# BT Versatility

Communication without complication

# Broadband Module/ Broadband Module Plus



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# 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



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



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

•	0
0	ADSL
•	Port 1
0	Port 2
0	Port 3
0	Port 4

### SET UP THE PC TO AUTOMATICALLY OBTAIN AN IP ADDRESS











Select Internet Protocol (TCP/IP), click Properties





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

**5** Select **Obtain an IP address automatically**,

Obtain DNS server address automatically, click OK

### SETTING UP THE BROWSER

Click Tools, Internet Options









B 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).

Launch the browser on any PC connected to the LAN, enter 0H<u>http://192.168.1.1</u> in the address field, press return

2 Enter User name (admin) and Password (admin)



**B** The Basic Configuration screen is displayed

Broadband Module	Basic Configuration
Basic Configuration Status System Backup / Restore System Restart	This page shows general status information about the Broadband Module @ Tell me <u>more about the status information</u>
Advanced Configuration	Internet Access settings
Setup	Internet Access is provided by the ADSI Modern
LAN Gateway ADSI: Modem	The default entering is not exceeded as t
ETH/DMZ Port	The default gateway is not currently set.
VoIP ISDN	No name (DNS) servers have been configured.
WLAN	About the Broadband Module
	The hardware revision for the Broadband Module is C.
	The firmware version for the Broadhand Module is 134

### 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.





Click ADSL Modem in the Setup menu

Click Change the ADSL Modem settings here ...







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

Broadband Module			
Broadband Module	ADSL Modem: PPPoA		
Skatus System Backup / Restore System Restart Advanced Configuration	In order to use a PPPoA connection to the Internet, you must supply a username and password to logon to your Internet Service Provider (SP). Your ISP should provide you with a username and password when you sign up for their service.		
Setup	PPP Username		
LAN Gaberway ADSL Modern ETH[DM2Port VolP ISDN VLAN	PPP Password Retype the PPP Password Next> Cancel		

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





**6** Click **Confirm Changes** 



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  $\checkmark$  .

### 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.



### **2** Select <u>Change VoIP Endpoint</u> <u>types here ...</u>

Broadband Mod	ule
Broadband Module	VoIP
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Setting up VoIP for the Broadband Module allows you to route telephony calls over a data network. Our course about VoIP Your coursent VoIP settings are:
Setup	
LAN Gateway AOS, Moden Emilipade Part VeDP VEDP WLAN	Endpoint 1         G711,G729         Not Configured           Endpoint 2         G711,G729         Not Configured           Endpoint 3         G711,G729         Not Configured           Endpoint 4         G711,G729         Not Configured           Endpoint 5         G711,G729         Not Configured           Endpoint 6         G711,G729         Not Configured           Endpoint 7         G711,G729         Not Configured           Endpoint 10         G711,G729         Not Configured           Endpoint 11         G711,G729         Not Configured           Endpoint 12         G711,G729         Not Configured
	Change VoIP Endpoint types here Change VoIP Endpoint authentication here Change VoIP Endpoint additional options here

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

Select Next >

<b>4</b> Select Confirm Change	jes
--------------------------------	-----

Broadband Module	VoIP: En	idpoint Type
Basic Configuration Ratus Dystem Backup / Restore Dystem Restart Advanced Configuration	You should fill (7) Tell me more Endpoint 1	out the following fields. <u>e about VoIP</u> Extension Type Inscfive
Setup	Endpoint 2	Inactive V
AN Gatanyo Bad, Nodom ChildM2 Port FaiDP Sch MAN	Endpoint 3 Endpoint 4 Endpoint 5 Endpoint 6 Endpoint 7 Endpoint 8 Endpoint 9 Endpoint 10 Endpoint 11 Endpoint 12	ITTP Extension V ITTP Extension V Inactive V Inactive V Inactive V Inactive V Inactive V Inactive V
	Next > (	annal .

Broadband Module	VoIP: Confirm			
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The endpoint settings will be: Type Endpoint 1 Inactive Endpoint 2 Inactive			
Setup	Endpoint 3 ITP Extn			
LAN Gateway ADSL Modem ETHUDM2 Port VoIP ISDN WLAN	Endpoint 4 ITP Extn Endpoint 5 ITP Extn Endpoint 7 Inoctive Endpoint 7 Inoctive Endpoint 9 Inactive			
	Endpoint 10 Inactive Endpoint 11 Inactive Endpoint 12 Inactive To confirm this setting, click on the Confirm Changes button below. If you do not wish to apply this setting, click on the Cancel button. Confirm Changes Cancel			

• 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>





Restart the module

Broadband Module	VoIP: Confirm		
Basic Configuration			
Status	The endpoint settings will be:		
System Backup / Restore			
System Restart	Username / MAC		
Advanced Configuration	Endpoint 1 Not Configured		
	Endpoint 2 Not Configured		
Restart Required	ITP Extn 152 00:10:36:03:00:00		
A To implement your	ITP Extn 153 00:10:36:03:00:00		
changes a restart is	ITP Extn 154 00:10:36:03:00:00		
required.	ITP Extn 155 00:10:36:03:00:00		
	Endpoint 7 Not Configured		
Restart	Endpoint 8 Not Configured		
	Endpoint 9 Not Configured		
Setup	Endopint 10 Not Configured		
All Colours	Endopint 11 Not Configured		
AND Modern	Endopint 12 Not Configured		
FTHEM? Date	Endpoint 22 Not Configured		
VAIP	To confirm this setting, click on the Confirm Changes button below.		
ISON	you do not wish to apply this setting, click on the <b>Contram Changes</b> button below. If		
WLAN			
	Confirm Changes Cancel		

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.



### **2** Select <u>Change VoIP Endpoint</u> <u>types here ...</u>

Broadband Mod	ule		
Broadband Module	VolP		
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Setting up VoIP for calls over a data ne ② Tell me more abo	the Broadband Mode twork. int VoIP	ule allows you to route telephony
	Your current VoIP se	ettings are:	
Setup	ITP Extn 150	6711.6729	00:10:36:04:65:FA
LAN Gateway ADSL Modem ETH/DMZ Port	ITP Extn 151 ITP Extn 152 ITP Extn 153	G711,G729 G711,G729 G711,G729	00:10:36:04:65:FB 00:10:36:04:65:FC 00:10:36:04:65:FD
ISON NE AN	IP Trunk 5 IP Trunk 6	G711,G729	05600490010
WLAN	Endpoint 7	G711,G729	Not Configured
	Endpoint 9	G711,G729	Not Configured
	Endpoint 10	G711,G729	Not Configured
	Endpoint 11	G711,G729	Not Configured
	Endpoint 12	G711,G729	Not Configured
	Change VoIP Endp Change VoIP Endp	point types here point authentication	here

# **3** Select a free endpoint and select UM Service

Select Next >

adband Module	VoIP: End	dpoint Type
sic Configuration stus stem Backup / Restore stem Restart vanced Configuration	You should fill o Tell me more	ut the following fields. about YolP Extension Type
etup	ITP Extn 150	ITP Extension
AN Gateway DSL Modem TH/DM2 Port WIP EDN	ITP Extn 152 ITP Extn 153 IP Trunk 5 IP Trunk 6	TP Extension  Trunk Trunk
n.m	Endpoint 7 Endpoint 8 Endpoint 9 Endpoint 10	Inactive Inactive Trunk ITP Extension UM Service
	Endpoint 11 Endpoint 12	Inactive



Restart the module

Broadband Module	VoIP: Confirm	
Basic Configuration		
Status	The endpoint settings will be:	
System Backup / Restore	Tune	
system Hestart Industrial Configuration	Endpoint 1 ITP Extra	
	Endpoint 2 ITP Extp	
ietup	Endpoint 3 ITP Extn	
UL Calance	Endpoint 4 ITP Extn	
wa uatoway 105. Modem	Endpoint 5 Trunk	
TH/DMZ Port	Endpoint 6 Trunk	
foIP	Endpoint 7 UM Service	
SON	Endpoint 8 Inactive	
VLAN	Endpoint 9 Inactive	
	Endpoint 10 Inactive	
	Endpoint 11 Inactive	
	Endpoint 12 Inactive	
	To confirm this setting, click on the C	confirm Changes button below.

# 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.

ilo Da	ntom Ex	topoione	Linco	Internet	Madula	Hotol	Ouida Sotu	, Holp			
Save	Close C	urrent Pan	e G	et all and	save!	Load and	send all! F	Reset Cu	rrent Pane to Defa	ault	Connect
Set R	ange On	Set Rang	je Off	Receive	Selected	Recei	ve on scree	en data	Send Selected	Send Changes	
					selec	ct connec	tion mediur	n			
							V24	via serial	Port		
										_	
						Port			Speed		
						COM1	-		115200 •		
										_	
									Connect Canc	el	

- 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:

Broadband Module				
Broadband Module	Addressing			
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Addressing controls the network address of the Broadband Module. (2) Tell me more about the Broadband Module address settings Currently, the address settings for the Broadband Module are:			
Setup LAN Gateway ADSL Modem ETH/MM2 Doct	IP Address: <b>192.168.1.1</b> Subnet Mask: <b>255.255.255.0</b> Change the Broadband Module address settings here			

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

Broadband Module				
Broadband Module	LAN Gateway: Confirm			
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The IP address for the Broadband Module will be <b>192.168.2.1</b> . The Subnet Mask for the Broadband Module will be <b>255.255.0</b> . To confirm this setting, click on the <b>Confirm Changes</b> button below. If you do not wish to apply this setting, click on the <b>Cancel</b> button.			
Setup LAN Gateway ADSL Modem	Confirm Changes Cancel			

• Select "Confirm Changes"

The following screen is displayed



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

Broadband Module				
Broadband Module	Addressing			
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Addressing controls the network address of the Broadband Module. Tell me more about the Broadband Module address settings Currently, the address settings for the Broadband Module are:			
Setup LAN Gateway ADSL. Modem ETH/DMZ Port	IP Address: <b>192.168.2.1</b> Subnet Mask: <b>255.255.255.0</b> Change the Broadband Module address settings here			

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

Broadband Module				
Broadband Module	ADSL Modem			
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The ADSL Modem settings control how the Broadband Module connects to the Internet.  Tell me more about the ADSL Modem settings  ADSL Modem is currently configured as follows:			
Setup LAN Gateway ADSL Modem ETH/0MZ Port VOIP ISON WLAN	Internet Access is provided by <b>DSL (PPPoA)</b> with a VPI of <b>0</b> and a VCI of <b>38</b> The PPP Username is . The PPP Password is <b>not set</b> . <u>Change the ADSL Modem settings here</u>			

This screen shows the current settings.

• Select "Change the ADSL Modem settings here ...."

The following screen is displayed

Broa	Broadband Module				
Broadt	oand Module	ADSL Modem: Types of Access			
Basic Confi Status System Ba System Re	iguration ckup / Restore start	There are five types of Internet Access available. Choose a type that is suitable for your Internet connection from the options below: ⑦ Tell me <u>more about ADSL Modem settings</u>			
Advanced	Configuration	PPPoA - use this if you have a PPPoA DSL connection			
Setup		C PPPoE - use this if you have a PPPoE DSL connection			
LAN Gatew	Jay	O DHCP - use this if you have a DHCP DSL connection			
ADSL Mod ETH/DMZ F	dem Port	<ul> <li>Manual - use this to configure your connection's gateway and DNS servers directly</li> </ul>			
VoIP ISDN WLAN		Next> Cancel			

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.

Broadband Module	
Broadband Module	ADSL Modem: Manual VPI and VCI Setup
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The Broadband Module needs to know which VPI and VCI it should use for Internet Access. Enter the VPI and VCI values that your ISP has provided in the boxes below:
Setup LAN Gateway ADSL Modem ETH(DM2 Port	VPI 0 VCI 38 Next> Cancel
Setup LAN Gateway ADSL Modem ETH/DM2 Port VoIP	VPI U VCI 38 Next> Cancel

### **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

Broadband Module		
Broadband Module	ADSL Modem: Confirm	
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Internet Access will be provided by <b>PPPoA</b> . The VPI will be <b>0</b> and the VCI will be <b>38</b> .	
Setup	To confirm these settings, click on the <b>Confirm Changes</b> button below. If you do not wish to apply these settings, click on the <b>Cancel</b> button.	
LAN Gateway ADSL Modem ETH/DMZ Port	Confirm Changes Cancel	

• 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

	Broadband Module		
	Broadband Module	ADSL Modem: Types of Access	
	Status System Backup / Restore System Restart	There are five types of Internet Access available. Choose a type that is suitable for your Internet connection from the options below: ⑦ Tell me more about ADSL Modem settings	
Advanced Configuration	Advanced Configuration	PPPoA - use this if you have a PPPoA DSL connection	
	Setup	PPPOE - Use this if you have a PPPOE DSL connection	
	LAN Gateway ADSL Modem ETH/DMZ Port	<ul> <li>DHCP - use this if you have a DHCP DSL connection</li> <li>Manual - use this to configure your connection's gateway and DNS servers directly</li> </ul>	
	VoIP ISDN WLAN	Next> Cancel	

• Select "Next"

The following screen is displayed

Broadband Module		
Broadband Module	ADSL Modem: PPPoE	
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	In order to use a PPPoE connection to the Internet, you must supply a username and password to logon to your Internet Service Provider (ISP). Your ISP should provide you with a username and password when you sign up for their service. () Tell me more about the PPP username and password	
Setup	PPP Username username	
LAN Gateway ADSL Modem ETH/DM2 Port VoIP ISDN WLAN	PPP Password •••••• Retype the PPP Password •••••• Next> Cancel	

- 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

Broadband Module	
 Broadband Module	ADSL Modem: Confirm
Status	Internet Access will be provided by <b>PPPoE</b> .
System Backup / Restore System Restart Advanced Configuration	The VPI will be <b>0</b> and the VCI will be <b>38</b> .
Havancea comigaration	To confirm these settings, click on the <b>Confirm Changes</b> button below.
Setup	If you do not wish to apply these settings, click on the <b>Cancel</b> button.
LAN Gateway ADSL Modem	Confirm Changes Cancel

• Select "Confirm Changes"

The following screen is displayed

Broadband Module		
Broadband Module	ADSL Modem	
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The ADSL Modem settings control how the Broadband Module connects to the Internet. (2) Tell me more about the ADSL Modem settings	
Restart Required	ADSL Modem is currently configured as follows: Internet Access is provided by <b>DSL (PDDoE)</b> with a VPI of <b>D</b> and a VCL	
To implement your changes a restart is required.	of 38. The PPP Username is username. The PPP Password is set.	
Restart	Change the ADSL Modem settings here	
Setup	Your current MAC spoofing configuration is as follows:	
LAN Gateway ADSL Modem ETH/DMZ Port	MAC spoofing is <b>disabled.</b> Enable or disable MAC Spoofing here	

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

Broadband Module	
Broadband Module	ADSL Modem: RFC1483 Mode
Status System Backup / Restore System Restart	There are four types of RFC1483 connection available. Choose a type that is suitable for your Internet connection from the options below: ⑦ Tell me <u>more about ADSL Modem settings</u>
Advanced Configuration	ে LLC Bridged
Setup	C LLC Routed
LAN Gateway	C VCMux Bridged
ADSL Modem ETH/DMZ Port VoIP ISDN	← VCMux Routed Enable Link State Monitoring: 🔽
WLAN	Next> Cancel

• 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"

Broadband Module		
Broadband Module	ADSL Modem: Manual VPI and VCI Setup	
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The Broadband Module needs to know which VPI and VCI it should use for Internet Access. Enter the VPI and VCI values that your ISP has provided in the boxes below:	
Setup LAN Gateway ADSL Modem ETH(MMZ Port	VPI 0 VCI 38 Next > Cancel	

### 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

Broadband Module		
	Broadband Module	ADSL Modem: Confirm
	Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Internet Access will be provided by <b>DHCP</b> . The VPI will be <b>0</b> and the VCI will be <b>38</b> .
	Setup	To confirm these settings, click on the <b>Confirm Changes</b> button below. If you do not wish to apply these settings, click on the <b>Cancel</b> button.
	LAN Gateway ADSL Modem	Confirm Changes Cancel

• Select "Confirm Changes"

The following screen is displayed

Broadband Module		
Broadband Module	ADSL Modem	
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The ADSL Modem settings control how the Broadband Module connects to the Internet.  (2) Tell me more about the ADSL Modem settings  ADSL Modem is currently configured as follows:	
Restart Required To implement your changes a restart is required. Restart	Internet Access is provided by DHCP with a VPI of <b>0</b> and a VCI of <b>38</b> . Change the ADSL Modem settings here	

• 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

Broadband Module	
Broadband Module	ADSL Modem: Types of Access
Status System Backup / Restore System Restart	There are five types of Internet Access available. Choose a type that is suitable for your Internet connection from the options below: ⑦ Tell me more about ADSL Modem settings
Advanced Configuration	<ul> <li>PPPoA - use this if you have a PPPoA DSL connection</li> <li>PPPoE - use this if you have a PPPoE DSL connection</li> </ul>
Setup	C DHCP - use this if you have a DHCP DSL connection
ADSL Modem ETH/DMZ Port VoIP ISDN WLAN	Manual - use this to configure your connection's gateway and DNS servers directly      Next>     Cancel

• Select "Next"

The following screen is displayed

Broadband Module	
Broadband Module	ADSL Modem: Manual Setup
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	For manually configured Internet Access, you must provide values for the fields below. Your Internet Service Provider should provide these values. (7) Tell me more about manual Internet Access settings Broadband Module WAN address [213], [94], [222], [177]
Setup	Broadband Module WAN Subnet Mask 255 . 255 . 255 . 0
LAN Gateway ADSL Modem	Internet Gateway address         213         .94         .222         .176           Primary DNS address         212         .17         .32         .1
VoIP ISDN WLAN	Secondary DNS address 212 , 17 , 32 , 3 Next> Cancel

- 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

Broadband Module			
Broadband Module	ADSL Modem: Confirm		
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The following values will be used for your manual ADSL Modem settings: The Broadband Module WAN address will be <b>213.94.222.177</b> . The Broadband Module WAN Subnet Mask will be <b>255.255.0</b>		
Setup	The Internet Gateway address will be <b>213.94.222.176</b> .		
LAN Gateway ADSL Modem ETH/MM2 Port VoIP ISDN WLAN	The Primary DNS Server will be <b>212.17.32.1</b> . The Secondary DNS Server will be <b>212.17.32.3</b> . The VPI will be <b>0</b> and the VCI will be <b>38</b> . To confirm these settings, click on the <b>Confirm Changes</b> button below. If you do not wish to anoly these settings, click on the <b>Cancel</b> button.		
	Confirm Changes Cancel		

• 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

Broadband Module			
Broadband Module	ETH/DMZ Port		
Basic Loninguration Status System Backup / Restore System Restart Advanced Configuration	The ETH/DMZ Port settings control how the Broadband Module uses the ETH/DMZ Port. Tell me more about the ETH/DMZ Port settings The ETH/DMZ Port is currently configured as follows:		
Setup LAN Gateway ADSL Modem	The ETH/DMZ Port hosts a <b>DMZ</b> . Change the ETH/DMZ Port settings here		
Volp ISDN WLAN	The DMZ IP Address is <b>192.168.0.1</b> . The DMZ Subnet Mask is <b>255.255.255.0</b> . <u>Change the DMZ IP address here</u>		

• 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

Broadband Module			
Broadband Module	ETH/DMZ Port: Confirm		
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The ETH/DMZ Port will use <b>PPPoE</b> to provide internet access. To confirm these settings, click on the <b>Confirm Changes</b> button below. If you do not wish to apply these settings, click on the <b>Cancel</b> button.		
Setup	Confirm Changes Cancel		

• 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

Broadband Module				
Broadband Module	ETH/DMZ Port: IP Gateway Mode			
Status System Backup / Restore System Restart Advanced Configuration	Choose a type that is suitable for your Internet connection from the options below: <ul> <li>Tell me more about ETH/DMZ Port settings</li> <li>DHCP - use this if your provider uses DHCP to assign network extinged.</li> </ul>			
Setup LAN Gateway ADSL Modem ETH/DMZ Port	C Static - use this if you must configure your network settings     manually.      Next > Cancel			

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

The following screen is displayed

В	Broadband Module				
	Broadband Module	ETH/DMZ Port: Confirm			
Bi St Sy Sy Ad	asic Contiguration latus /stem Backup / Restore /stem Restart dvanced Configuration	The ETH/DMZ Port will use an external <b>IP Gateway</b> to provide internet access. The network settings will be obtained by <b>DHCP</b> .			
Se LA	e <b>tup</b> NI Gateway	To confirm these settings, click on the <b>Confirm Changes</b> button below. If you do not wish to apply these settings, click on the <b>Cancel</b> button.			
ET	FH/DMZ Port	Cancel			

• 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

Broadband Module				
Broadband Module	ETH/DMZ Port: IP Gateway Mode			
Status System Backup / Restore System Restart Advanced Configuration	Choose a type that is suitable for your Internet connection from the options below:  Tell me <u>more about ETH/DMZ Port settings</u> DHCP - use this if your provider uses DHCP to assign network			
Setup LAN Gateway ADSL Modem ETH/DM2 Port	settings.   Static - use this if you must configure your network settings manually.  Next> Cancel			

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

The following screen is displayed.

Broadband Module			
Broadband Module	ETH/DMZ Port: Static IP Gateway		
Basic Loninguration Status System Backup / Restore System Restart Advanced Configuration	For static configuration, you must provide values for the fields below. Your Service Provider or LAN administrator should provide these values. Tell me more about static IP gateway settings Broadband Module WAN address 213 . 94 . 222 . 177		
Setup	Broadband Module WAN Subnet Mask 255 . 255 . 255 . 0		
LAN Gateway ADSL Modem ETH/DMZ Port VoIP ISDN WLAN	Internet Gateway address         213         .         94         .         222         .         176           Primary DNS address         212         .         57         .         32         .         1           Secondary DNS address         212         .         57         .         32         .         1           Next>         Cancel         Cancel		

- 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

Broadband Module				
Broadband Module	ETH/DMZ Port: Confirm			
Basic Configuration Status System Backup / Restore System Restart	The Broadband Module DMZ address will be <b>192.168.3.1</b> . The Broadband Module DMZ Subnet Mask will be <b>255.255.255.0</b>			
Advanced Configuration	To confirm these settings, click on the <b>Confirm Changes</b> button below. If you do not wish to apply these settings, click on the <b>Cancel</b> button.			
Setup LAN Gateway ADSI Modem	Confirm Changes Cancel			

• 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

Broadband Module	VoIP		
Status System Backup / Restore System Restart Advanced Configuration	Setting up VoIP for calls over a data ne ② Tell me <u>more abc</u> Your current VoIP si	the Broadband Module twork. <u>ut VoIP</u> attings are:	allows you to route telephony
Setup			
LAN Gateway ADSL Modem ETH/DMZ Port VOIP ISDN WLAN	Endpoint 1 Endpoint 2 Endpoint 3 Endpoint 4 Endpoint 5 Endpoint 7 Endpoint 7 Endpoint 8 Endpoint 9 Endpoint 10 Endpoint 10 Endpoint 11 Endpoint 12 <u>Change VOIP Endp Change VOIP Endp</u>	G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729 G711,G729	Not Configured Not Configured

• Select Change VoIP Endpoint types here ...

The following screen is displayed

 Broadband Module		VolP: E	ndpoint Type
Basic Configuration Status System Backup / Restore		You should fil ⑦ Tell me mo	out the following fields. re about VoIP
System Restart Advanced Configuration		Endpoint 1	Extension Type Trunk
Setup		Endpoint 2	Inactive
LAN Gateway		Endpoint 3	Trunk
ADSL Modem		Endpoint 4	ITP Extension
VoIP		Endpoint 5	Inactive
ISDN		Endpoint 6	Inactive
WLAN		Endpoint 7	Inactive
		Endpoint 8	Inactive
		Endpoint 9	Inactive
		Endpoint 10	Inactive
		Endpoint 11	Inactive
		Endpoint 12	Inactive
		Next >	Cancel

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

The following screen is displayed
Broadband Module		
Broadband Module	VoIP: Confirm	
Basic Configuration Status	The endpoint settings will be:	
System Restart Advanced Configuration	Type Endpoint 1 <b>Trunk</b>	
Setup	Endpoint 2 Trunk Endpoint 3 Inactive	
LAN Gateway ADSL Modem	Endpoint 4 Inactive Endpoint 5 Inactive Endpoint 6 Inactive	
VoIP ISDN	Endpoint 7 Inactive Endpoint 8 Inactive	
WLAN	Endpoint 9 Inactive Endpoint 10 Inactive	
	Endpoint 11 Inactive Endpoint 12 Inactive	
	To confirm this setting, click on the <b>Confirm Changes</b> button below. If you do not wish to apply this setting, click on the <b>Cancel</b> button.	
	Confirm Changes Cancel	

• Select Confirm Changes

The following screen is displayed

Broadband Module	VoIP: Endpoint Authentication
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	You should fill out the following fields. (2) Tell me <u>more about VoIP</u> Username Password MAC Address IP Trunk 1 [23456789
Restart Required To implement your changes a restart is required. Restart	IP Trunk 2     34567890       Endpoint 3
Setup LAN Gateway ADSL Modem ETH(DMZ Port VOIP ISDN WLAN	Endpoint 7 Endpoint 8 Endpoint 9 Endpoint 10 Endpoint 11 Endpoint 12 Next> Cancel

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

Broadband Module		
Broadband Module	VoIP: Confirm	
Basic Configuration Status System Backup / Restore	The endpoint settings will be:	
System Restart	Username / MAC	
Advanced Configuration	IP Trunk 1 23456789	
	IP Trunk 2 34567890	
Restart Required	Endpoint 3 Not Configured	
▲ To implement your	Endpoint 4 Not Configured	
Changes a restart is	Endpoint 5 Not Configured	
required.	Endpoint 6 Not Configured	
Deutert	Endpoint 7 Not Configured	
Restart	Endpoint 8 Not Configured	
	Endpoint 9 Not Configured	
Setup	Endpoint 10 Not Configured	
LAN Gateway	Endpoint 11 Not Configured	
ADSL Modem	Endpoint 12 Not Configured	
ETH/DMZ Port		
VoIP	To confirm this setting, click on the <b>Confirm Changes</b> button below. If	
15UW	you do not wish to apply this setting, click on the <b>Cancel</b> button.	
WLAN	Confirm Changes Cancel	

• Select Confirm Changes

The following screen is displayed

Pagic Configuration	CALOF HAR DE		
Status System Backup / Restore System Restart Advanced Configuration	Setting up VoIP for calls over a data ne ⑦ Tell me <u>more abc</u>	the Broadband Module twork. out VoIP	allows you to route telephony
	Your current VoIP s	ettings are:	
Restart Required	IP Trunk 1	G711.G729	23456789
To implement your	IP Trunk 2	G711,G729	34567890
required.	Endpoint 3	G711,G729	Not Configured
	Endpoint 4	G711,G729	Not Configured
Restart	Endpoint 5	G711,G729	Not Configured
	Endpoint 6	G711,G729	Not Configured
ietup	Endpoint 7	G711,G729	Not Configured
ON Cateway	Endpoint 8	G711,G729	Not Configured
DSI Modem	Endpoint 9	G711,G729	Not Configured
H/DMZ Port	Endpoint 10	G711,G729	Not Configured
oIP	Endpoint 11	G711,G729	Not Configured
5DN	Endpoint 12	G711,G729	Not Configured
VLAN	Change VoIP End Change VoIP End Change VoIP End	coint types here coint authentication h coint additional option	ere s here

Restart the module.

# **Additional Endpoint Options**

There are three additional parameters for each IP Endpoint:

Change VoIP Endpoint additional options here ...

Broadband Module	VoIP: End	point Addition	nal Optic	ons
Status System Backup / Restore	You should fill out ⑦ Tell me more a	the following fields. bout VoIP		
System Restart Advanced Configuration		Enable Silence Suppression	Enable RFC2833	Codecs
	IP Trunk 1		Γ	G711,G729 💌
A To implement your	IP Trunk 2		Γ	G711,G729 💌
changes a restart is	Endpoint 3			G711,G729 💌
required.	Endpoint 4			G711,G729 💌
Restart	Endpoint 5			G711,G729 💌
	Endpoint 6			G711,G729 💌
Setup	Endpoint 7			G711,G729 💌
LAN Gateway	Endpoint 8			G711,G729 💌
ETH/DMZ Port	Endpoint 9			G711,G729 💌
VoIP	Endpoint 10			G711,G729 💌
ISDN WLAN	Endpoint 11			G711,G729 💌
	Endpoint 12			G711,G729 💌
	Next > Cano	cel		

#### **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 automativally 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 <u>Change Unified Communications</u> <u>Settings here ...</u>

Broadband Module		
Broadband Module	VoIP: Unified Communication	
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Tell me more about Unified Communication The SMTP and IMAP Clients are currently configured as follows:	
	Server Name Port	
LAN Gateway ADSL Modem ETH/DMZ Port VoIP ISDN WLAN	SMTP: smtp.otconnect.com 25 IMAP: imap4.btconnect.com 143 Change the Unified Communication address settings here	

Select the link Change the Unified Communications address settings here ...

ł	Broadband Module				
ſ	Broadband Module	Unified Communication Address: Setup			
	Status System Backup / Restore System Restart Advanced Configuration	Server Name     Port       SMTP:     smtp.other.com     25       IMAP:     imap4.other.com     143			
	Setup LAN Gateway ADSL Modem ETH/DMZ Pont VoIP ISON WLAN	Next > Cancel			

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 >

Broadband Module			
Broadband Module	Unified Communication: Confirm		
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The SMTP Server settings will be <b>smtp.other.com: 25</b> The IMAP Server settings will be <b>imap4.other.com: 143</b> To confirm this setting, click on the <b>Confirm Changes</b> button below. If you do not wish to apply this setting, click on the <b>Cancel</b> button.		
LAN Gakeway ADSL Modem ETH/UMZ Port <b>VoIP</b> ISON WLAN	Confirm Changes Cancel		

### Select Confirm Changes

sic Configuration	
stem Backup / Restore stem Restart vanced Configuration	Tell me more about Unified Communication The SMTP and IMAP Clients are currently configured as follows:
	Server Name Port
tup N Gateway SL Modem H/DMZ Port	SMTP: smtp.other.com 25 IMAP: imap4.other.com 143 Change the Unified Communication address settings here

The new settings are displayed.

# ISDN

Where the PBX is equipped with ISDN line(s), ISDN can be used to automatically back up the onboard 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

Broadband Module		
Broadband Module	ISDN	
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The ISDN settings control how the Broadband Module uses ISDN to connect to the Internet. (2) Tell me <u>more about the ISDN settings</u> ISDN is currently <b>disabled</b> .	
Setup LAN Gateway ADSL Modem STW/DM2 Dext	Change the ISON settings here	

• 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.

Broadband Module				
Broadband Module	ISDN: Mode			
Status System Backup / Restore System Restart Advanced Configuration	Choose an ISDN mode that is suitable for your Internet connection from the options below: () Tell me <u>more about ISDN settings</u> () Disabled - use this if you do not want to use ISDN for Internet access.			
Setup	<ul> <li>Backup - use this if you want the Broadband Module to use ISDN for backup Internet Access when ADSL is unavailable.</li> </ul>			
LAN Gateway ADSL Modem ETH/DMZ Port VoIP	C Enabled - use this if you want to always use ISDN for Internet Access.      Next>     Cancel			

- Select Backup
- Select "Next"

The following screen is displayed

Broadband Module		
Broadband Module	ISDN: Settings	
Status System Backup / Restore System Restart Advanced Configuration	In order to use an ISDN connection to the Internet, you must supply a username, password and phone number to logon to your Internet Service Provider (ISP). Your ISP should provide you with these details when you sign up for their service. (7) Tell me <u>more about the ISDN settings</u>	
Setup	Phone Number 923456789	
LAN Gateway ADS, Modem ETH/DMZ Port YOIP <b>ISDN</b> WLAN	PPP Username username PPP Password •••••• Retype the PPP Password ••••••	

- 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

Broadband Module					
Broadband Module	ISDN: Confirm				
Status	ISDN will be configured as a backup.				
System Backup / Restore System Restart Advanced Configuration	The phone number will be <b>923456789</b> . The username will be <b>username</b>				
Sohn	To confirm these settings, click on the <b>Confirm Changes</b> button below.				
LAN Gateway ADSL Modem ETH/DMZ Port	If you do not wish to apply these settings, click on the <b>Cancel</b> button.           Confirm Changes         Cancel				

• Select "Confirm Changes"



## (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:-

Broadband Module					
Broadband Module	ISDN: Settings				
Status System Backup / Restore System Restart Advanced Configuration	In order to use an ISDN connection to the Internet, you must supply a username, password and phone number to logon to your Internet Service Provider (ISP). Your ISP should provide you with these details when you sign up for their service. (7) Tell me more about the ISDN settings				
Setup LAN Gateway ADSL Modem	Phone Number 923456789 PPP Username username PPP Password				
ETHIOMZ Port VoIP ISDN WLAN	Retype the PPP Password  Next> Cancel				

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

Broadband Module				
Broadband Module	ISDN: Confirm			
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	ISDN will be <b>enabled</b> . The phone number will be <b>923456789</b> . The username will be <b>username</b>			
Setup LAN Gateway	To confirm these settings, click on the <b>Confirm Changes</b> button below. If you do not wish to apply these settings, click on the <b>Cancel</b> button.			
ADSL Modem ETH/DMZ Port VoIP	Contirm Changes Cancel			

• Select "Confirm Changes"

The following screen is displayed

Broadband Module					
Broadband Module	ISDN				
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	The ISDN settings control how the Broadband Module uses ISDN to connect to the Internet.  (?) Tell me <u>more about the ISDN settings</u> ISDN is currently <b>enabled</b> .				
Setup LAN Gatoway ADSL Modem ETH/DM2 Port VoIP ISDN	The PPP Username is <b>username</b> . The PPP Password is <b>set</b> . The phone number is <b>923456789</b> .				
WLAN	Change the ISDN settings here				

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



• <u>Select Enable or disable the wireless network here ...</u>

Broadband Module					
Broadband Module	WLAN: Enable / Disable				
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Enabling wireless networking will allow PCs with wireless network capabilities to connect to the Internet through the Broadband Module. Tell me <u>more about the wireless networks</u> Select whether you want wireless PCs to connect to your device:				
Setup LAN Gateway ADSL Modem ETH/IDM2 Port VoIP ISDN WLAN	<ul> <li>Disable - Wireless PCs will not be able to connect to your device</li> <li>Enable - Wireless PCs will be able to connect to your device</li> <li>Next&gt; Cancel</li> </ul>				

- Select "Enable"
- Select "Next"

The following screen is displayed



- Note the SSID ٠
- Select "Next" •

The following screen is displayed

Broadband Module			
Broadband Module	WLAN: Channel Selection		
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	You may either choose a channel yourself, or allow the Broadband Module to automatically select the best channel. Tell me more about wireless channels Allow the Broadband Module to select channel		
Setup	<ul> <li>Select a channel manually</li> </ul>		
LAN Gateway ADSL Modem ETH(DMZ Port VoIP ISDN WLAN	Next > Cancel		

- Select "Allow the Broadband Module to select a channel" •
- Select "Next" •

The following screen is displayed

Broadband Module					
Broadband Module	WLAN: Security				
Status System Backup / Restore	It is highly recommended that Wi-Fi Protected Access (WPA) is used, to prevent unauthorised access to your wireless network.				
System Restart Advanced Configuration	You can encrypt wireless network data transmissions using wireless network security. Select an encryption option from the list below.				
Secop LAN Gateway ADSL Modern ETH/DMZ Port VOIP ISDN WLAN	<ul> <li>Off - no encryption on the wireless network</li> <li>64bit encryption on the wireless network</li> <li>128bit encryption on the wireless network</li> <li>Wi-Fi Protected Access (WPA) on the wireless network</li> </ul>				
	Enable SSID Broadcast: 🔽				

- Select "Off" •
- Check "Enable SSID Broadcast" Select "Next" •
- •



- Select "Allow any Wireless PCs to connect"
- Select "Next"

The following screen is displayed



- Select "DMZ"
- Select "Next"

The following screen is displayed

Broadband Module					
Broadband Module	WLAN: Confirm				
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Wireless networking will be <b>enabled</b> . The wireless network name (SSID) will be set to <b>PRISM_01_1f_54</b> . The Broadband Module will automatically select the best wireless channel. The wireless networking security will be set to <b>off</b> . SSID Broadcast will be <b>enabled</b> .				
Setup	All wireless PCs will be allowed to connect to the wireless network. The wireless network will be on the DMZ.				
LAN Gateway ADSL Modem ETH/DM2 Port VoIP ISDN WLAN	To confirm these settings, click on the <b>Confirm Changes</b> button below. If you do not wish to apply these settings, click on the <b>Cancel</b> button. Confirm Changes Cancel				

- Select "Confirm Changes"
- Restart the module

### Connecting your PC to the Wireless Network

- Click Start
- Click Control Panel

P Control Panel							E	
Eile Edit View Favorites Tools	Help							
🕝 Back 🔹 🕥 🔹 🎓 Se	arch 🜔 Fo	Iders 🔝 -						
Address 🔂 Control Panel							~	🔁 Go
Control Panel	Ġ,	×	5	-	2	*	<b>P</b>	
Switch to Category View	Accessibility Options	Add Hardware	Add or Remov	Administrative Tools	Automatic Updates	Bluetooth Devices	Broadcom ASF Configuration	
See Also	and the	P	1	-	N		and a	
🍓 Windows Update	Broadcom Control Suite	Date and Time	Display	Find Fast	Folder Options	Fonts	Game Controllers	
Help and Support		ø	1	-	C		PL	
	Intel(R) GMA Driver for	Internet Options	Java Plug-in	Keyboard	Mouse	Network Connections	PatchLink Update	
		EP/	-			3	1	
	Phone and Modem	Portable Media Devices	Power Options	Printers and Faxes	Regional and Language	Scanners and Cameras	Scheduled Tasks	
	۲	Ī	O,	2	3		<u>8</u> 2	
	Security Center	SigmaTel Audio	Sounds and Audio Devices	Speech	System	Taskbar and Start Menu	User Accounts	
	6							
	Windows Firewall	Wireless Network Set						

• Double click the Network Connections icon

S Network Connections		
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools	Advanced Help	
🚱 Back 🝷 🕥 - 🏂 🔎 Si	earch 🌔 Folders 💷 -	
Address 🔕 Network Connections		💌 🔁 Go
Network Tasks   Create a new connection  Change Windows Firewall  settings	Dial-up RAS LAVE: Eleventrated Conervant D110 MDC V.9x Mo Eleventrated Conervant D110 MDC V.9x Mo	
secongs	LAN or High-Speed Internet	
See Also 🛞	Local Area Connection Disabled Broadcom NetXtreme 57xx Gig View Intel(R) PRO/Wreless 2200BG	
Other Places	Personal Area Network	
Control Panel My Network Places My Documents My Computer	Buetooth Network Connection Bisconnected Bluetooth Device (Personal Ar	
Details		
Network Connections System Folder		

• Double click the Wireless Network Connection icon

(1) Wireless Network Connect	ion				
Network Tasks	Choose a wireless network				
😴 Refresh network list	Click an item in the list below to connect to a wireless network in range or to get more information.				
Set up a wireless network for a home or small office	((o)) BTY Demo Room				
Related Tasks	((o)) damians_wpa_aim				
Learn about wireless networking	Unsecured wireless network ((\cap)) PRISM_01_5f_79_bernar	000			
preferred networks	🛛 🦸 Security-enabled wireless network				
Settings	((p)) CSE lab Wireless AIM				
	((Q)) PRISM_01_1f_5d				
	Unsecured wireless network				
	((o)) Reservoir_sig				
	🖡 👸 Security-enabled wireless network (WPA)				
		⊆onnect			

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 <u>View details of connected wireless PCs ...</u> link under General Settings takes you to the following screen which shows details of PCs connected to the WLAN

Broadband Module				
Broadband Module	WLAN: Connected Wireless PCs			
Status System Backup / Restore	The following 1 wireless PCs are currently connected:			
System Restart	MAC Address: 00:12:f0:55:7c:cd			
Advanced Configuration	Signal Strength: -37			
Setup LAN Gateway	Return to the wireless status page.			
ADSL Modem				
ETH/DMZ Port				
VoIP				
ISDN				
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"



### **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

Broadband Module		
Broadband Mo	dule	WLAN: Basic
Basic Configuration Status System Backup / Rest System Restart Advanced Configurat	tore	Before a wireless network can operate, you need to provide a name (SSID) for the network. Network Name (SSID) PRISM_01_1f_54
Restart Required	nt vour	Next> Cancel

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

Broadband Module	
Broadband Module	WLAN: Channel Selection
Basic Configuration Status System Backup / Restore System Restart	You may either choose a channel yourself, or allow the Broadband Module to automatically select the best channel. ⑦ Tell me <u>more about wireless channels</u>
Advanced Configuration	<ul> <li>Allow the Broadband Module to select channel</li> </ul>
Restart Required	C Select a channel manually
To implement your changes a restart is required.	Next> Cancel

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

Broadband Module	
Broadband Module	WLAN: Channel Selection
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Select the channel you wish the wireless network to use. ⑦ Tell me <u>more about wireless network channels</u> Channel 5 •
Restart Required	Next> Cancel

- Select a channel from the drop down menu
- Select "Next"



## **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

Broadband Module	
Broadband Module	WLAN: 64bit Network Key
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	You must provide a 10 character hex network key for 64bit encryption. A hex key is made of the letters A to F and numbers 0 to 9. ⑦ Tell me more about Wireless network keys Key
Restart Required To implement your Changes a restart is	Next > Cancel

- 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"



- 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

Broadband Module	
Broadband Module	WLAN: Wi-Fi Protected Access
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	You must provide a pass phrase for Wi-Fi Protected Access. This should consist of between 8 and 63 characters.           ⑦ Tell me more about Wireless network pass phrases           Pass           phrase
Restart Required To implement your Changes a restart is required.	Next> Cancel

• 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

Broadband Module	WLAN: Address Authentication
Basic Configuration Status System Backup / Restore	Enter the MAC address to add below: ⑦ Tell me more about restricting wireless access
System Restart Advanced Configuration	MAC address 00 : 10 : 36 : 03 : 2C : 07

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

The following screen is displayed

Broadband Module	
Broadband Module	WLAN: Address Authentication
Status System Backup / Restore System Restart	You can configure the list of addresses to <b>deny</b> access to your device below. ⑦ Tell me <u>more about restricting wireless access</u>
Restart Required	00:10:36:03:20:07
To implement your changes a restart is required.	Remove an address here  Next> Cancel

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

Broadband Module	
Broadband Module	WLAN: Address Authentication
Basic Configuration Status System Backup / Restore	Select the MAC address to remove below: ⑦ Tell me more about restricting wireless access
System Restart Advanced Configuration	00:10:36:03:2C:07 -
Restart Required	Next > Cancel
To implement your changes a restart is	

• 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

Broadband Module	
Broadband Module	WLAN: Address Authentication
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	You can configure the list of addresses to <b>allow</b> access to your device below. (7) Tell me <u>more about restricting wireless access</u> No addresses have been set.
Restart Required To implement your changes a restart is required.	Add an address here Next> Cancel

• Select add an address here ...

The following screen is displayed

Broadband Module	
Broadband Module	WLAN: Address Authentication
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Enter the MAC address to add below: ⑦ Tell me <u>more about restricting wireless access</u> MAC address 00 : 10 : 36 : 03 : 2C : 06
Restart Required	Next > Cancel

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

The following screen is displayed

Broadband Module	
Broadband Module	WLAN: Address Authentication
Basic Configuration Status System Backup / Restore System Restart	You can configure the list of addresses to <b>allow</b> access to your device below. ⑦ Tell me more about restricting wireless access
Advanced Configuration	00:10:36:03:2C:06
Restart Required	Add an address here
To implement your changes a restart is required.	Next> Cancel

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

Broadband Module	
Broadband Module	WLAN: Address Authentication
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Select the MAC address to remove below: Tell me more about restricting wireless access 00:10:36:03:20:06
Restart Required To implement your changes a restart is	Next> Cancel

- 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"

Broadband Mod	ule
Broadband Module	WLAN: Confirm
Basic Configuration Status System Backup / Restore System Restart	Wireless networking is set to operate in <b>United Kingdom</b> . Wireless networking type is <b>802.11B/G</b> .
Advanced Configuration Restart Required	The wireless networking will be renabled. The wireless network name (SSID) will be set to <b>PRISM_01_1f_54</b> . The Broadband Module will automatically select the best wireless channel. The wireless networking security will be set to <b>Wi-Fi Protected Access</b> (WDA) SSID Broadcast will be enabled
To implement your changes a restart is required.	Only the wireless Poisson should be allowed to connect to the wireless network.
Restart	The wireless network will be on the DMZ.
LAN Gateway ADSL Modem	If you do not wish to apply these settings, click on the <b>Contirm Changes</b> button below. If you do not wish to apply these settings, click on the <b>Cancel</b> button.
VoIP	Cancer Cancer

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

Broadband Mo	dule
Broadband Module	WLAN: Confirm
Basic Configuration Status System Backup / Restore System Restart Advanced Configuration	Wireless networking will be <b>disabled</b> . To confirm these settings, click on the <b>Confirm Changes</b> button below. If you do not wish to apply these settings, click on the <b>Cancel</b> button.
Setup LAN Gateway	Confirm Changes Cancel

- 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

Broadband Mod	ule
Broadband Module	Configuration Restored
Basic Configuration Status <b>System Backup / Restore</b> System Restart Advanced Configuration	Your configuration has been restored. The configuration changes will not take effect until you restart your Broadband Module. To restart now, click the <b>Restart</b> button below. A restart will briefly disconnect you from the Internet.
Restart Required	NOTE: You must restart your Broadband Module before making any further configuration changes.
To implement your changes a restart is required.	Restart
Restart	

• 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.

Broadband Mod	ule
Broadband Module	Advanced Configuration
Basic Configuration Advanced Configuration ADSL Test Diagnostics Flash Update Reset to Defaults	Changing the Advanced Configuration can affect the security and functionality of the Broadband Module. Only specialists with knowledge of the advanced features should make changes to the Advanced Configuration.
Advanced Setup Admin Accounts Firewall & Security IP Routes DHCP Server Advanced ISDN	

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 <u>the browser programming</u> <u>interface</u>.

When changing the passwords from their default settings, it is recommended that  $\underline{both}$  passwords are changed.

# To change the Admin password

Connect to 192	2.168.1.1 🛛 🛛 🔀
R	<b>GF</b>
WebAdmin	
<u>U</u> ser name:	🖸 admin 💌
Password:	•••••
	Remember my password
	OK Cancel

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

- Go to Advanced Settings
- Select "Admin Accounts"

Broadband Module	Admir	Account	ts	
Basic Configuration Advanced Configuration NDSL Test Nagnostics Hash Update Reset to Defaults	This page configurati	allows you to cor on web-pages ently Def	ntrol access to	your router's console and these
Advanced Setun	User	Comment		
Admin Accounts	admin	Created by CLI	Edit userO	
irewall & Security P Routes XHCP Server	engineer	Created by CLI		
vdvanced ISDN				

• Select Edit user ...

The following screen is displayed

Broadband Module	Admin Accounts: edit user 'admin'
Basic Configuration Advanced Configuration ADSL Test Diagnostics	Details for user 'admin'
Flash Update	Username: admin
Reset to Defaults	Password: •••••
Advanced Setup	Comment: Created by CLI
Admin Accounts	Apply Reset
Firewall & Security IP Routes	Cancel and return to Admin Accounts Setup Page
DHCP Server	
P Routes HCP Server	Cancel and return to Admin Accounts Setup Page •

- 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

Broadband Mod	ule					
Broadband Module	Admin	Account	ts			
Basic Configuration Advanced Configuration ADSL Test Diagnostics Flash Update Reset to Defaults	This page allows you to control access to your router's console and these configuration web-pages Currently Defined Users					
Advanced Setup	User	Comment				
Admin Accounts	admin	Created by CLI				
Firewall & Security IP Routes	engineer	Created by CLI	Edit userO			

• Select "Edit user"

The following page is displayed

Broadband Mo	dule
Broadband Module	Admin Accounts: edit user 'engineer'
Basic Configuration Advanced Configuration ADSL Test Diagnostics Flash Update	Details for user 'engineer'
Reset to Defaults	Password:
Advanced Setup	Comment: Created by CLI
Admin Accounts Firewall & Security IP Routes	Apply Keset Cancel and return to Admin Accounts Setup Page

- 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.

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

The pre-defined security configurations are:

Medium Security Level (from any source IP address or any source port)		Exte < Inte	ernal :> ernal	Exte < DI	ernal :> MZ	Di < Inte	MZ > rnal	
Service	Destination Port		In	Out	In	Out	In	Out
ICMP	N/A	N/A	F	Т	F	Т	F	Т
Any	TCP	0 - 65535	F	Т	F	Т	F	Т
Any	UDP	0 - 65535	F	Т	F	Т	F	Т
RMCP	TCP	50	F	Т	F	Т	Т	F
	TCP	51	F	Т	F	Т	Т	F
ISAKMP	UDP	500	F	Т	F	Т	Т	F
SSL	TCP	443	F	Т	F	Т	Т	F
Kerberos	TCP	88	F	Т	F	Т	Т	F
Kerberos	UDP	88	F	Т	F	Т	Т	F
HTTP	TCP	80	F	Т	Т	Т	F	Т

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

Low S (from any sou	Low Security Level n any source IP address or any source port)		Exte < Inte	ernal > ernal	Exte < DI	ernal > MZ	DMZ <> Internal	
Service	Dest	ination Port	In	Out	In	Out	In	Out
ICMP	N/A	N/A	F	Т	Т	Т	Т	Т
Any	TCP	0 - 65535	F	Т	F	Т	F	Т
Any	UDP	0 -65535	F	Т	F	Т	F	Т
HTTP	TCP	80	F	Т	Т	Т	Т	Т
FTP	TCP	21	F	Т	Т	Т	Т	Т
SSH	TCP	22	F	Т	Т	Т	Т	F
Telnet	TCP	23	F	Т	Т	Т	Т	Т
SMTP	TCP	25	F	Т	Т	Т	F	Т
RMCP	TCP	50	F	Т	F	Т	Т	F
	TCP	51	F	Т	F	F	Т	F
POP3	TCP	110	F	Т	Т	Т	F	Т
ISAKMP	UDP	500	F	Т	F	Т	Т	F
SSL	TCP	443	F	Т	F	Т	Т	F
Kerberos	TCP	88	F	Т	F	Т	Т	F
Kerberos	UDP	88	F	Т	F	Т	Т	F
DNS	UDP	53	F	Т	Т	Т	Т	Т
SIP	UDP	5060 - 6000	Т	Т	Т	Т	Т	Т
IPT	TCP	5566	Т	Т	Т	Т	Т	Т

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.



- 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 ..."



• Select "Add Global Address Pool ..."

The following screen is displayed.

Broadband Mo	dule			
Broadband Module	NAT Ad	d Global Addre	ss Pool: i	pwan
Basic Configuration Advanced Configuration ADSL Test Diagnostics	Add Gl	obal Address	Pool	
Flash Update Reset to Defaults	Interface Type	Use Subnet Configuration	IP Address	Subnet Mask/I Address 2
Advanced Setup	internal 💌	Use Subnet Mask		
Admin Accounts Firewall & Security IP Routes DHCP Server	Add Glo	bal Address Pool		

- 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 ... "

NAT Add Res	served M	apping:	ipwar			
Add Reserv	ed Mapp	oing				
IP Addre	Transport	Exter Ra	External Port Inte Range F			
Global	Internal	Туре	Start	End	Start	End
0.0.0.0 (Set to 0.0.0.0 to use the primary		icmp 💌	0	0	0	0

• 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 ..."

Broadband Module									
Broadband Module	Security	Policy	Configu	ation					
Basic Configuration Advanced Configuration ADSL Test	Curren	Current Security Policies							
Flash Update Reset to Defaults	Interface Type 1	Interface Type 2	Validators	Policy (	Configuration				
Advanced Setup	external	internal	Only listed hosts blocked	Port Filters O	Host Validators ()				
Admin Accounts Firewall & Security	external	dmz	Only listed hosts blocked	Port Filters O	Host ValidatorsO				
DHCP Server Advanced ISDN	dmz	internal	Only listed hosts blocked	Port FiltersO	Host Validators O				
	Return to Inte	erface List O							

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

The following screen is displayed for the interface selected

Source	ource Destination	Destination	Destination	IP	Source Port		Destination Port		Direction		
Address	Address	Protocol	Min	Max	Min	Max	Inbound	Outbound			
Any	Any	ICMP	N/A	N/A	N/A	N/A	false	true	Delete		
Any	Any	тср	0	65535	o	65535	false	true	Delete		
Any	Any	UDP	0	65535	0	65535	false	true	Delete		
Any	Any	UDP	0	65535	5060	6000	true	true	Delete		
dd TCP or	UDP Filter										
dd Raw IP	Filter										
eturn to Po	olicy List										

# Firewall Port Filters: external-internal

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

ouurce auuress		Drotocol	aource	Destination		0.1011
	address	Protocol	port	port	Inbound	Outbound
P Address: 0.0.00 Mask: 0.0.00	IP Address: 0.0.0.0 Mask: 0.0.0.0		Range Start - End 0 - 65535	Range Start - End 0 - 65535	Allow	Allow
pply	1		J	1	J	]

• 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

### Firewall Add TCP/UDP Port Filter: external-internal

Pourso addrocc	Destination	Brotocol	Source	Destination	Dire	ection
source address	address	Protocol	port port		Inbound	Outbound
IP Address: 0.0.0.0 Mask:	IP Address: 0.0.0.0 Mask:		Range Start - End 0 -	Range Start - End 0 -	Allow	Allow
Apply	10.0.0		65535			
Return to Filter List						
teturn to Policy List						
eturn to Interface I	List					

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.
roadband Mo	dule						
Broadband Module Iasic Configuration Idvanced Configuration	Curren	Current Security Policies					
Nagnostics Hash Update Reset to Defaults	Interface Type 1	Interface Type 2	Validators	Policy (	Configuration		
dvanced Setup	external	internal	Only listed hosts blocked	Port Filters	Host Validators		
dmin Accounts i <b>rewall &amp; Security</b>	external	dmz	Only listed hosts blocked	Port FiltersO	Host ValidatorsC		
HCP Server dvanced ISDN	dmz	internal	Only listed hosts blocked	<u>Port</u> Filters… <b>≬</b>	Host Validators		

• Select "<u>Host Validators</u>..." for a particular interface

The following screen is displayed

Broadband Mod	Broadband Module				
Broadband Module	Configure Validators: external-internal'				
Basic Configuration Advanced Configuration	Host Validators				
Diagnostics Flash Update Reset to Defaults	No Host Validators Defined				
Advanced Setup	Add Host Validator				
Admin Accounts Firewall & Security IP Routes	Return to Interface List				
DUGD Comm					

• Select "Add <u>Host Validator ... "</u> for the selected interface

Broadband Mo	dule
Broadband Module Basic Configuration Advanced Configuration	Firewall Add Host Validator: external- internal
ADSL Test Diagnostics Flash Update Reset to Defaults	Add Host Validator Host IP Address: 192.168.1.7
Advanced Setup Admin Accounts Firewall & Security IP Routes DHCP Server Advanced ISDN	Host Subnet Mask: [255.255.0] Direction: both -
	Return to Validator List • Return to Policy List • Return to Interface List •

- 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 ..."

urren	t Sec	urity	Triggei	rs					
				Security	Triggers				
Transport Type	Port Number Start	Port Number End	Secondary Port Number Start	Secondary Port Number End	Allow Multiple Hosts	Max Activity Interval	Enable Session Chaining	Enable UDP Session Chaining	B Ac Repl
tcp	1720	1720	1024	65535	false	30000	true	false	true
udp	51200	51201	1024	65535	false	3000	false	false	false
tcp	51210	51210	1024	65535	false	3000	true	false	false

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

• Select "<u>New Trigger"</u>

The following screen is displayed

Transport Type	Port Number Start	Port Number End	Secondary Port Number Start	Secondary Port Number End	Allow Multiple Hosts	Max Activity Interval	Enable Session Chaining	Enable UDP Session Chaining	F
tcp 💌			1024	65535	Allow 💌		Allow 💌	Allow 💌	Γ
Apply									

• 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

false 💌	
false 💌	
600	seconds
1800	seconds
86400	seconds
5	per second
60	seconds
10	per second
20	per second
10	seconds
5	per second
15	per second
100	per second
	false       ▼         false       ▼         600       1800         86400       5         60       1         10       2         10       5         15       100

• 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 ٠
- •
- •
- Restart the module •

## Security Logging



• Select "Configure Security Logging ..."

The following page is displayed

Securi	Security Logging State				
Security Logo	jing is enabled				
Disable	Security Logging				
Securi	ty Event	Loggi	ng States		
Logging Type	Status	State	Level	Output to:	
Session Logging	Enabled Level: notice Output to Event Log	Disable	notice  Change	Console	
Blocking Logging	Enabled Level: notice Output to Event Log	Disable	notice  Change	Console	
Intrusion Logging	Enabled Level: notice Output to Event Log	Disable	notice  Change	Console	

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

Broadband Mod	Broadband Module			
Broadband Module	Edit Routes			
Besic Configuration Advanced Configuration ADSJ. Test Diagnostics Flash Update Reset to Defaults	There are currently no Routes defined. <u>Create new Ip V4Route</u> 0 <u>Help</u> 0			

• Select "Create new IP V4 route ..."

The following page is displayed

Broadband Mod	ule	
Broadband Module	Create Ip	V4Route
Basic Configuration Advanced Configuration ADSL Test Diagnostics Flash Update Reset to Defaults	Name Destination Gateway Netmask	Value 0.0.0  0.0.0  0.0.0
Advanced Setup	Cost	1
Admin Accounts Firewall & Security IP Routes DHCP Server Advanced ISDN	Interface Advertise OK Reset	none 💌 false 💌
	Cancel	

- 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.

Broadband Module					
Broadband Module	DHCP Server				
Basic Configuration Advanced Configuration ADSL Test Diagnostics	This page allows creation of DHCP server subnets and DHCP server fixed host IP/MAC mappings. You may also enable and disable the DHCP server from here.				
Flash Update Reset to Defaults	The DHCP server is currently <i>enabled</i> .				
Advanced Setup	Disable				
Admin Accounts					

• 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.

Admini Accounts Firewall & Security IP Routes DHCP Server Advanced ISDN	DHCP server interfaces
	Use this section to edit the list of IP interfaces that the DHCP server will operate on.
	Name Delete?
	iplan
	Apply Reset

## Add new interface

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



## Existing DHCP Server Subnets

Existing DH	CP server s	ubnets					
Subnet Yalue	Subnet Mask	Use local host address as DNS server	Use local host address as default gateway	Assign Auto Domain Name	Get subnet from IP interface	Delete?	
192.168.1.0	255.255.255.0	true 💌	true 💌	true 💌	iplan 💌		Advanced Options ()
192.168.0.0	255.255.255.0	true 💌	true 💌	true 💌	ipdmz 💌		Advanced OptionsO
Apply Reset							
Create new Subn	<u>et</u> 0						
Help							

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 <u>Create new subnet ...</u>

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

## **Advanced Options**

• Select Advanced Options

Parameters for this subnet

Edit DHCP server su	ıbnet				
This page allows you to change an existing DHCP server subnet. This can include moving the subnet, offering a different range of addresses on the subnet, or altering option configuration parameters offered to DHCP clients on this subnet.					
Parameters for this sub	onet				
Edit the definition of the DHCP subr the subnet value and subnet mask interface using the <b>Get subnet fro</b> track the IP address and subnet mainterface.	et here. If you do not v by hand, you may inste <b>m IP interface</b> field. Th ask belonging to the cho	vish to specify ad select an IP e subnet will osen IP			
Subnet value	192 . 168 . 1	. 0			
Subnet mask	255 . 255 . 255	. 0			
Get subnet from IP interface	iplan 💌				
Maximum lease time	259200	seconds			
Default lease time	259200	seconds			

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

### IP addresses to be available on this subnet

## IP addresses to be available on this subnet You need to make sure that the start and end addresses offered in this You need to make sure that the start and end dual boot and the sub-range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you defined above. Alternatively, you may range are within the subnet you have range ra

спеск the <b>Use a default range</b> box : pool on this subnet.	to assign a sultable default IP addi
Start of address range	192 , 168 , 1 , 2
End of address range	192 . 168 . 1 . 21
Use a default range	

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

## **DNS Server option information**

## DNS server option information

Enter the addresses of Primary and Secondary DNS servers to be provided to DHCP clients on this subnet. You may instead allow DHCP server to specify its own IP address by clicking on the Use local host address as DNS server checkbox.

Primary DNS server address	0	. 0	. 0	. 0
Secondary DNS server address	0	. 0	. 0	. 0
Use local host address as DNS server	$\overline{\mathbf{v}}$			

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

### Default gateway option information

Use local host as default gateway  $\overline{\mathbf{v}}$ 

Use local host as default gateway is checked by default.

### Additional option information

Additional option information
Add and remove items from this list to configure additional option information you would like the DHCP server to give to clients on this subnet.
Create new DHCP option ()
OK Reset
Cancel

Select Create new DHCP option ...

## **Create DHCP server configuration option**

This page allows you to set up a new DHCP server configuration option that will be sent to DHCP clients on this subnet.

Create new DHCP option	
Choose which option you would like to Then fill in the text box to specify wh should request a value for the chose. <b>WINS servers</b> , may be a list of IP ac seperated by commas, as in the follo 192.168.219.1, 192.168.220.1	o configure using the drop down list. Nat will be sent to DHCP clients if they n option. Some of the options, such as Idresses. You should type them in Wing example:
Option name	Default gateway 💌
Option value           OK         Reset           Cancel	Default gateway Domain name IRC server HTTP server SMTP server POP3 server NNTP server WINS servers
	Time servers

- 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.

Existing DH	CP server s	ubnets					
Subnet Value	Subnet Mask	Use local host address as DNS server	Use local host address as default gateway	Assign Auto Domain Name	Get subnet from IP interface	Delete?	
192.168.1.0	255.255.255.0	true 💌	true 💌	true 💌	iplan 💌		Advanced Options
192.168.0.0	255.255.255.0	true 💌	true 💌	true 💌	ipdmz 💌	Γ	Advanced Options <b>0</b>
Apply Reset							
Create new Subn	<u>et</u> 0						
Help							
There are current	ly no DHCP serve:	r fixed IP/N	/AC mappir	ngs define	d.		
Create new Fixed	Host O						
Help							

• Select "Create new Fixed Host ..."

# Create new DHCP server fixed host IP/MAC mapping

Add new mapping		
Define your new fixed mapping here given to the host with the MAC add not clash with an IP address already You should also ensure that there is address to reside in. The MAC addre hexadecimal pairs seperated by colo	. The IP address you cl ress you specify. The II r present in a dynamic a suitable subnet defir ass should be expressed ons, e.g. <b>00:20:2b:01:</b>	hoose will be Paddress must address range, hed for the IP 1 as 6 <b>D2:03</b>
IP address		
MAC address		
Maximum lease time	259200	seconds
Cancel		

- 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.

1	e
	Edit PPPolsdn Settings
	Call Log
	The ISDN Call Log is currently <b>disabled</b> . To retrieve the ISDN Call Log, right-click here and select "Save Target As".
	• Disabled - Do not log ISDN Calls
	$^{\rm C}$ Enabled - Log ISDN Calls made for the next 5 days.
	Apply

## Options

Additional parameters can be entered for ISDN

Name	Value	
Backup Telephone Num	ber	
Number of Retries	6	
Retry Interval	30	seconds
Initial Period	3	minutes
Recurring Period	10	minutes
Idle Timer	30	seconds
Maximum Calls/day	0	
Auto Recovery On	Enabled C Disabled	
Auto Recovery Timer	30	minutes

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

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

## **DSL Status**

• Select <u>DSL Status</u> on the ADSL Test page

Operational mode State Trained transmit bit rate Trained receive bit rate	Inactive HandShake O kbps O kbps
Upstream power Local Fast channel FEC error count Local Interleaved channel FEC error count Local Fast channel CRC Local Interleaved CRC Local line attenuation Local signal-to-noise margin Local LOS Local SEF	0.0 dB 0 0 0 0 0 0.0 dB 0.0 dB 0 0
Remote Fast channel FEC error count Remote Interleaved channel FEC error count Remote Fast channel CRC Remote Interleaved CRC Remote line attenuation Remote signal-to-noise margin Remote LOS Remote SEF	0 0 0 0 0 0 0 0 0 0 0 0

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 negotiati 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 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.

Broadband Module		
Broadband Module	Diagnostics	
Advanced Configuration Advanced Configuration ADSL Test Diagnostics Flash Update Reset to Defaults	Welcome to the Broadband Module. Please select a menu option to view diagnostic and status information about your module.	
Diagnostics		
Event Log Ping Logging		

## **Event Log**

Shows system related events. This provides diagnostic information.

Broadband Module		
Broadband Module	Event log	
Basic Configuration Advanced Configuration ADSL Test <b>Diagnostics</b> Flash Update Reset to Defaults	Showing all events (most recent events last; times are since last reboot, or real time if available):	
Diagnostics	Time Event	
Event Log Ping Logging	Clear these entries	
	Select events to view	
	Select a log View	

## Ping

This is used to test the broadband connection.

Ping					
This allows you to ch	This allows you to check the availability of the listed services				
Description	Address	Ping	Status		
Gateway Address	not currently set	Ping			
Primary DNS	not currently set	Ping			
Secondary DNS	not currently set	Ping			
SIP Server	sip.bbvservice.nat.bt.com	Ping			
User Defined		Ping			
IP Routes		Ping			
Ping All		,	,		

## **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



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"

- Co	ontrol	Panel									L	
Eile	Edit	View	Favorite	s <u>T</u> ools	Help							-
G	Back	e	) • 💋	i 🔎 s	earch 🜔 Fo	Iders 🛄 -						
Addre	55 🗗	Contro	Panel								~	🔁 Go
1	Cont	rol Pa	nel	۲	Ġ,	1	5	-	2	*	<b>P</b>	
Ū	<b>}</b> Swit	th to Ca	ategory Vie	BW	Accessibility Options	Add Hardware	Add or Remov	Administrative Tools	Automatic Updates	Bluetooth Devices	Broadcom ASF Configuration	
5	ee Alsi	,		۲		P		-	N	1	and the	
4	Wind	lows Up	odate		Broadcom Control Suite	Date and Time	Display	Find Fast	Folder Options	Fonts	Game Controllers	
۲	) Help	and Su	pport			<b>9</b>	-	1	Ö		PL	
					Intel(R) GMA Driver for	Internet Options	Java Plug-in	Keyboard	Mouse	Network Connections	PatchLink Update	
					1		4			<b>S</b>	1	
					Phone and Modem	Portable Media Devices	Power Options	Printers and Faxes	Regional and Language	Scanners and Cameras	Scheduled Tasks	
					۲	Ŧ	O,	2	S		83	
					Security Center	SigmaTel Audio	Sounds and Audio Devices	Speech	System	Taskbar and Start Menu	User Accounts	
					6							
					Windows Firewall	Wireless Network Set						

• Double click the Network Connections icon

S Network Connections		
<u>Eile Edit View Favorites Tools</u>	Adva <u>n</u> ced Help	- <b>1</b> 1
🌀 Back 👻 🕥 - 🏂 🔎 Se	earch 🍋 Folders 🔢 -	
Address 🔕 Network Connections		💌 🔁 Go
Network Tasks     Image: Create a new connection       Image: Change Windows Firewall settings       See Also	Dial-up  RAS LAKE Disconnected Conexant D110 MDC V.9x Mo  EAN or High-Speed Internet	
Network Troubleshooter	Local Area Connection biolabid Broadcom NetXtreme 57xcr Gig Wreless Network Connection Wreless Network Connection Wreless Network Connection Wreless Network Connection	
Control Panel My Network Places My Documents My Computer	Bluetooth Network Connection Bluetooth Device (Personal Ar	
Details Network Connections System Folder		

• Double click the Wireless Network Connection icon



A list of wireless networks is displayed.

• Click Change the order of preferred networks

🗕 Wireless Network Connection Properties 🛛 🕐	×
General Wireless Networks Advanced	_
Use Windows to configure my wireless network settings	
←Available <u>n</u> etworks:	
To connect to, disconnect from, or find out more information about wireless networks in range, click the button below	
View Wireless Networks	
Preferred networks: Automatically connect to available networks in the order listed below: Move up	
Add     Remove     Properties       Learn about setting up wireless network configuration.     Adyanced	
OK Cancel	

• Click Add

Wireless ne	twork proper	ties			? 🗙	
Association	Authentication	Conn	ection			
Network name (SSID): Network 01						
Wireless	network key					
This netv	vork requires a ke	ey for th	ne following:			
Network	Authentication:		WPA-PSK		*	
<u>D</u> ata end	cryption:		TKIP		~	
Network key:						
C <u>o</u> nfirm n	Confirm network key:					
Key inde <u>y</u> (advanced): 1						
This is a access	a <u>c</u> omputer-to-con points are not use	nputer ed	(ad hoc) network	; wireless		
			ОК	<b>с</b>	ancel	

- 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

C:\WINDOWS\system32\cmd.exe	- 🗆 🗙
Microsoft Windows XP [Version 5.1.2600] (C) Copyright 1985–2001 Microsoft Corp.	
C:\Documents and Settings\terrywilliams\Desktop>ipconfig/all_	

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

C:\Documents and Settings\terrywilliams\Desktop>ipconfig/all #indows IP Configuration Host Name	icrosoft Windows XP [Version 5.1.2600] C) Copyright 1985-2001 Microsoft Corp.	
<pre>Jindows IP Configuration Host Name</pre>	:\Documents and Settings\terrywilliams\Desktop>ipconfig/all	
Host Name	indows IP Configuration	
Sthernet adapter Wireless Network Connection: Media State Media disconnected Description	Host Name	
Media State Media disconnected Description	thernet adapter Wireless Network Connection:	
	Media State Media disconnected Description <u>Intel(R) PRO/Wirel</u> ess 2200BG N Connection Physical Address 00-12-F0-55-7C-CD	letwork

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



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Registered Office: 81 Newgate Street, London EC1A 7AJ. Registered in England No: 1800000. Produced by BT Business Information Systems Marketing Cover designed by H&P Graphics Limited (9968).

### PHME 42397/05/05

Part No. 2731.31000-4

Printed on paper which meets international environmental standards