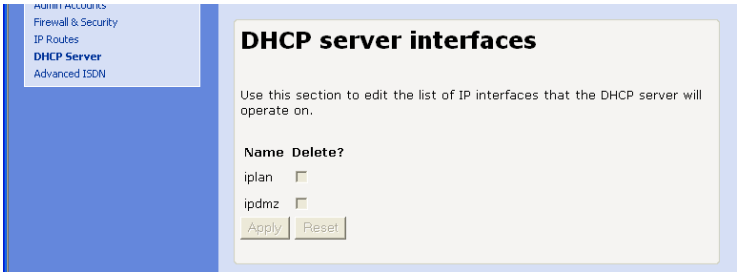
The DHCP Server is displayed

Enable/Disable
The DHCP server is enabled by default.

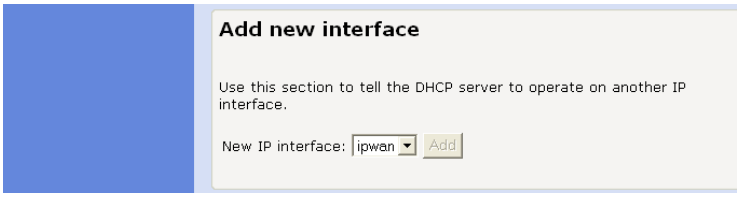


- Select “Disable” to turn off the DHCP server.

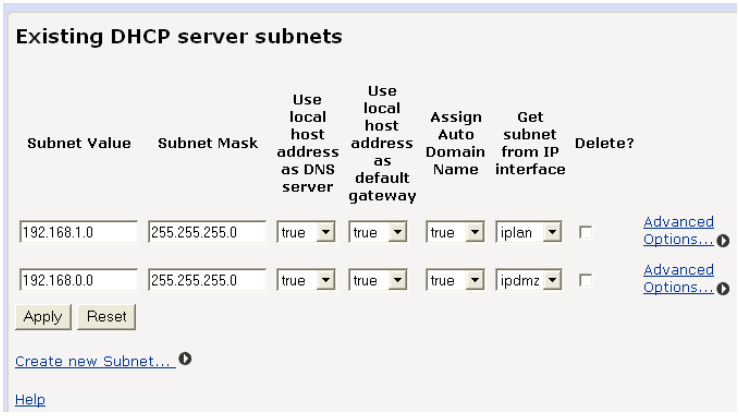
DHCP Server Interfaces
By default the DHCP server operates on the iplan and ipdmz interfaces.
There is an option to delete DHCP on each interface.



Add new interface
There is an option to tell the DHCP server to operate on the ipwan interface.



Existing DHCP Server Subnets



The settings for the existing subnets on the iplan and ipdmz are displayed.
All displayed parameters can be changed – change the setting to a new value and click “Apply”.
To delete a subnet, check the associated box and select “Apply”.

To create a new subnet

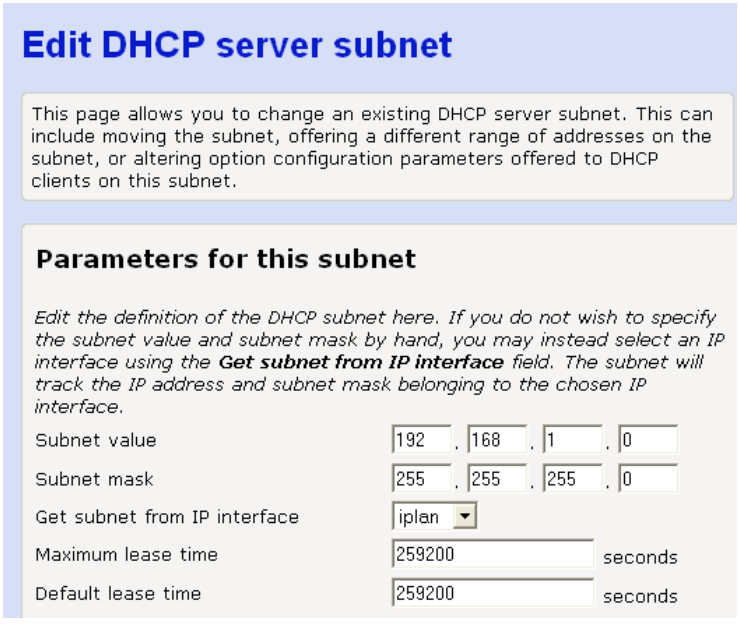
- Select Create new subnet …

The screen displayed is the same as Edit DHCP server subnet in the following section.

Advanced Options

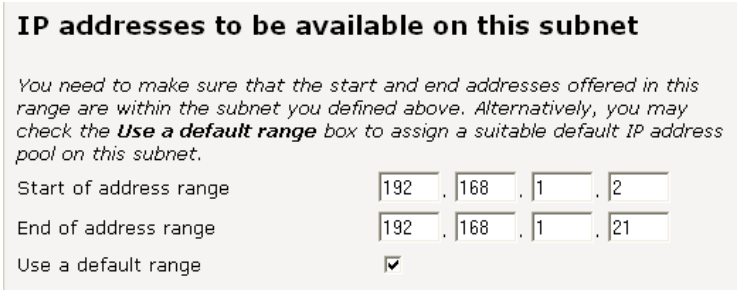
- Select Advanced Options

Parameters for this subnet



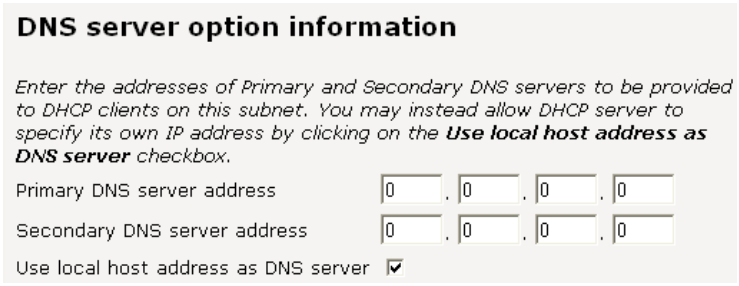
The current subnet parameters are shown. These can be changed as required.

IP addresses to be available on this subnet



The range of IP addresses available on the subnet is shown. These can be changed if required.

DNS Server option information



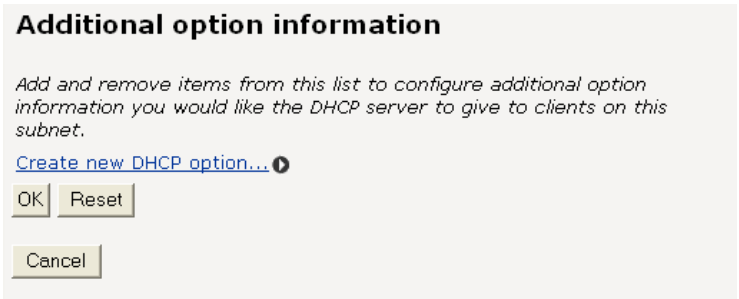
The default setting is use local host as the DNS server - all DNS requests are sent to the default gateway 192.168.1.1 which then relays the request to the DNS addresses negotiated at start up.

Specific DNS servers can be defined if required.

Default gateway option information

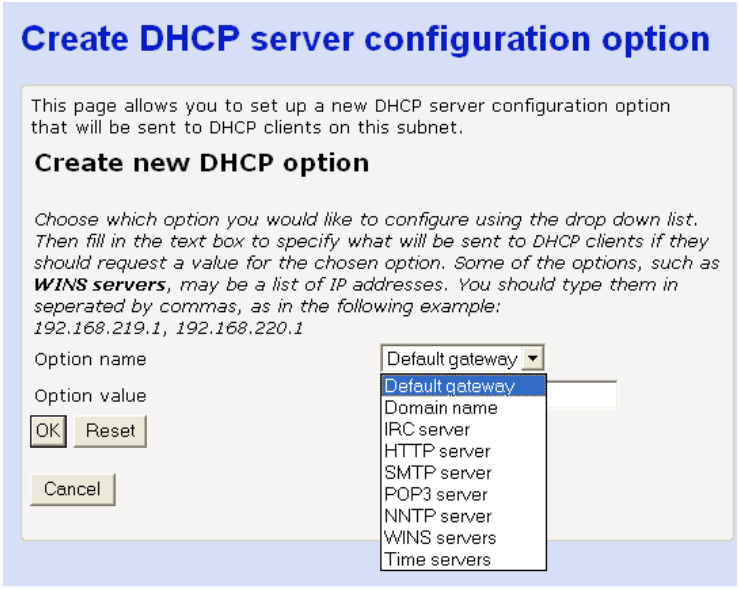
Use local host as default gateway is checked by default.

Additional option information



- Select Create new DHCP option …

The following screen is displayed

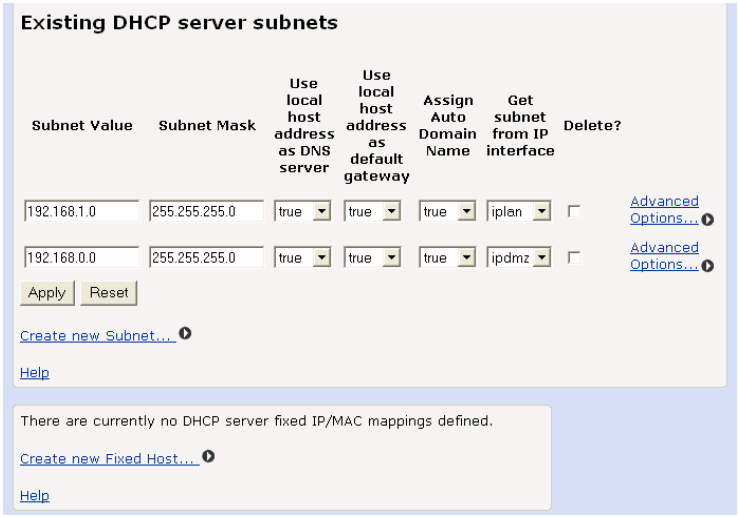


- Select one of the following options from the drop down menu:

  Default gateway
  Domain name
  IRC server
  HTTP server
  SMTP server
  POP3 server
  NNTP server
  WINS server
  Time server

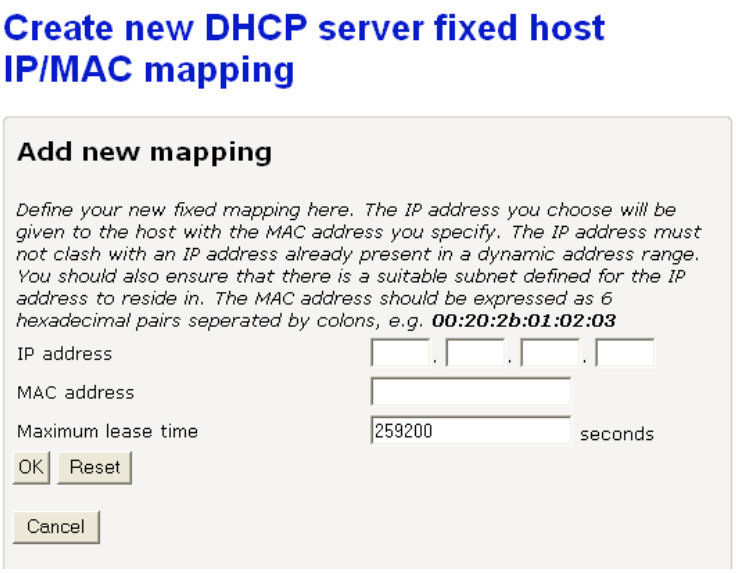
- Enter the option value in the field below.
- Select OK

To always assign the same IP address to a host
The same IP address will always be assigned to a specific host with the specified MAC address.



- Select "Create new Fixed Host …"

The following screen is displayed



- Enter the IP address to be assigned to the host
- Enter the MAC address of the host
- Enter the maximum lease time in seconds
- Select “OK”

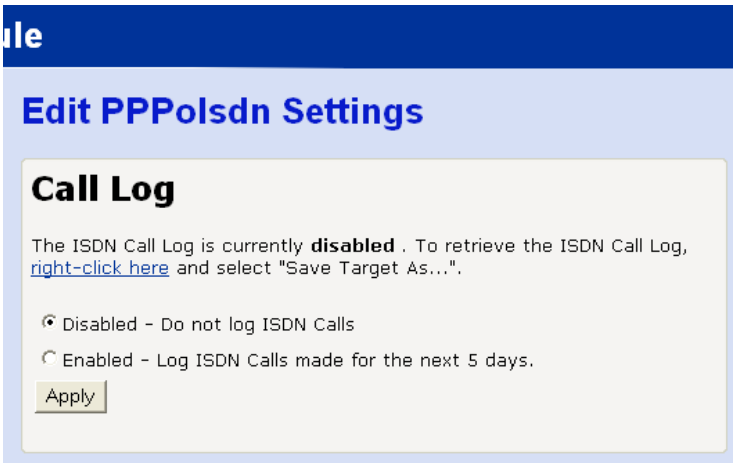
ADVANCED ISDN

Additional optional ISDN settings can be entered here.

- Select "Advanced ISDN" from the Advanced Configuration menu

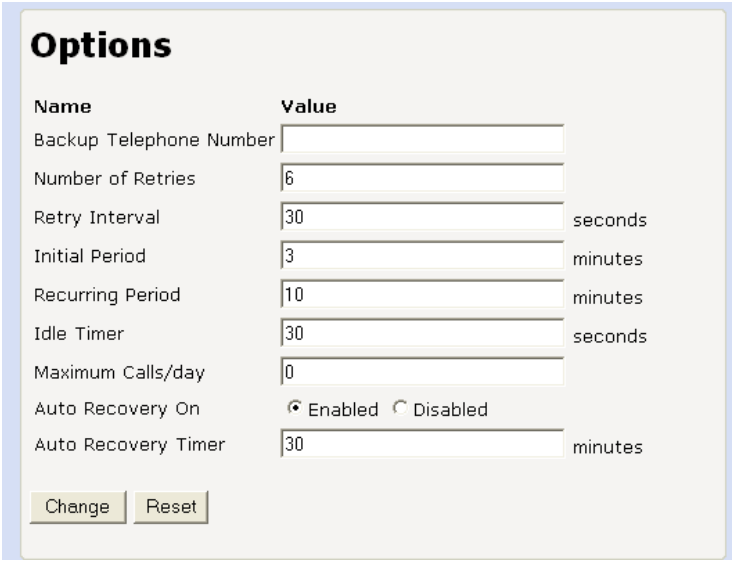
Call Log

This option is used for system maintenance and is disabled by default.



Options

Additional parameters can be entered for ISDN



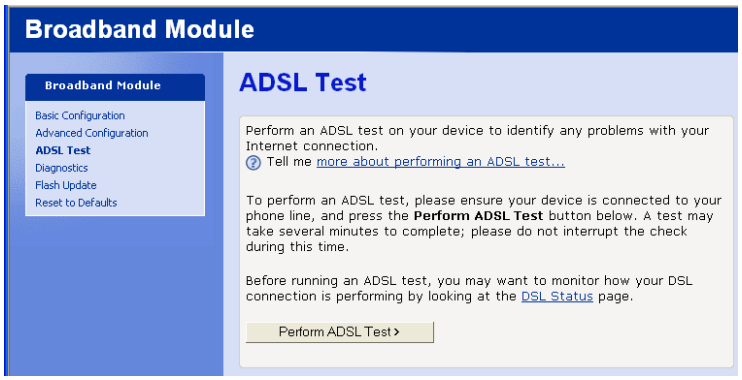
Backup Telephone Number	If the ISP provides a secondary telephone number for Internet access in case the primary number is unavailable, it can be entered here.
Number of Retries	If the first attempt to establish an ISDN connection is unsuccessful, the module automatically redials the number. The user configures the number of times the number is redialled within the range 1 - 255. The default setting is 30 retries. The number of retries applies first to the main telephone number and then to the backup telephone number if it is enabled. If a connection cannot be established on the backup number after the last retry, no further attempt is made to establish a connection. No limit is placed on the number of retries if ' 0' (zero) is specified as the number of retries.
Retry Interval	This defines the time interval between retry attempts and is programmable within the range 5 - 60 seconds. The default setting is 10 seconds.
Initial Period	During an ISDN call a timer is set to disconnect the call if no data is sent or received for a period of time. Three timers are used: The Initial Period defines the period from the start of the call to the end of the initial billing period. This can be set by the user to the initial billing period of the ISDN call. This information is available from the service provider. The range is between 0 and 60 minutes. The default setting is 3 min.
Recurring Period	The Recurring period defines the recurring billing period. The range is between 0 and 60 minutes. This can be set by the user to the recurring billing period of the ISDN call. This information is available from the service provider. The range is 0 to 60 minutes. The default setting is 3 min.
Idle Timer	The Idle timer monitors the call for a period before the expiry of the initial billing period and subsequent recurring periods. If no data is present during the idle timer period, the call is automatically disconnected at the end of that billing period. The default setting is 30 secs and the range is 0 - 120 secs. If the Initial Period and the Recurring Period are set to zero, no cost control is applied and the call will always remain connected

	regardless of whether data is present or not until the call is manually disconnected. If the Initial Period is set to zero, and the Recurring period is set to a non-zero value, then the call is only monitored for idle periods during the Recurring Period. If the Initial Period is set to a non-zero value, and the Recurring Period is set to zero, then the call is only monitored for idle periods during the Initial Period. If the call is still connected after the Initial Period, it will remain connected until manually disconnected.
Maximum Calls/day	A call counter sets a threshold on the maximum number of ISDN calls allowed per day. When this threshold is exceeded, ISDN is disabled. This is designed to control the number of calls inadvertently made by applications without the knowledge of the user. The range is 0 -1000. When this is set to 0 (the default setting), there is no limit on the number of calls that can be made. The counter is automatically set to zero at midnight each day.
Auto Recovery On	When enabled, the auto recovery timer becomes active.
Auto Recovery Timer	A timer option is provided to automatically re-enable the ISDN after the retry threshold is reached. The timer range is 1 - 120 minutes. The default setting is 30 minutes.

- Enter the new parameters
- Select "Change" ("Reset" restores the default values)

ADSL TEST

This performs a series of diagnostic tests on the ADSL connection and displays the test results.



- Select “Perform ADSL Test”

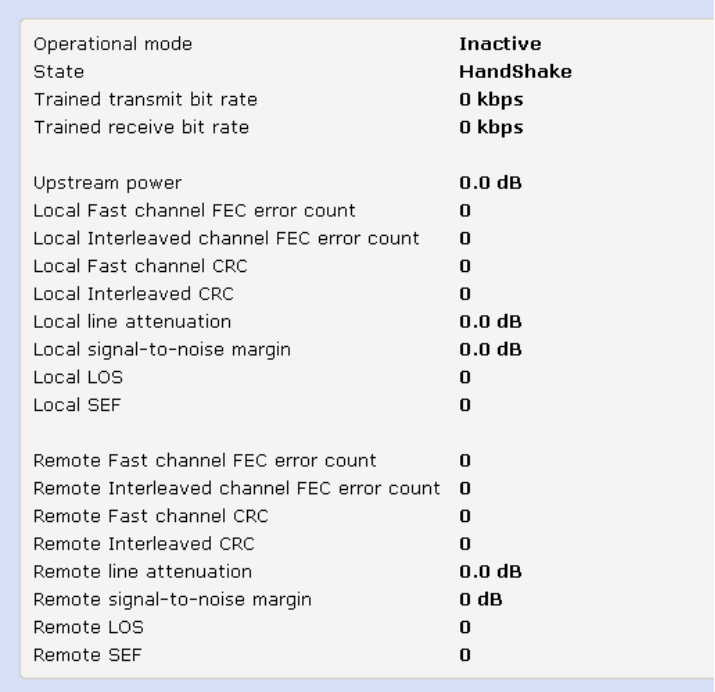
The tests are performed and the results are displayed.

Result	Test	Diagnostic	Cause
Passed	User diagnostics complete	-	ADSL connection OK
Failed	Physical connection	WAN port connecting: handshaking	ADSL line disconnected

Aborted	User's ppp connection	Configuration changed during test	Incorrect username or password
Failed	User's ppp connection	ppp connection establish	Incorrect protocol (Type of Access) Incorrect VPI or VCI

DSL Status

- Select DSL Status on the ADSL Test page



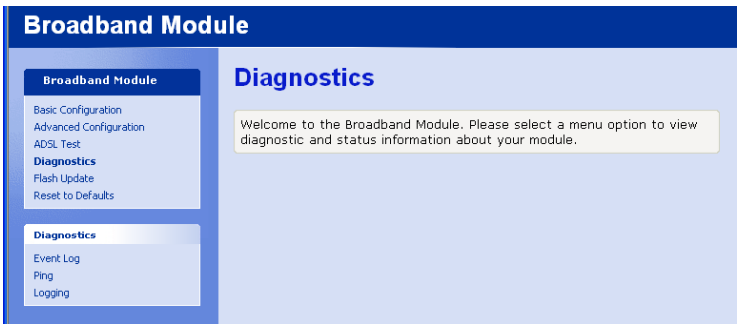
This page displays a range of DSL parameters indicating line speed and quality.

Parameter	***Description***
Operational Mode	Inactive – the line is disconnected or the DSL modem is negotiation with the DSLAM
	G.DMT or T1.413 - indicates the DSL standard that has been negotiated with the DSLAM
State	Showtime – the line is synchronised and the ADSL connection is successfully established
	Training - the ADSL modem is negotiating line speed with the DSLAM
	Handshake - the handshaking procedure is taking place to determine the nature and capabilities of the endpoints
Trained transmit bit rate	The upstream line speed
Trained transmit bit rate	The downstream line speed

Upstream power	The output power of the ADSL modem
Local/Remote fast channel FEC error count	The fast channel Forward Error Correction error count measured at the near/far end
Local/Remote interleaved channel FEC error count	The interleaved channel Forward Error Correction error count measured at the near/far end
Local/Remote fast channel CRC	The fast channel Cyclic Redundancy Check error count measured at the near/far end
Local/Remote interleaved channel CRC	The interleaved channel Cyclic Redundancy Check error count measured at the near/far end
Local/Remote line attenuation	The line loss measured at the near/far end
Local/Remote signal-to-noise margin	The signal-to-noise ratio measured at the near/far end
Local/Remote LOS	The number of occurrences of Loss of Signal at the near/far end
Local/Remote SEF	The number of Severely Errored Frames received at the near/far end

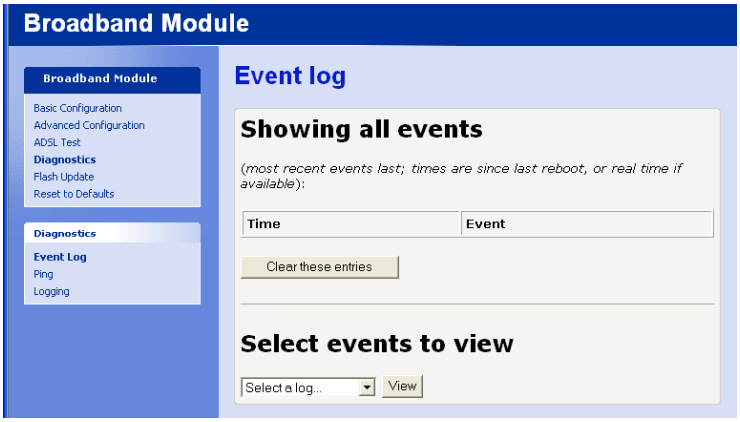
DIAGNOSTICS

This is used for system maintenance and contains the following diagnostic tools.



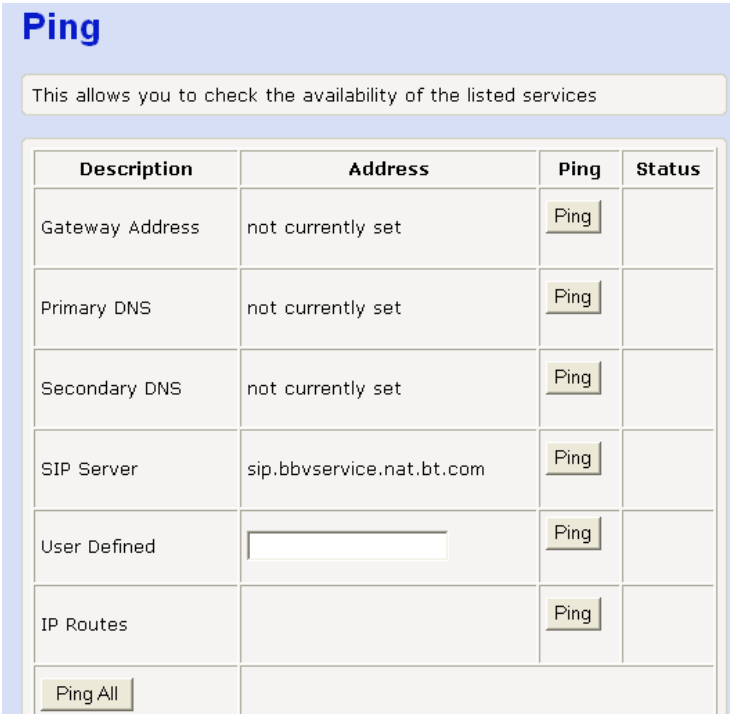
Event Log

Shows system related events. This provides diagnostic information.



PING

This is used to test the broadband connection.



FLASH UPDATE

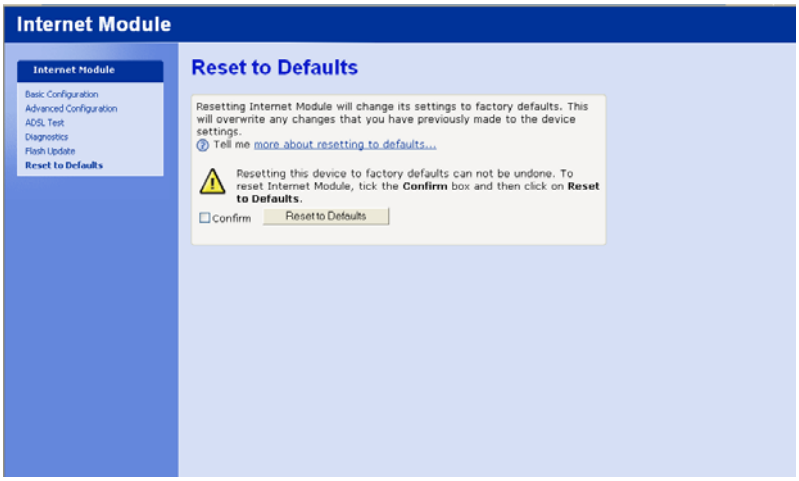
This option is used to update the module with a new version of firmware and is available to engineering support personnel only.

RESET TO DEFAULTS

This resets the module to the factory default settings.

Select “Reset to Defaults” from the Advanced Configuration menu

The following screen is displayed



Check the “Confirm” box
Select “Reset to Defaults”

The default settings are restored.

APPENDIX A

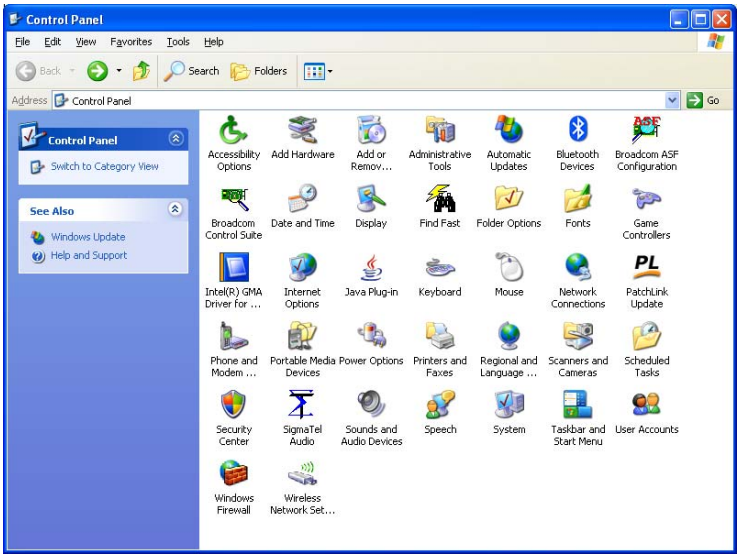
Setting up wireless networking on a PC using the recommended settings in WLAN setup

Enter the settings used in the initial WLAN setup (page 44) in the table below. Refer to this table when setting up PCs to connect to the WLAN

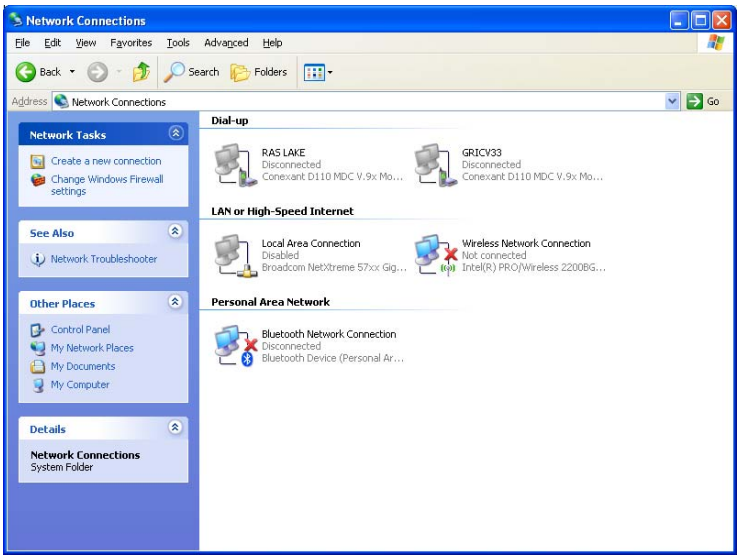
Network Name / SSID	
WPA Pass Phrase	
PCs Allowed to connect to WLAN	
MAC Address (1)	
MAC Address (2)	
MAC Address (3)	
MAC Address (4)	
MAC Address (5)	
MAC Address (6)	
MAC Address (7)	
MAC Address (8)	

This procedure describes setting up WPA security on a PC with Windows XP.
For other operating systems, please consult your PC user manual.
Note that some older wireless LAN adapters do not support WPA.

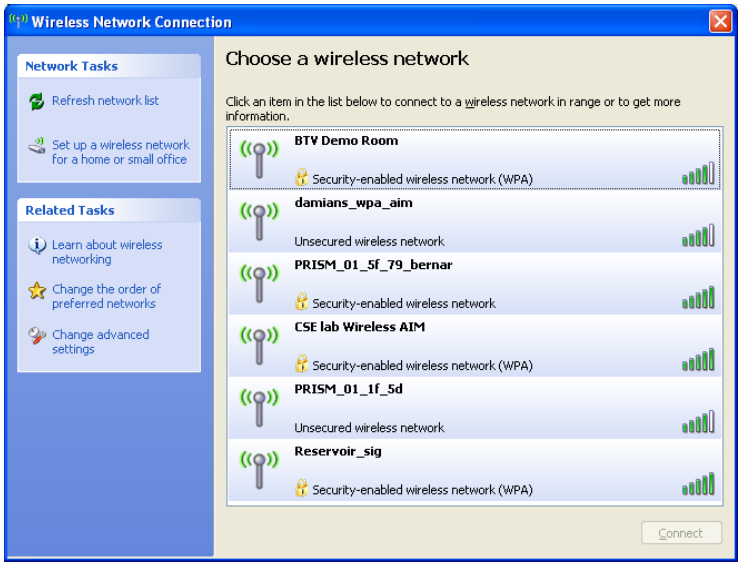
- Click "*Start*" on the task bar of the PC
- Click "*Control Panel*"



- Double click the *Network Connections* icon

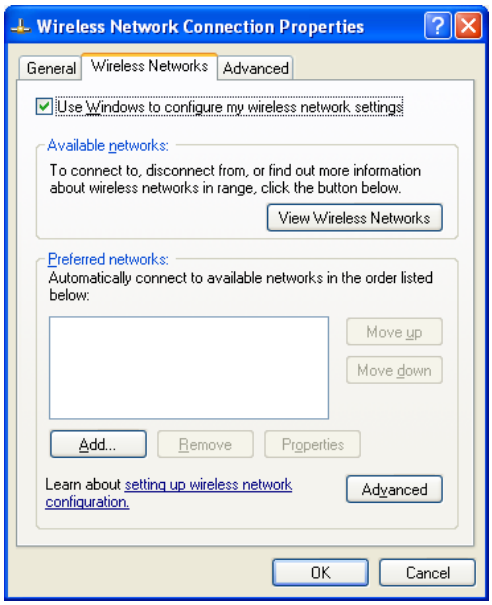


- Double click the *Wireless Network Connection* icon

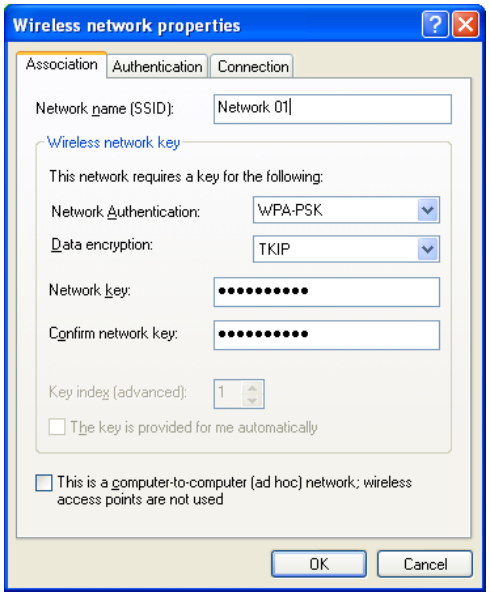


A list of wireless networks is displayed.

- Click *Change the order of preferred networks*



- Click *Add*

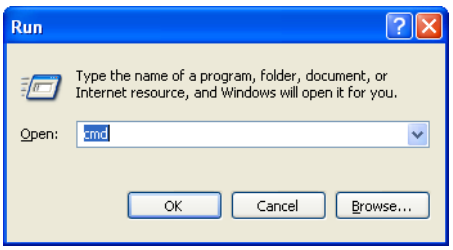


- Enter the *network name (SSID)* (this is the Network Name (SSID) entered in the WLAN settings in p.43)
- Select *WPA-PSK* from the Network Authentication drop-down menu
- Select *TKIP* from the Data encryption drop-down menu
- Enter the *network key* (this is the Pass Phrase entered in the WLAN settings in p.46)
- Confirm the network key
- Click *OK*

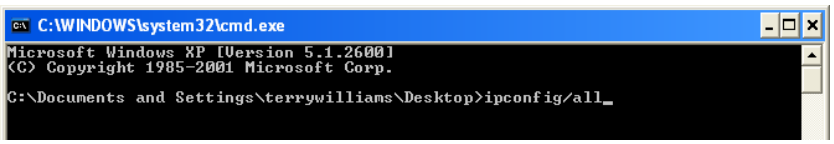
APPENDIX B

To find out the MAC address of a PC

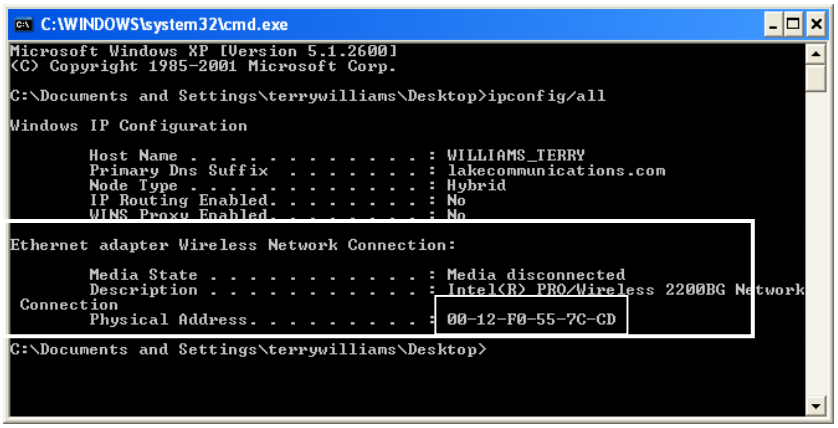
- Click *start*
- Click *Run*



- Enter *cmd*



- At the prompt > type *ipconfig/all* [return]



The MAC address is displayed under

Ethernet adapter Wireless Network Connection:

Physical Address . . . . . : (MAC address)

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BT Versatility BROADBAND MODULE
/BROADBAND MODULE PLUS Manual
Issue 3, July 2007
Part number LR 2731.31001-3

CE

The CE Marking on this equipment indicates Compliance with the following

This device conforms to Directive 1999/5/EC on Radio Equipment and Telecommunications Terminal Equipment as adopted by the European Parliament And Of The Council

Offices Worldwide

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