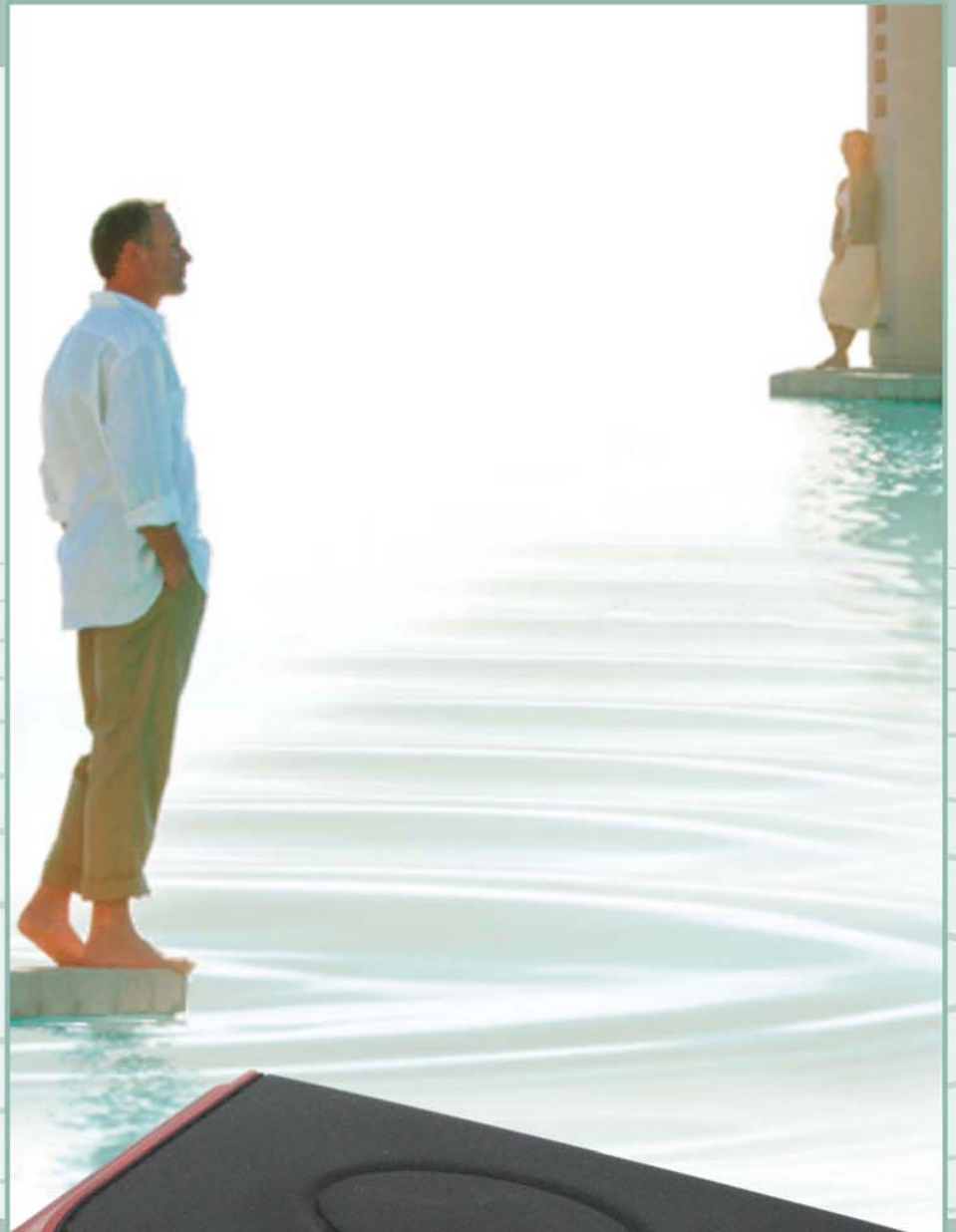


**IRELLI**

BROADBAND  
SOLUTIONS

 **access**

# Multiplay Access Gateway Family



User Manual  
**Discus™ Router**

 **discus™**

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**Manual Code: OGU 930500118-A1**

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DISCUS™ Router

# Welcome

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## ABOUT THIS GUIDE

This guide describes how to install and configure the DISCUS™ Router. This guide is intended for use by those responsible for installing and setting up network equipment; consequently, it assumes a basic working knowledge of LANs (Local Area Networks) and Internet Routers.

## NAMING CONVENTION


Throughout this guide, the DISCUS™ Router is referred to as the “Router”. Category 5 Ethernet Cables are referred to as Ethernet Cables throughout this guide.

## CONVENTIONS



Table 1 and Table 2 list conventions that are used throughout this guide.

**TABLE 1. Notice Icons**

---

Icon	Notice Type	Description
	Information note	Information that describes important features or instructions.

**TABLE 1. Notice Icons**

Icon	Notice Type	Description
	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device.
	Warning	Information that alerts you to potential personal injury.

**TABLE 2. Text Conventions**

Convention	Description
The words “enter” and “type”	When you see the word “enter” in this guide, you must type something, and then press Return or Enter. Do not press Return or Enter when an instruction simply says “type.”
Keyboard key names	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press Ctrl+Alt+Del
Words in italics	Italics are used to: <ul style="list-style-type: none"> <li>• Emphasize a point.</li> <li>• Denote a new term at the place where it is defined in the text.</li> <li>• Identify menu names, menu commands, and software button names. Examples: “From the Help menu, select Contents. Click OK.”</li> </ul>

# Introduction

---

## INTRODUCTION

The **DISCUS™ Router** is designed to provide a cost-effective means of sharing a single broadband Internet connection between several wired computers. The Router also provides protection in the form of an electronic “firewall” preventing anyone outside of your network from seeing your files or damaging your computers.

The **DISCUS™ Router** is an ADSL2+ router, targeted to residential environments SOHO customers, that provides routed broadband services from a single and modular access point.

The **DISCUS™ Router** is the ideal solution for:

1. Connecting multiple PCs and Video game consoles;
2. Sharing broadband internet connections between home computers;
3. Sharing printers and peripherals.

## PACKAGE CONTENTS









Your new **DISCUS™ Router** ADSL2+ Router kit contains the related hardware and software. In it you will find:

1. One **DISCUS™ Router** unit
2. One Power Supply adapter
3. One ADSL splitter micro filter
4. One USB cable
5. One phone cable
6. One Ethernet cable
7. One installation CD-ROM

DISCUS™ Router

8. One Quick Guide

**TABLE 1. Kit Material**

	<b>Quantity</b>	<b>DESCRIPTION</b>
	1	<i>DISCUS™ Router</i>
	1	<i>Power Supplier</i>
	1	<i>Ethernet Cable</i>
	1	<i>USB Cable</i>
	1	<i>Phone Cord</i>
	1	<i>CD-ROM</i>
	1	<i>Quick Guide</i>
	1	<i>ADSL Splitter Micro Filter</i>

If any of these items are missing or damaged, please contact your retailer.

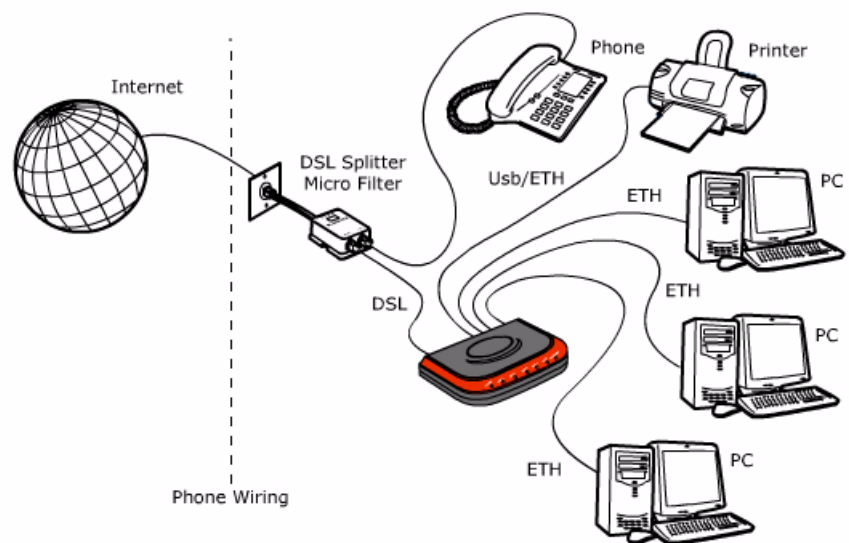
## DISCUS™ Router

It implements an high speed Asymmetric Digital Subscriber Line (ADSL2/2+) connection to the telephone line on the WAN side, as well several local connectivity technologies on the LAN side:

- Four switched 10/100 Base-TX Ethernet ports
- One Universal Serial Bus 1.1 (USB) connection to a host PC

Figure 1 shows a sample network: your Router becomes your connection to the Internet. Connections can be made directly to the Router expanding the number of computers you can have in your network.

**FIGURE 1. Sample Home Network**

**ROUTER ADVANTAGES**

The advantages of the DISCUS™ Router include:

- Shared Internet connection for wired computers
- No need for a dedicated, "always on" computer serving as your Internet connection
- Cross-platform operation for compatibility with Windows and Macintosh computers (see Technical description for supported platforms).
- Easy-to-use, Web-based setup and configuration
- Centralization of all network address settings (DHCP)
- a Virtual server to enable remote access to Web, FTP, and other services on your network
- a Security — Firewall protection — against Internet hacker attacks

**MINIMUM SYSTEM AND COMPONENT REQUIREMENTS**

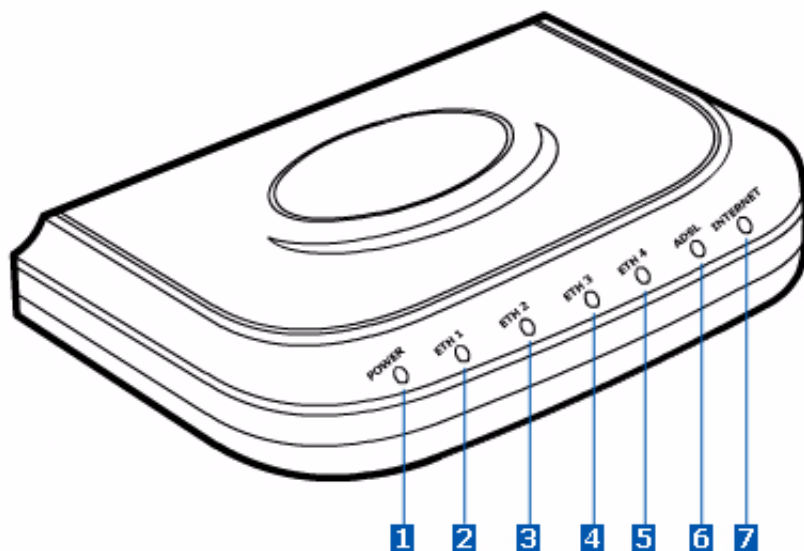
Your DISCUS™ Router requires that the computer(s) and components in your network be configured with at least the following:

- A computer with the Operating Systems that support TCP/IP networking protocols: Windows 98SE, Windows ME, Windows 2000, Windows XP 32bit or MAC 10.x
- An Ethernet 10Mbps or 10/100 Mbps NIC for each computer to be connected to one of the four Ethernet port at the rear of the Router
- An USB 1.1 port
- At least, 60MB of free hard disk space
- At least, 128 MB of RAM
- Supported Browsers: Internet Explorer 5.5 or higher, Netscape 4.7 or higher

**FRONT PANEL**

The front panel of the Router contains seven indicator lights (LEDs) that help to describe the state of networking and connection operations.

**FIGURE 2. Front Panel LEDs**



**TABLE 2. LED Description**

Ref.	LED	LED label	LED Colour	LED Behaviour
1	Power	POWER	Green	Solid Green      Power on Off                  Power off
2/3/4/5	Ethernet 1/2/3/4 link	ETH 1 / ETH 2 / ETH 3 / ETH 4	Green	Solid Green      Ethernet link established

**TABLE 2. LED Description**

Ref.	LED	LED label	LED Colour	LED Behaviour	
6	<i>ADSL line</i>	<i>ADSL</i>	<b>Green</b>	<i>Flashing Green</i>	<i>LAN activity present (traffic in either directions)</i>
				<i>Off</i>	<i>No Ethernet link established</i>
				<i>Off</i>	<i>No cable connected</i>
				<i>Off</i>	<i>No DSL line active</i>
7	<i>Internet</i>	<i>INTERNET</i>	<b>Green</b>	<i>Solid Green</i>	<i>DSL connected</i>
				<i>Flashing Green</i>	<i>DSL attempting synchronization</i>
				<i>Solid Green</i>	<i>WAN IP address available (PPP active)</i>
				<i>off</i>	<i>Modem Power off</i>
			<b>Red</b>	<i>Solid Red</i>	<i>WAN IP address not available (PPP failure)</i>

**REAR PANEL**

The rear panel of the Router contains a Reset Configuration to Factory Default button, a power adapter socket, a Power on button, four LAN ports, one ADSL port and one USB 1.1 device port.

FIGURE 3. Rear Panel LEDs

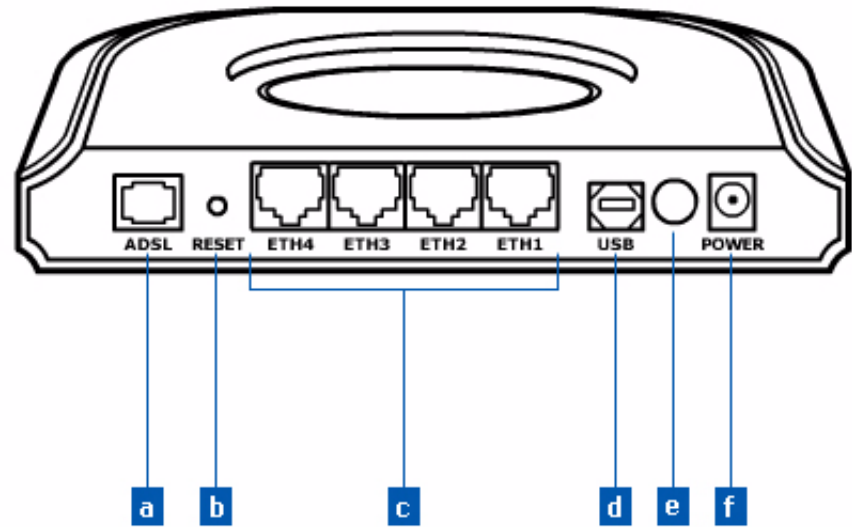


TABLE 3. Port Description

PORT	DESCRIPTION
<i>a</i>	<i>Phone ADSL connector (ADSL2/2+)</i>
<i>b</i>	<i>Reset Configuration to factory default</i>
<i>c</i>	<i>Four Ethernet ports 10/100 Mbps</i>
<i>d</i>	<i>USB 1.1 port</i>
<i>e</i>	<i>Power button</i>
<i>f</i>	<i>Power Adapter Socket</i>

# Hardware Installation

---

## INTRODUCTION

This chapter will guide you through a basic installation of the Router including:

1. Positioning the **DISCUS™ Router**
2. Installing Micro Filters
3. Connecting the Router to your network
4. Setting up your computer for networking with the Router



*Please read carefully the Safety Information in Appendix "A"*



*A multimedia guided tour on how to connect your device and install the router's drivers is available on CD-ROM. It is recommended to follow CD-ROM procedures to easy up device setup.*

## POSITIONING THE ROUTER

You should place the Router in such a location to ensure that:

- It is located near an electrical outlet and a phone wall socket
- Water or moisture cannot enter the case of the unit
- It is out of direct sunlight and away from sources of heat
- The cabling is away from power lines, fluorescent lighting fixtures, and sources of electrical noise such as radios, transmitters and broadband amplifiers.

**INSTALLING MICRO  
FILTERS**

Before beginning installation you must locate devices in your house requiring a DSL filter such as phones, fax machines, answering machines, dial-up modems, Satellite TV dialers or monitored security systems and attach a DSL filter to any one of them sharing the same phone line as your DSL modem.

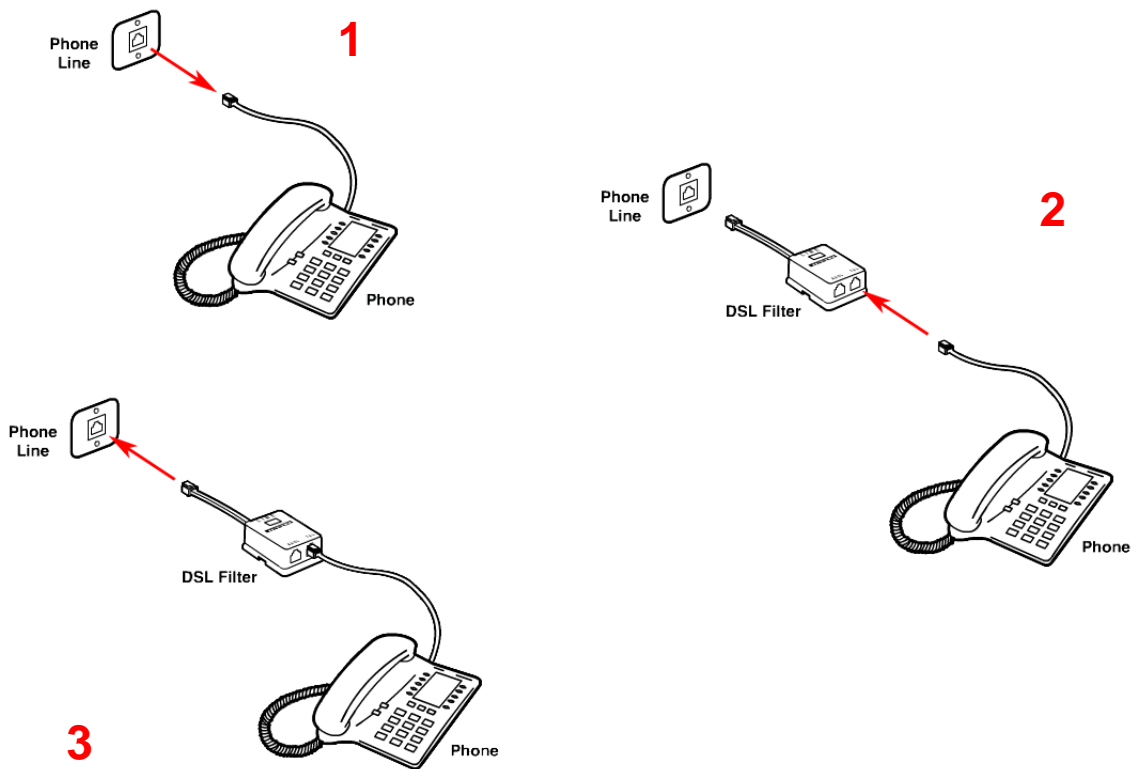
To install DSL filters please follow these steps:

1. Disconnect the phone cable from the telephone wall socket
2. Insert the phone cable into the DSL filter socket identified with a phone symbol
3. Insert the DSL filter cable into the telephone wall socket



*You do not need to attach a DSL filter to unused wall sockets.*

**FIGURE 1. DSL filter installation**



DISCUS™ Router

**POWERING UP THE ROUTER**

To power up the Router:

1. Plug the power adapter into the power adapter socket located on the rear panel of the Router
2. Plug the power adapter into a standard electrical wall socket
3. Press the Power button
4. Wait for the power LED to turn steady green

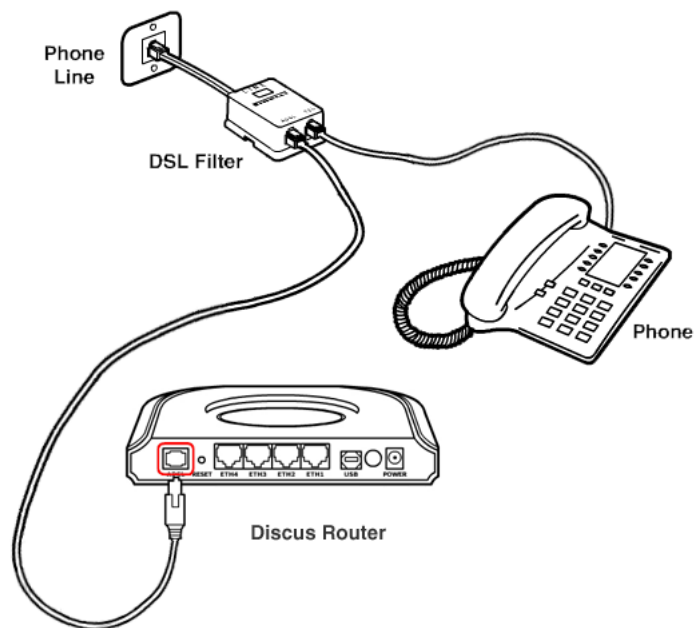
**CONNECTING THE ROUTER**

The first step to install the router is to physically connect it to the telephone socket and then to connect it to a computer - by means of an Ethernet or an USB connection - to be able to access the Internet

To connect the phone cable:

1. Connect one end of the phone cable into the DSL filter socket identified with a computer symbol
2. Connect the other end of the phone cable into the DSL socket on the rear of the Router

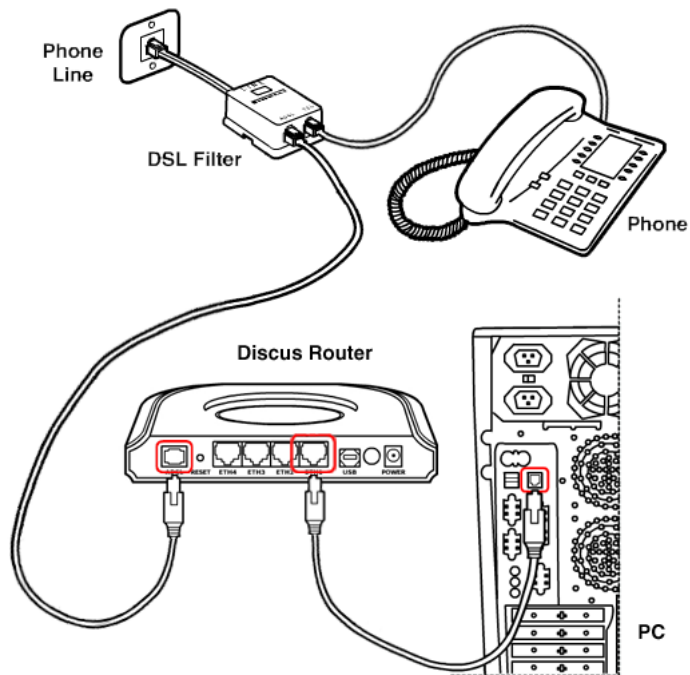
**FIGURE 2. Phone cable connection**



To connect the Ethernet cable:

1. Connect one end of the Ethernet cable into one of the four Ethernet sockets on the rear of the Router
2. Connect the other end of the ethernet cable into the Ethernet plug of your computer

**FIGURE 3. Ethernet cable connection**



To connect the USB cable:

1. Connect one end of the USB cable into the USB socket of your computer.



*Don't plug the other end of the USB cable until setup software will ask you to do it.*

2. Launch USB driver setup available on *CD-ROM*.  
To do this, browse till *x:\driver* folder (where "x" is the CD-ROM drive unit letter); from this folder, according to your Operating System, launch the following executable:
  - WINDOWS >> "x:\driver\windows\setup.exe"
  - MACOS X >> "x:\driver\macosx\Package.sit"

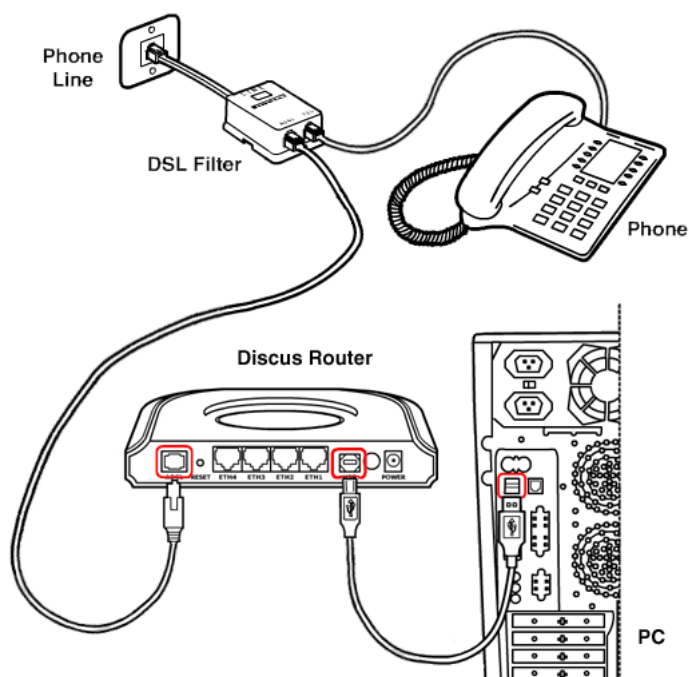
and follow setup instructions.

DISCUS™ Router

3. The setup software will invite you to plug the other end of the USB cable into the USB socket on the rear of the Router (see “USB Connection”).

To perform for the very first time a USB connection or an Ethernet one to the Router, it is recommended you to launch the *setup* application on CD-ROM and follow the step by step procedure.

**FIGURE 4. USB cable connection**





# Setting Up Your Computer

---

The Router has the ability to dynamically allocate network addresses to the computers on your network, using DHCP. However, your computers need to be configured correctly for this to take place. To change the configuration of your computers to allow this, follow the instructions in this chapter.

## INSTALL SOFTWARE

The very first time you set up your computer, we recommend you to use setup software available on CD-ROM.



*Before installing the DISCUS™ Router software please close all applications to avoid any conflict.*

Setup software offers a guided product tour, a step by step hardware installation guide, a software installation guide and setup depending on your connection choice (USB or ETHERNET) and a driven user registration with DSL Internet connection line check.

Setup software setup allows, for supported Microsoft Windows Operating Systems, to setup automatically your computer Ethernet settings.

To launch Setup, insert Setup software CD-ROM in CD-ROM unit: if the autoplay function is enabled it will start automatically, otherwise click once on the "Run..." item in "Start" menu. In the opened panel type "x:\install.exe" where x is your CD-ROM drive letter.

## ETHERNET CONNECTION

In case you already established a connection with your Router a first time and/or you do need to set up manually a connection to your Router, please follow the instructions described in this chapter. You will be guided to set up an Ethernet connection to the Router. To do so, first you have to verify the existence of a TCP/IP protocol stack and, then, according to your Operating System, to establish an Ethernet connection to it. This connection will require you to enable your computer to receive from the Router its own IP Address automatically: in such a case, the Router acts like the DHCP server in your local network.

## ETHERNET CONNECTION >> TCP/IP PROTOCOL INSTALLATION

This procedure requires the TCP/IP protocol installed on your computer. Refer to the following paragraphs and to your Windows and MacOS operating systems manuals.

### Microsoft Windows 98SE, ME, 2000.

1. Put in the CD-ROM drive your Windows installation CD-ROM
2. Starting from *Start -> Settings -> Control Panel* or *Start -> Control Panel* depending on the configuration of your computer
3. Make a double click on the *Network and Dial-up Connections* icon
4. Select the interested Network Adapter icon and from the contextual menu, do select the *Properties* item
5. If the *Internet Protocol (TCP/IP)* component is not checked you must enable it by checking the *Internet Protocol (TCP/IP)* item; otherwise, if it is not listed, you must install it by selecting the *Install...* button
6. Choose the *Protocol Network* component and click on the *Add..* button
7. In the *Select Network Protocol* panel, do choose *Internet Protocol (TCP/IP)* and the *OK* button
8. After rebooting, you're ready to configure the TCP/IP setting, as described in the following paragraphs

### Microsoft Windows XP.

TCP/IP stack is considered a core component of the operating system, so it cannot be installed or uninstalled. You must check in this case that Internet Protocol (TCP/IP) is enabled. To do so, follow these steps:

1. Starting from *Start -> Settings -> Control Panel* or *Start -> Control Panel* depending on the configuration of your computer
2. Make a double click on the *Network Connections* icon
3. Select the Network Adapter icon and from the contextual menu, do select the *Properties* item
4. In the *General TAB* panel, verify that *Internet Protocol (TCP/IP)* item is checked; if not, do check it and click on the *OK* button

### Apple MacOS 10.x.

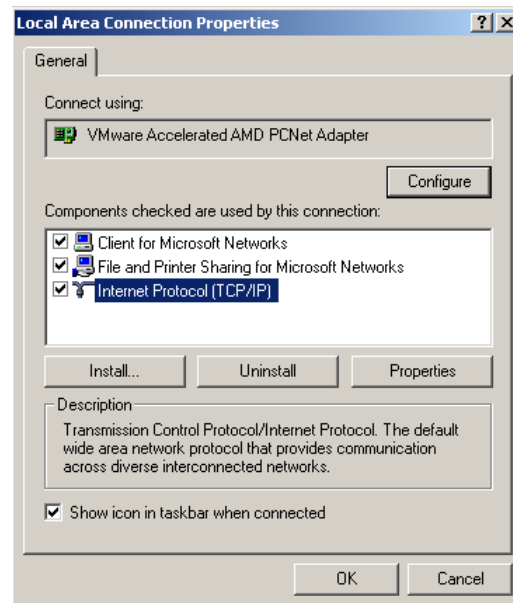
TCP/IP is installed on a MacOS system as part of Open Transport.

## DISCUS™ Router

**ETHERNET CONNECTION**  
>> MS WINDOWS 98SE, ME,  
2000

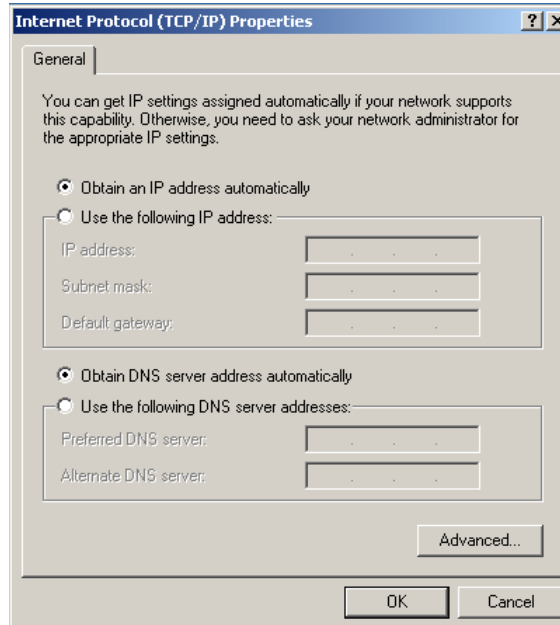
To configure TCP/IP on these Operating Systems follow these steps:

1. Select *Start -> Settings -> Control Panel* and make a double click on the *Network and Dial-up Connection* icon.
2. Select the adapter card interested by TCP/IP configuration and then select the *Properties* item from its contextual menu
3. Select *Internet Protocol (TCP/IP)* item then click on *Properties* button

**FIGURE 1. Local Area Connection Properties**

4. Select the *General* TAB panel, then check the *Obtain an IP address automatically* and *Obtain DNS server address automatically* radio buttons. Click on *OK* button.

**FIGURE 2. Internet Protocol (TCP/IP) Properties**



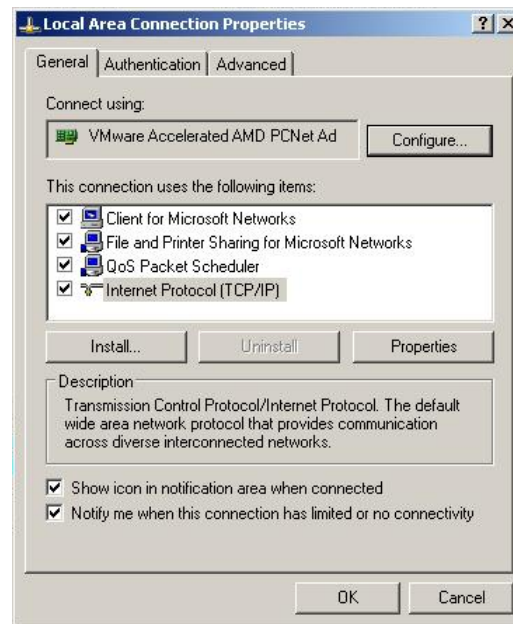
5. A system reboot will be required to make the changes real.

**ETHERNET CONNECTION**  
**>> MS WINDOWS XP**

To configure TCP/IP on MS Windows XP Operating System follow these steps:

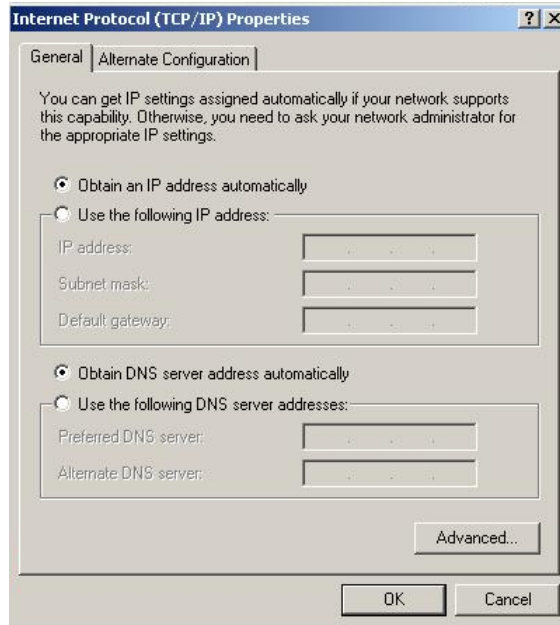
1. Select *Start -> Settings -> Control Panel* and make a double click on the *Network Connections* icon.
2. Select the adapter card interested by TCP/IP configuration
3. Select the *Properties* item from the contextual Adapter Card menu
4. Select in the *General* TAB panel, the *Internet Protocol (TCP/IP)* item and then click on *Properties* button.

**FIGURE 3. Local Area Connection Properties**



5. In the *General* TAB panel, check the *Obtain an IP address automatically* radio button and the *Obtain DNS server address automatically* radio button. Click on *OK* button.

**FIGURE 4. Internet Protocol (TCP/IP) Properties**

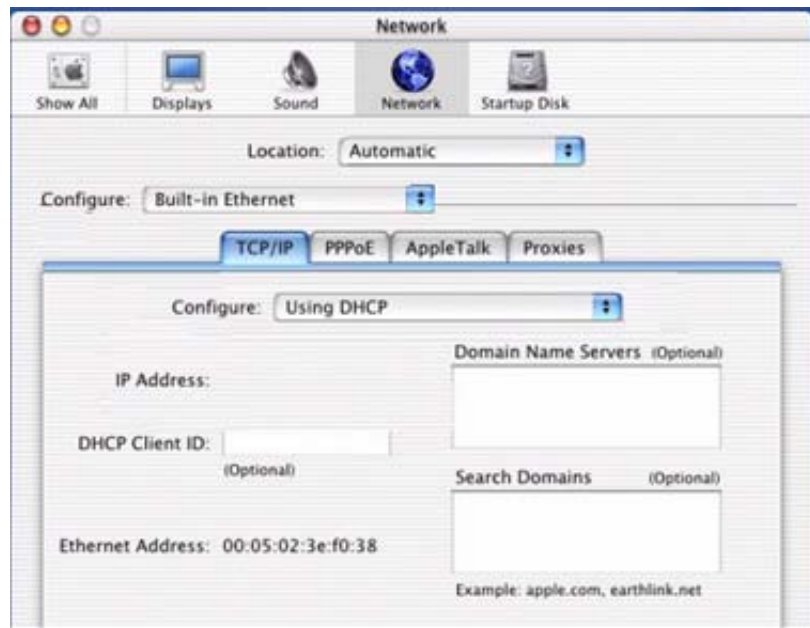


**ETHERNET CONNECTION  
>> MAC OS 10.X**

To configure TCP/IP on MAC OS 10.x follow these steps:

1. Open the *Apple Menu* -> *System Preferences* and select *Network*.
2. From the *Show* drop down list, according to the type of connection used, select *Built-in Ethernet*.
3. Select the *TCP/IP* tab.
4. Select *DHCP* from the *Configure* pop-up menu to have a dynamic IP address.

FIGURE 5. Network panel on MAC OS 10.x



5. Click *Apply Now*.
6. Click on the *Register* button to save the changes in the Control Panel.
7. Enter *http://192.168.1.1/* in the address bar of your browser to open the **DISCUS™ Router Home Page**.

#### USB CONNECTION

To connect your first Computer to the **DISCUS™ Router** using USB port, you have to install the Router's USB driver on your computer.



*Before connecting the USB Cable to the USB Port of the DISCUS™ Router you have to run the setup software and to follow the instructions. Connect the USB Cable only when required from the installation software.*



*Only one Windows or Macintosh computer can be directly connected to the DISCUS™ Router using the USB connection. Additional computers can be added to your network using the Ethernet connections.*

#### USB CONNECTION >> MS WINDOWS



*Using Windows 98SE the system could require the Operating System installation CD-ROM.*

1. Browse the Setup CD-ROM and install the USB Windows driver selecting the folder x:\driver\windows (where x is the CD-ROM driver unit).
2. Make a double click on setup.exe file to start driver setup procedure.
3. When the message "NOW CONNECT THE USB CABLE" should appear, connect the USB cable from a free USB port of the computer to the **DISCUS™ Router** USB port.
4. Enter *http://192.168.1.1/* in the address bar of your browser to open the **DISCUS™ Router** Home Page.

**USB CONNECTION >> MAC OS 10.X**

1. Browse the CD-ROM and install the USB MAC OS 10.x selecting the folder x:\driver\macosx (where x is the CD-ROM drive unit).
2. Make a double click on the Package.sit zipped file to start the unzip.

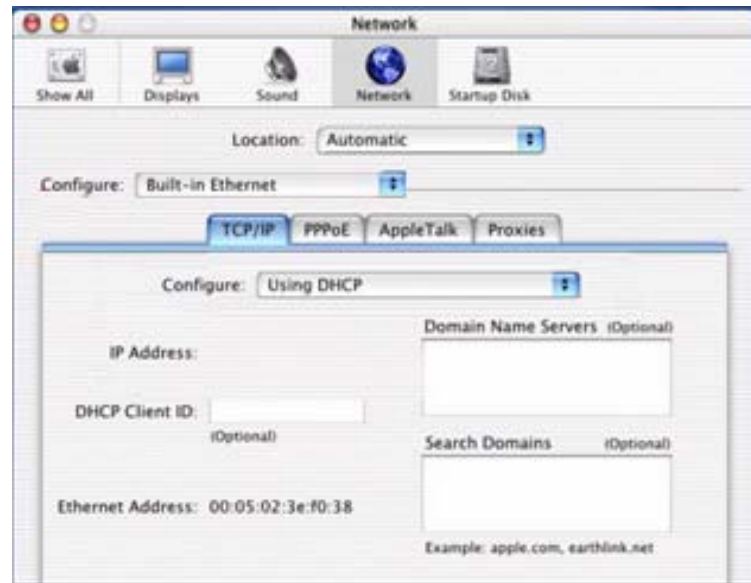


*If the system requires the path, select the hard disk main folder, normally named Macintosh HD.*

3. Select the folder *Macintosh HD:osxdrv:Install USB ADSL*.
4. Make a double click on the *install* script file.
5. Restart the computer clicking on the *Restart* button.
6. When appear the message "NOW CONNECT THE USB CABLE", connect the USB cable from a free USB port of the computer to the **DISCUS™ Router** USB port.
7. Verify that your computer is configured to obtain an IP address automatically via DHCP mode, following the next steps.
8. Open the *Apple Menu* -> *System Preferences* and select *Network*.
9. From the Show drop down list, according to the type of connection used, select *Built-in USB ADSL*.
10. Select the TCP/IP tab.
11. Select *Using DHCP* from the *Configure* pop-up menu to have a dynamic IP address.

DISCUS™ Router

FIGURE 6. Network Panel



12. Click *Apply Now*.
13. Click on the *Register* button to save the changes in the Control Panel.
14. Enter *http://192.168.1.1/* in the address bar of your browser to open the **DISCUS™ Router Home Page**.



# Router Configuration

---

## INTRODUCTION

The Router setup program is web based, which means that it is accessed through your web browser.

To access to Router's web server:

1. Launch your web browser on the computer
2. Enter the following URL in the location or address field of your browser: `http://192.168.1.1`



*The Router comes with a default IP address (192.168.1.1). If you change it, please take note of the new Router's IP address, otherwise a "Reset Configuration to Factory Default" operation should be done to be able to access again to the Router.*

Access to DSL router configuration pages is controlled through three user accounts: *admin*, *support* and *user*.

1. "*admin*" has unrestricted access to change and view configuration of the DSL Router.
2. "*support*" is used to allow an ISP technician to access DSL Router for maintenance and to run diagnostics.
3. "*user*" can access the DSL Router, view configuration settings and statistics, as well as, update the router's software.

You will be asked to insert a *username* and a *password* (according to the above listed user accounts): insert them to access to Router's configuration panels. The *main page*, upon Router access, will be opened as shown in Figure 1.

The *main page* contains a menu on the left - always available in all the web pages which is the starting point for any Router's configuration.

The complete menu has the following main items:

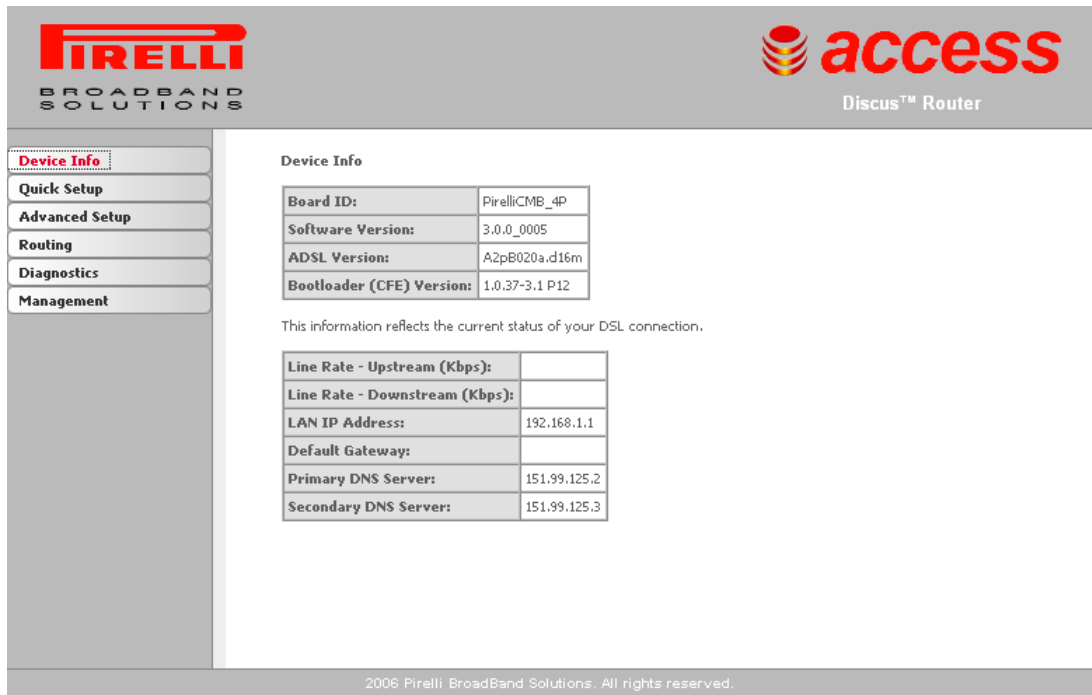
1. **Device Info:** it allows to access to Device Information and Statistics.
2. **Quick Setup:** if no WAN interface does exist, this menu will be available.
3. **Advanced Setup:** it allows the access to the advanced configuration panels.
4. **NAT:** it allows to configure NAT parameters (available only if a WAN interface already available)
5. **Security:** it configures IP filtering parameters (available only if a WAN interface already available)
6. **Routing:** it allows to configure the default gateway or the static routings
7. **DNS:** to configure the DNS server parameters (available only if a WAN interface already available)
8. **Diagnostics:** a menu to show and run diagnostic test for troubleshooting or system behaviour analysis.
9. **Management:** it allows to define Router parameters devoted to user access, log management, Router's time, Backup Router's configuration, etc.



*In order to submit the changes of most of device parameters you have to click the **Save/Apply** button to save permanently your changes. In some cases, the reboot of the Router is required.*

DISCUS™ Router

FIGURE 1. Router's Main Page



**ACCESS CONTROL TO THE WEB SITE SECTIONS**

According to your profile permission (*admin*, *support* or *user*) some information cannot be available. In case no WAN interface is already configured, the Quick Setup menu with its own dedicated options will be available .

Table 1 shows a map of panels according to user rights and WAN state.

**TABLE 1. Access control to web site sections**

Section / Sub Section	admin	user	no WAN configured
<i>Device Info</i>			
Summary	x	x	x
WAN	x	x	x
<i>Statistics</i>			
LAN	x	x	x
WAN	x	x	x
ATM	x	x	x
ADSL	x	x	x
Route	x	x	x

**TABLE 1. Access control to web site sections**

<b>Section / Sub Section</b>	<b>admin</b>	<b>user</b>	<b>no WAN configured</b>
<i>ARP</i>	x	x	x
<i>DHCP</i>	x	x	x
<i>Quick Setup</i>	x		x
<i>Advanced Setup</i>			
<i>WAN</i>	x		x
<i>LAN</i>	x		x
<i>DSL</i>	x		x
<i>Port Mapping</i>	x		
<i>NAT</i>	x		
<i>Virtual Servers</i>	x		
<i>Port Triggering</i>	x		
<i>DMZ Host</i>	x		
<i>Security</i>	x		
<i>IP Filtering</i>	x		
<i>Outgoing</i>	x		
<i>Incoming</i>	x		
<i>Routing</i>	x		
<i>Default Gateway</i>	x		x
<i>Static Route</i>	x		x
<i>DNS</i>	x		
<i>DNS Server</i>	x		
<i>Diagnostics</i>	x	x	x
<i>Management</i>			
<i>Settings</i>	x		
<i>Settings Backup</i>	x		x
<i>Settings Update</i>	x		x
<i>Settings Restore</i>	x		x
<i>System Log</i>	x	x	x
<i>Access Control</i>	x		
<i>Services</i>	x		x
<i>IP Addresses</i>	x		x
<i>Passwords</i>	x		x
<i>Update Software</i>	x	x	x
<i>Save/Reboot</i>	x		x

# Device Info Section

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This chapter will describe the **Device Info Section** accessible from the *Home Page* of the **DISCUS™ Router** upon user authentication to the Router.



*Be aware that any configuration change could compromise your connectivity.*

## SUMMARY

The *Summary* (see Figure 1), accessible through **Device Info >> Summary** item selection, is a read-only page and contains details of the router such as Hardware, Firmware and Software information, LAN IP address, the current status of your DSL connection etc.

**FIGURE 1. Summary Device Info Panel**



**Device Info**

<b>Board ID:</b>	PirelliCMB_4P
<b>Software Version:</b>	3.0.0_0005
<b>ADSL Version:</b>	A2pB020a.d16m
<b>Bootloader (CFE) Version:</b>	1.0.37-3.1 P12

This information reflects the current status of your DSL connection.

<b>Line Rate - Upstream (Kbps):</b>	
<b>Line Rate - Downstream (Kbps):</b>	
<b>LAN IP Address:</b>	192.168.1.1
<b>Default Gateway:</b>	
<b>Primary DNS Server:</b>	151.99.125.2
<b>Secondary DNS Server:</b>	151.99.125.3

**WAN**

WAN Info section can be accessed by clicking on **Device Info >> WAN**. Since a WAN connection has not been set up yet, there is no information to view. After completing the configurations for a WAN connection, you can return to this screen to view the information on your WAN status.

**FIGURE 2. WAN Info Panel**



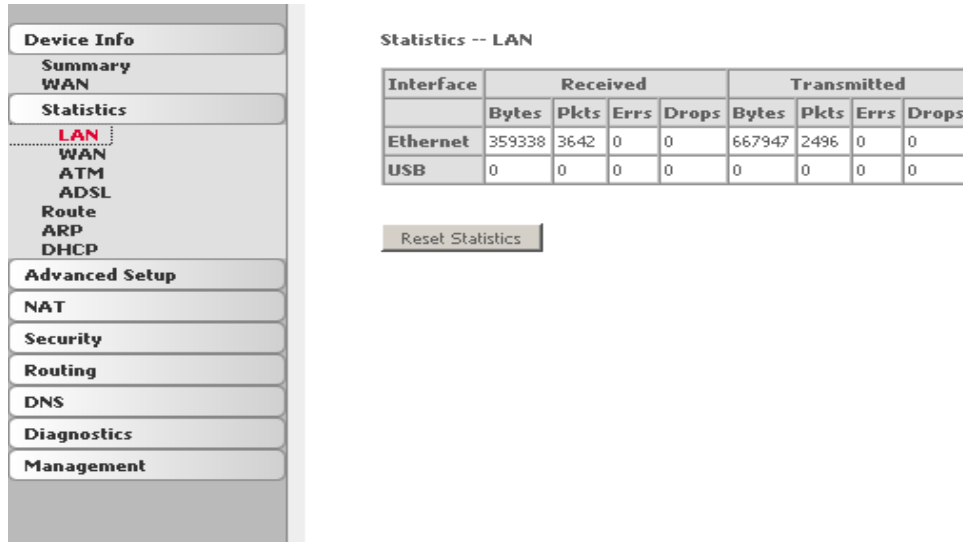
**WAN Info**

VPI/VCI	Con. ID	Category	Service	Interface	Protocol	Igmp	Multicast	QoS	State	Status	IP Address
8/35	1	UBR	pppoe_8_35_1	ppp_8_35_1	PPPoE	Disabled	Disabled	Disabled	Enabled	ADSL Link Down	

**STATISTICS >> LAN**

Access the LAN statistics from the router by clicking on **Statistic >> LAN**. The **Reset Statistics** button, will reset statistic counters.

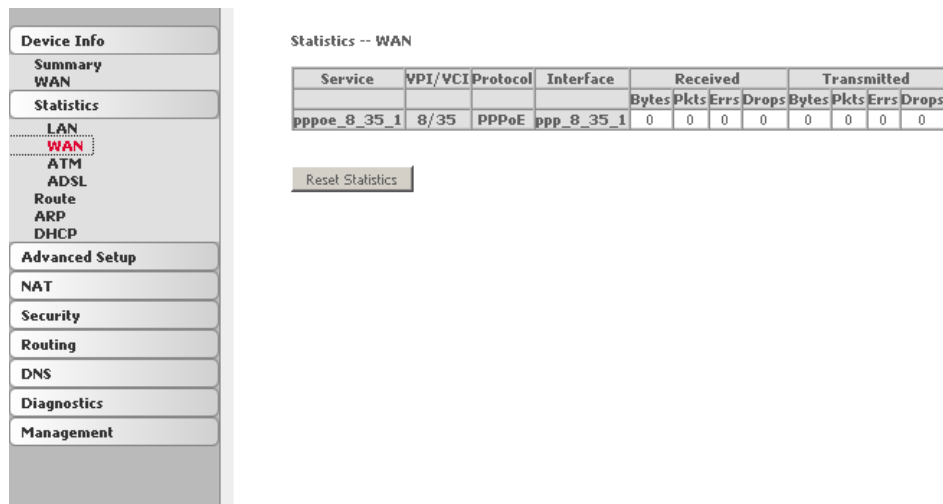
FIGURE 3. Statistics LAN Panel



**STATISTICS >> WAN**

Access the WAN statistics from the router by clicking on **Statistic >> WAN**. The **Reset Statistics** button, will reset statistic counters.

FIGURE 4. Statistics WAN Panel



**STATISTICS >> ATM**

Access the ATM statistics from the router by clicking on **Statistic >> ATM**. The **Reset Statistic** button, will reset statistic ATM counters.

**FIGURE 5. Statistics >> ATM Panel**

Statistics -- ATM

ATM Interface Statistics

In Octets	Out Octets	In Errors	In Unknown	In Hec Errors	In Invalid Vpi Vci Errors	In Port Not Enable Errors	In PTI Errors	In Idle Cells	In Circuit Type Errors	In OAM RM CRC Errors	In GFC Errors
0	0	0	0	0	0	0	0	0	0	0	0

AAL5 Interface Statistics

In Octets	Out Octets	In Ucast Pkts	Out Ucast Pkts	In Errors	Out Errors	In Discards	Out Discards
0	0	0	0	0	0	0	0

AAL5 VCC Statistics

VPI/VCI	CRC Errors	SAR Timeouts	Oversized SDUs	Short Packet Errors	Length Errors
8/35	0	0	0	0	0

Reset Statistics

**STATISTICS >> ADSL**

Access the DSL statistics from the router by clicking on **Statistic >> ADSL**. Information contained in this screen is useful for troubleshooting and diagnostics of connection problems.

The **Reset Statistics** button, will reset statistic ADSL counters.

FIGURE 6. Statistics >> ADSL Panel

**Device Info**

Summary  
WAN

**Statistics**

LAN  
WAN  
ATM  
ADSL  
Route  
ARP  
DHCP

**Advanced Setup**

NAT

Security

Routing

DNS

Diagnostics

Management

Statistics -- ADSL

Mode:		
Type:		
Line Coding:		
Status:		Link Down
Link Power State:		LO
	<b>Downstream</b>	<b>Upstream</b>
SNR Margin (dB):		
Attenuation (dB):		
Output Power (dBm):		
Attainable Rate (Kbps):		
Rate (Kbps):		
Super Frames:		
Super Frame Errors:		
RS Words:		
RS Correctable Errors:		
RS Uncorrectable Errors:		
HEC Errors:		
OCD Errors:		
LCD Errors:		
Total Cells:		
Data Cells:		
Bit Errors:		
Total ES:		
Total SES:		
Total UAS:		

**ADSL BER Test.** A Bit Error Rate Test (BER Test) is a test that reflects the ratio of error bits to the total number transmitted. If you click on the **ADSL BER Test** button at the bottom of the ADSL Statistics screen, the pop-up window shown in Figure 7 will appear. Upon test duration choice (in seconds), and by pressing the **Start** button, the test will start running. At its end a result page will be shown. Do close this page by selecting the **Close** button.

**FIGURE 7. ADSL BER Test Panels**

**Start phase**

**ADSL BER Test - Start**

The ADSL Bit Error Rate (BER) test determines the quality of the ADSL connection. The test is done by transferring idle cells containing a known pattern and comparing the received data with this known pattern to check for any errors.

Select the test duration below and click "Start".

Tested Time (sec):

**Run phase**

**ADSL BER Test - Running**

The ADSL BER test is in progress. The connection speed is 800 Kbps. The test will run for 10 seconds.

Click "Stop" to terminate the test.

**Result phase**

**ADSL BER Test - Result**

The ADSL BER test completed successfully.

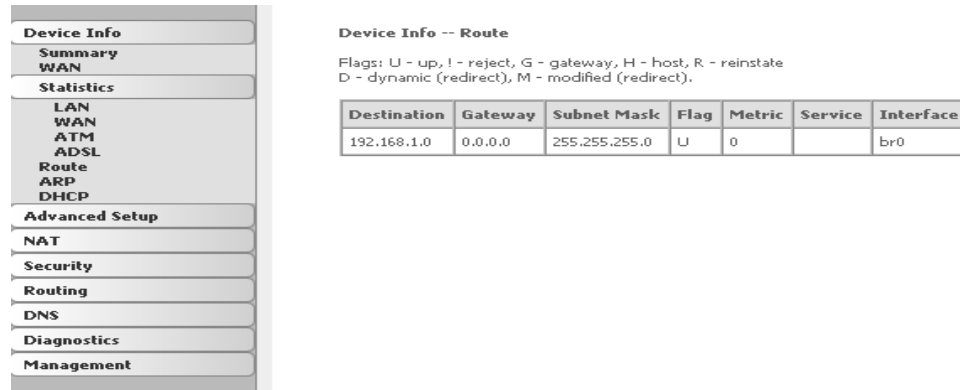
<b>Test Time (sec):</b>	10
<b>Total Transferred Bits:</b>	0x000000000006E8E00
<b>Total Error Bits:</b>	0x00000000000000000
<b>Error Ratio:</b>	0.00e+00

**ROUTE**

Access the Routing Status report from the router by clicking on **Route** button (see Figure 8).

DISCUS™ Router

**FIGURE 8. Route Panel**

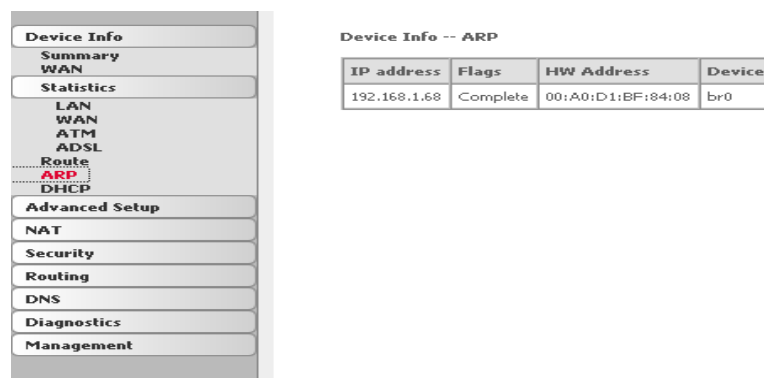


**ARP**

Access the Routing Status report from the router by clicking on **Device Info >> ARP**.

ARP (Address Resolution Protocol) maps the IP address to the physical address, labeled HW Address (the MAC address) and helps to identify computers on the LAN.

**FIGURE 9. ARP Panel**



**DHCP**

Access the DHCP leases from the router by clicking on **Device Info >> DHCP**.

It shows the computers, identified by the hostname and MAC address that have acquired IP addresses by the DHCP server with the time that the lease for the IP address is up.

FIGURE 10. DHCP Panel



Device Info -- DHCP Leases

Hostname	MAC Address	IP Address	Expires In
iway32	00:A0:D1:BF:84:08	192.168.1.68	23 hours, 30 minutes, 32 seconds

# Advanced Setup Section

This chapter will describe the **Advanced Setup Section** accessible from the *Home Page* of the **DISCUS™ Router**. This section is only



*Be aware that any configuration change could compromise your connectivity.*

accessible to a user with admin profile and is intended to collect most of the advanced configuration functions.

## WAN

By selecting **Advanced Setup >> WAN**, the page, shown in Figure 1, appears. It is used to configure the WAN settings as provided by your ISP.

**FIGURE 1. WAN Setup Panel**

### Wide Area Network (WAN) Setup

Choose Add, Edit, or Remove to configure WAN interfaces.  
Choose Save/Reboot to apply the changes and reboot the system.

VPI/VCI	Con. ID	Category	Service	Interface	Protocol	Igmp	Multicast	QoS	State	Remove	Edit
8/35	1	UBR	pppoe_8_35_1	ppp_8_35_1	PPPoE	Disabled	Disabled	Disabled	Enabled	<input type="checkbox"/>	Edit

Add Remove Save/Reboot

Click on the **Add** button if you want to add a new connection for the WAN interface. The ATM PVC Configuration screen is shown in Figure 2. The ATM PVC Configuration screen allows you to configure an ATM PVC identifier (VPI and VCI) and select a service category.

Check the **Remove** check-box and select the **Remove** button to delete a WAN configuration.

After an Add or Remove job, select the **Save/Reboot** button and the router will reboot thus saving the changes.

**FIGURE 2. Adding a WAN interface - Step 1**

**ATM PVC Configuration**

This screen allows you to configure an ATM PVC identifier (VPI and VCI) and select a service category. Otherwise choose an existing interface by selecting the checkbox to enable it.

VPI: [0-255]

VCI: [32-65535]

Service Category:  ▼

Peak Cell Rate: [cells/s]

By clicking on the **Add** button, this screen allows you to configure an ATM PVC identifier (VPI and VCI) and select a service category. Find out the values listed in Table 1 from your ISP before you change them.

**TABLE 1. ATM PVC Configuration parameters**

Parameter	Value	Description
VPI	0-255	Virtual Path Identifier
VCI	32-65535	Virtual Channel Identifier

DISCUS™ Router

Parameter	Value	Description
Service Category	<p>UBR without PCR</p> <p>UBR with PCR</p> <p>CBR</p> <p>Non Realtime VBR</p> <p>Realtime VBR</p>	<p>- <b>UBR Without PCR</b> (Unspecified Bit Rate without Peak Cell Rate). UBR service is suitable for applications that can tolerate variable delays and some cell losses. Applications suitable for UBR service include text/data/image transfer, messaging, distribution, and retrieval and also for remote terminal applications such as telecommuting.</p> <p>- <b>UBR With PCR</b> (Unspecified Bit Rate with Peak Cell Rate)</p> <p>- <b>CBR</b> (Constant Bit Rate) used by applications that require a fixed data rate that is continuously available during the connection time. It is commonly used for uncompressed audio and video information such as videoconferencing, interactive audio (telephony), audio / video distribution (e.g. television, distance learning, and pay-per-view), and audio / video retrieval (e.g. video-on-demand and audio library).</p> <p>- <b>Non Realtime VBR</b> (Non-Real-time Variable Bit Rate) can be used for data transfers that have critical response-time requirements such as airline reservations, banking transactions, and process monitoring.</p> <p>- <b>Realtime VBR</b> (Real-time Variable Bit Rate) used by time-sensitive applications such as real-time video. Rt-VBR service allows the network more flexibility than CBR.</p>
Enable Quality of service	true/false	<p>Enabling packet level QoS for a PVC improves performance for selected classes of applications.</p> <p>QoS cannot be set for CBR and Realtime VBR. QoS consumes system resources; therefore the number of PVCs will be reduced. Use Advanced Setup/Quality of Service to assign priorities for the applications.</p>
Peak Cell Rate [cells/sec]	1-255000	Can be set for all Service Categories with the exception of "UBR without PCR" Service Category
Sustainable Cell Rate [cells/s]		Can be set only for Realtime and Non Realtime VBR. Sustainable Cell Rate must be lower than Peak Cell Rate.
Maximum Burst Size: [cells]	1-1000000	Can be set only for Realtime and Non Realtime VBR.

**FIGURE 3. Adding a WAN interface - Step 2**

**Connection Type**

Select the type of network protocol and encapsulation mode over the ATM PVC that your ISP has instructed you to use. Note that 802.1q VLAN tagging is only available for PPPoE, MER, and Bridging.

- PPP over ATM (PPPoA)
- PPP over Ethernet (PPPoE)
- MAC Encapsulation Routing (MER)
- IP over ATM (IPoA)
- Bridging

**Encapsulation Mode**

VC/MUX

Back Next

Select the type of network protocol and encapsulation mode over the ATM PVC that your ISP has instructed you to use. Since this example uses a *PPPoE* connection, the next screen (Figure 4) requires you to enter a PPP username and password. After filling in the page and making any selections your ISP has instructed you to, click on **Next** button to continue.

**TABLE 2. Connection Type Configuration Parameters**

Parameter	Value	Description
Connection Type	<i>PPP over ATM (pppA)</i> <i>PPP over Ethernet (pppE)</i> <i>MAC Encapsulation Routing (MER)</i> <i>IP over ATM (IPoA)</i> <i>Bridging</i>	
Encapsulation Mode	<i>VC/MUX</i> <i>LLC/ENCAPSULATION</i> <i>LLC/SNAP-BRIDGING</i> <i>LLC/SNAP-ROUTING</i>	- <i>VC/MUX encapsulation is available to all connection types</i> - <i>LLC/ENCAPSULATION is available to PPPoA connection type</i> - <i>LLC/SNAP-BRIDGING is available to PPPoE, MER and Bridging connection types</i> - <i>LLC/SNAP-ROUTING is available to IPoA connection type</i>

**FIGURE 4. Adding a WAN interface - Step 3 (PPPoE case)**

#### PPP Username and Password

PPP usually requires that you have a user name and password to establish your connection. In the boxes below, enter the user name and password that your ISP has provided to you.

PPP Username:   
 PPP Password:   
 PPPoE Service Name:   
 Authentication Method:    
 Connection Trigger:    
 Passthrough:

Dial on demand (with idle timeout timer)

PPP IP extension

Use Static IP Address

The next screen (Figure 5) allows you to configure NAT either by enabling or disabling it. Other services include IGMP multicast and WAN service. After making your selections, click on **Next** button to go on to the next page.

**FIGURE 5. Adding a WAN interface - Step 4**

**Enable IGMP Multicast, and WAN Service**

Enable IGMP Multicast

Enable WAN Service

Enable WAN Multicast

Service Name

When the settings are complete, the screen in Figure 6 appears showing a **WAN Setup – Summary** screen to display the WAN configurations. Click on **Save** button to save the settings.

**FIGURE 6. Adding a WAN interface - Step 5: Summary**

**WAN Setup - Summary**

Make sure that the settings below match the settings provided by your ISP.

<b>VPI / VCI:</b>	5 / 66
<b>Connection Type:</b>	PPPoA
<b>Service Name:</b>	pppoe_8_35_1
<b>Service Category:</b>	RT_VBR
<b>IP Address:</b>	Automatically Assigned
<b>Service State:</b>	Enabled
<b>NAT:</b>	Enabled
<b>Firewall:</b>	Enabled
<b>IGMP Multicast:</b>	Disabled
<b>WAN Multicast:</b>	Disabled
<b>Quality Of Service:</b>	Disabled

Click "Save" to save these settings. Click "Back" to make any modifications.

NOTE: You need to reboot to activate this WAN interface and further configure services over this interface.



**LAN**

You can configure the DSL Router IP address and Subnet Mask for the LAN interface to correspond to your LAN's IP Subnet. If you want the DHCP server to automatically assign IP addresses, then enable the DHCP server and enter the range of IP addresses that the DHCP server can assign to your computers. Disable the DHCP server if you prefer to manually assign IP addresses. Click on **Next** button to continue.

The **Save** button only saves the LAN configuration data, but does not apply the configurations. Select the **Save/Reboot** button to save the LAN configuration data and reboot the router applying the new configurations.

**FIGURE 7. LAN Panel**

**Local Area Network (LAN) Setup**

Configure the DSL Router IP Address and Subnet Mask for LAN interface. Save button only saves the LAN configuration data. Save/Reboot button saves the LAN configuration data and reboots the router to make the new configuration effective.

IP Address:   
Subnet Mask:

Enable IGMP Snooping

Disable DHCP Server

Enable DHCP Server

Start IP Address:

End IP Address:

Leased Time (seconds):

Configure the second IP Address and Subnet Mask for LAN interface

**DSL**

The DSL settings screen contains three sections: modulation, phone line, and capability that should be specified by your ISP.

Consult with your ISP to select the correct settings for each. Then click on **Save/Apply** if you are finished or click on **Advanced Settings** button if you want to configure more advanced settings.

**FIGURE 8. DSL Settings Panel**

**DSL Settings**

Select the modulation below.

- G.Dmt Enabled
- G.lite Enabled
- T1.413 Enabled
- ADSL2 Enabled
- AnnexL Enabled
- ADSL2+ Enabled
- AnnexM Enabled

Select the phone line pair below.

- Inner pair
- Outer pair

Capability

- Bitswap Enable
- SRA Enable

**FIGURE 9. DSL Advanced Settings Panel**

**DSL Advanced Settings**

Select the test mode below.

- Normal
- Reverb
- Medley
- No retrain
- L3

The test mode can be selected from the DSL Advanced Settings screen. Test modes include—normal, reverb, medley, no retrain, and L3.

**FIGURE 10. DSL Advanced Settings - Tone Selection Panel**

**ADSL Tone Settings**

Upstream Tones																											
<input checked="" type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input checked="" type="checkbox"/> 5	<input checked="" type="checkbox"/> 6	<input checked="" type="checkbox"/> 7	<input checked="" type="checkbox"/> 8	<input checked="" type="checkbox"/> 9	<input checked="" type="checkbox"/> 10	<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/> 12	<input checked="" type="checkbox"/> 13	<input checked="" type="checkbox"/> 14	<input checked="" type="checkbox"/> 15												
<input checked="" type="checkbox"/> 16	<input checked="" type="checkbox"/> 17	<input checked="" type="checkbox"/> 18	<input checked="" type="checkbox"/> 19	<input checked="" type="checkbox"/> 20	<input checked="" type="checkbox"/> 21	<input checked="" type="checkbox"/> 22	<input checked="" type="checkbox"/> 23	<input checked="" type="checkbox"/> 24	<input checked="" type="checkbox"/> 25	<input checked="" type="checkbox"/> 26	<input checked="" type="checkbox"/> 27	<input checked="" type="checkbox"/> 28	<input checked="" type="checkbox"/> 29	<input checked="" type="checkbox"/> 30	<input checked="" type="checkbox"/> 31												
Downstream Tones																											
<input checked="" type="checkbox"/> 32	<input checked="" type="checkbox"/> 33	<input checked="" type="checkbox"/> 34	<input checked="" type="checkbox"/> 35	<input checked="" type="checkbox"/> 36	<input checked="" type="checkbox"/> 37	<input checked="" type="checkbox"/> 38	<input checked="" type="checkbox"/> 39	<input checked="" type="checkbox"/> 40	<input checked="" type="checkbox"/> 41	<input checked="" type="checkbox"/> 42	<input checked="" type="checkbox"/> 43	<input checked="" type="checkbox"/> 44	<input checked="" type="checkbox"/> 45	<input checked="" type="checkbox"/> 46	<input checked="" type="checkbox"/> 47												
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<input checked="" type="checkbox"/> 176	<input checked="" type="checkbox"/> 177	<input checked="" type="checkbox"/> 178	<input checked="" type="checkbox"/> 179	<input checked="" type="checkbox"/> 180	<input checked="" type="checkbox"/> 181	<input checked="" type="checkbox"/> 182	<input checked="" type="checkbox"/> 183	<input checked="" type="checkbox"/> 184	<input checked="" type="checkbox"/> 185	<input checked="" type="checkbox"/> 186	<input checked="" type="checkbox"/> 187	<input checked="" type="checkbox"/> 188	<input checked="" type="checkbox"/> 189	<input checked="" type="checkbox"/> 190	<input checked="" type="checkbox"/> 191												
<input checked="" type="checkbox"/> 192	<input checked="" type="checkbox"/> 193	<input checked="" type="checkbox"/> 194	<input checked="" type="checkbox"/> 195	<input checked="" type="checkbox"/> 196	<input checked="" type="checkbox"/> 197	<input checked="" type="checkbox"/> 198	<input checked="" type="checkbox"/> 199	<input checked="" type="checkbox"/> 200	<input checked="" type="checkbox"/> 201	<input checked="" type="checkbox"/> 202	<input checked="" type="checkbox"/> 203	<input checked="" type="checkbox"/> 204	<input checked="" type="checkbox"/> 205	<input checked="" type="checkbox"/> 206	<input checked="" type="checkbox"/> 207												
<input checked="" type="checkbox"/> 208	<input checked="" type="checkbox"/> 209	<input checked="" type="checkbox"/> 210	<input checked="" type="checkbox"/> 211	<input checked="" type="checkbox"/> 212	<input checked="" type="checkbox"/> 213	<input checked="" type="checkbox"/> 214	<input checked="" type="checkbox"/> 215	<input checked="" type="checkbox"/> 216	<input checked="" type="checkbox"/> 217	<input checked="" type="checkbox"/> 218	<input checked="" type="checkbox"/> 219	<input checked="" type="checkbox"/> 220	<input checked="" type="checkbox"/> 221	<input checked="" type="checkbox"/> 222	<input checked="" type="checkbox"/> 223												
<input checked="" type="checkbox"/> 224	<input checked="" type="checkbox"/> 225	<input checked="" type="checkbox"/> 226	<input checked="" type="checkbox"/> 227	<input checked="" type="checkbox"/> 228	<input checked="" type="checkbox"/> 229	<input checked="" type="checkbox"/> 230	<input checked="" type="checkbox"/> 231	<input checked="" type="checkbox"/> 232	<input checked="" type="checkbox"/> 233	<input checked="" type="checkbox"/> 234	<input checked="" type="checkbox"/> 235	<input checked="" type="checkbox"/> 236	<input checked="" type="checkbox"/> 237	<input checked="" type="checkbox"/> 238	<input checked="" type="checkbox"/> 239												
<input checked="" type="checkbox"/> 240	<input checked="" type="checkbox"/> 241	<input checked="" type="checkbox"/> 242	<input checked="" type="checkbox"/> 243	<input checked="" type="checkbox"/> 244	<input checked="" type="checkbox"/> 245	<input checked="" type="checkbox"/> 246	<input checked="" type="checkbox"/> 247	<input checked="" type="checkbox"/> 248	<input checked="" type="checkbox"/> 249	<input checked="" type="checkbox"/> 250	<input checked="" type="checkbox"/> 251	<input checked="" type="checkbox"/> 252	<input checked="" type="checkbox"/> 253	<input checked="" type="checkbox"/> 254	<input checked="" type="checkbox"/> 255												

The frequency band of ADSL is split up into 256 separate tones, each spaced 4.3125 kHz apart. With each tone carrying separate data, the technique operates as if 256 separate modems were running in parallel. The tone range is from 0 to 31 for upstream and from 32 to 255 for downstream. Do not change these settings unless so directed by your ISP.

**PORT MAPPING**

Port mapping is a feature that allows you to open ports to allow certain Internet applications on the WAN side to pass through the firewall and enter your LAN. To use this feature, mapping groups need to be created by clicking on the **Add** button.

Port Mapping supports multiple ports to PVC and bridging groups. Each group will perform as an independent network. The **Remove** button will remove the grouping and add the ungrouped interfaces to the Default group. Only the default group has IP interface.

**FIGURE 11. Port Mapping Panel**

**Port Mapping -- A maximum 16 entries can be configured**

Port Mapping supports multiple ports to PVC and bridging groups. Each group will perform as an independent network. To support this feature, you must create mapping groups with appropriate LAN and WAN interfaces using the Add button. The Remove button will remove the grouping and add the ungrouped interfaces to the Default group

Enable virtual ports on

Group Name	Interfaces	Remove	Edit
Default	eth0, USB		

**FIGURE 12. Port Mapping - Add Panel**

**Port Mapping Configuration**

To create a new mapping group:

1. Enter the Group name and select interfaces from the available interface list and add it to the grouped interface list using the arrow buttons to create the required mapping of the ports. The group name must be unique.
2. Click Save/Apply button to make the changes effective immediately

**Note that the selected interfaces will be removed from their existing groups and added to the new group.**

Group Name:

**Grouped Interfaces**

eth0

**Available Interfaces**

USB



After clicking the **Add** button (see Figure 12), the below configuration screen appears, allowing you to enter the groups and the interfaces they are associated with.



# NAT Section

---

This chapter will describe the **NAT Section** accessible from the *Home Page* of the **DISCUS™ Router**. This section is only accessible



*Be aware that any configuration change could compromise your connectivity.*

to a user with admin profile and is intended to configure NAT functionalities.

## VIRTUAL SERVERS

If you enable NAT (Network Address Translation), you can configure the Virtual Server, Port Triggering and DMZ Host.

Virtual Server allows you to direct incoming traffic from WAN side (identified by Protocol and External port) to the Internal server with private IP address on the LAN side. The Internal port is required only if the external port needs to be converted to a different port number used by the server on the LAN side. A maximum of 32 entries can be configured.

To add additional virtual servers, click on the **Add** button. If you need to remove any of the server names, select the check box and click on the **Remove** button.

**FIGURE 1. NAT - Virtual Servers Setup Panel**

**NAT -- Virtual Servers**

Select the service name, and enter the server IP address and click "Save/Apply" to forward IP packets for this service to the specified server. **NOTE: The "Internal Port End" cannot be changed. It is the same as "External Port End" normally and will be the same as the "Internal Port Start" or "External Port End" if either one is modified.**

Remaining number of entries that can be configured:32

Server Name:

Select a Service:

Custom Server:

Server IP Address:

Save/Apply

External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End
7170	7170	TCP	7170	7170
2092	2092	UDP	2092	2092
3445	3445	UDP	3445	3445
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		

**PORT TRIGGERING**

Some applications require that specific ports in the Router's firewall be opened for access by the remote parties. Port Trigger dynamically opens up the 'Open Ports' in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the 'Triggering Ports'. The Router allows the remote party from the WAN side to establish new connections back to the application on the LAN side using the 'Open Ports'. A maximum of 32 entries can be configured.

DISCUS™ Router

**FIGURE 2. NAT - Port Triggering Setup Panel**

**NAT -- Port Triggering Setup**

Some applications require that specific ports in the Router's firewall be opened for access by the remote parties. Port Trigger dynamically opens up the 'Open Ports' in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the 'Triggering Ports'. The Router allows the remote party from the WAN side to establish new connections back to the application on the LAN side using the 'Open Ports'. A maximum 32 entries can be configured.

Application	Trigger		Open		Remove			
	Name	Protocol	Port Range			Protocol	Port Range	
			Start	End			Start	End
ICQ	UDP	4000	4000	TCP	20000	20059	<input type="checkbox"/>	

**DMZ HOST**

The DSL router will forward IP packets from the WAN that do not belong to any of the applications configured in the Virtual Servers table to the DMZ host computer.

Enter the IP address and click on **Save/Apply** button.

**FIGURE 3. NAT - DMZ Host Panel**

**NAT -- DMZ Host**

The DSL router will forward IP packets from the WAN that do not belong to any of the applications configured in the Virtual Servers table to the DMZ host computer.

Enter the computer's IP address and click "Apply" to activate the DMZ host.

Clear the IP address field and click "Apply" to deactivate the DMZ host.

DMZ Host IP Address:



# Security Section

This chapter will describe the **Security Section** accessible from the *Home Page* of the **DISCUS™ Router**. This section is only accessible



*Be aware that any configuration change could compromise your connectivity.*

to a user with admin profile and is intended to collect most of the security configuration functions.

**IP FILTERING >> OUTGOING** The outgoing filter will block the LAN traffic from entering the WAN side.

**FIGURE 1. Outgoing IP Filtering Setup Panel**

## Outgoing IP Filtering Setup

By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be **BLOCKED** by setting up filters.

Choose Add or Remove to configure outgoing IP filters.

Filter Name	Protocol	Source Address / Mask	Source Port	Dest. Address / Mask	Dest. Port	Remove
spam	TCP/UDP	23.34.55.66		85.75.88.99		<input type="checkbox"/>

Add Remove

Figure 1 lists the IP filters that were added. Click on the **Add** button to create new filters. Input the filter name, source information (from the LAN side), and destination information (from the WAN side). Then click on **Save/Apply** (see Figure 2).

**FIGURE 2. Outgoing IP Filtering Setup - Add Panel**

**Add IP Filter -- Outgoing**

The screen allows you to create a filter rule to identify outgoing IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click 'Save/Apply' to save and activate the filter.

Filter Name:

Protocol:

Source IP address:

Source Subnet Mask:

Source Port (port or port:port):

Destination IP address:

Destination Subnet Mask:

Destination Port (port or port:port):

**IP FILTERING >> INCOMING**

By default, all incoming IP traffic from the WAN is blocked when the firewall is enabled. However, some IP traffic can be **ACCEPTED** by setting up filters. Click on the **Add** button to add incoming filter settings.

Enter a filter name, information about the source address (from the WAN side), and information about the destination address (to the LAN side). Select the protocol and WAN interface, then click on **Save/Apply** to add the setting

**FIGURE 3. IP Filtering - Incoming Panel**

**Incoming IP Filtering Setup**

By default, all incoming IP traffic from the WAN is blocked when the firewall is enabled. However, some IP traffic can be **ACCEPTED** by setting up filters.

Choose Add or Remove to configure incoming IP filters.

Filter Name	VPI/VCI	Protocol	Source Address / Mask	Source Port	Dest. Address / Mask	Dest. Port	Remove
incoming_filter	ALL	TCP	22.33.44.55		33.44.55.66		<input type="checkbox"/>

# Routing Section

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This chapter will describe the **Routing Section** accessible from the *Home Page* of the **DISCUS™ Router**. This section is only accessible



*Be aware that any configuration change could compromise your connectivity.*

to a user with admin profile and is intended to collect most of the Routing configuration functions.

## DEFAULT GATEWAY

If *Enable Automatic Assigned Default Gateway* checkbox is selected, this router will accept the first received default gateway assignment from one of the PPPoA, PPPoE or MER/DHCP enabled PVC(s). If the checkbox is not selected, enter the static default gateway AND/OR a WAN interface. Click **Save/Apply** button to save it.



If changing the Automatic Assigned Default Gateway from unselected to selected, You must reboot the router to get the automatic assigned default gateway.

**FIGURE 1. Default Gateway Panel**

**Routing -- Default Gateway**

If Enable Automatic Assigned Default Gateway checkbox is selected, this router will accept the first received default gateway assignment from one of the PPPoA, PPPoE or MER/DHCP enabled PVC(s). If the checkbox is not selected, enter the static default gateway AND/OR a WAN interface. Click 'Save/Apply' button to save it.

NOTE: If changing the Automatic Assigned Default Gateway from unselected to selected, You must reboot the router to get the automatic assigned default gateway.

Enable Automatic Assigned Default Gateway

Save/Apply

**STATIC ROUTE**

The Static Route screen can be used to add a routing table (a maximum of 32 entries can be configured). Click on **Add** button to add a static route and, at the end of parameters' configuration, press the **Save/Apply** button. The **Remove** button, upon a route selection, will delete existing static routes.

**TABLE 1. Static Route Parameters**

Parameter	Description	Example
Destination	Destination Network address	20.0.0.0
Subnet Mask	Subnet mask	255.255.255.0
Gateway	Gateway IP address	
Interface	Available WAN interfaces	br0

**FIGURE 2. Static Route Panel**

**Routing -- Static Route (A maximum 32 entries can be configured)**

Destination	Subnet Mask	Gateway	Interface	Remove
<input type="button" value="Add"/> <input type="button" value="Remove"/>				

DISCUS™ Router

**FIGURE 3. Add - Static Route Panel**

Enter the destination network address, subnet mask, gateway AND/OR available WAN interface then click "Save/Apply" to add the entry to the routing table.

Destination Network Address:

Subnet Mask:

Use Gateway IP Address

Use Interface



# DNS Section

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This chapter will describe the **DNS Section** accessible from the *Home Page* of the **DISCUS™ Router**. This section is only accessible



*Be aware that any configuration change could compromise your connectivity.*

to a user with admin profile and is intended to collect most of the DNS configuration functions.

## DNS SERVER

Use the DNS Server screen to enable automatic assignment of a DNS or to specify a primary and secondary DNS.

If **Enable Automatic Assigned DNS** checkbox is selected, this router will accept the first received DNS assignment from one of the PPPoA, PPPoE or MER/DHCP enabled PVC(s) during the connection establishment. If the checkbox is not selected, enter the primary and optional secondary DNS server IP addresses. Click **Save** button to save the new configuration. You must reboot the router to make the new configuration effective.

**FIGURE 1. DNS Server Panel**

---

**DNS Server Configuration**

If 'Enable Automatic Assigned DNS' checkbox is selected, this router will accept the first received DNS assignment from one of the PPPoA, PPPoE or MER/DHCP enabled PVC(s) during the connection establishment. If the checkbox is not selected, enter the primary and optional secondary DNS server IP addresses. Click 'Save' button to save the new configuration. You must reboot the router to make the new configuration effective.

Enable Automatic Assigned DNS

Save

# Diagnostics Section

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This chapter will describe the **Diagnostics Section** accessible from the *Home Page* of the **DISCUS™ Router**.



*Be aware that any configuration changes could compromise your connectivity.*

By selecting **Diagnostics**, the page, shown in Figure 1, is shown. By means of this page it will be possible to run diagnostic tests to check your DSL connection. The results will show test results of three connections:

1. Connection to your local network
2. Connection to your DSL service provider
3. Connection to your Internet service provider

There are two buttons at the bottom of the screen: **Test** and **Test with OAM F4**, which will allow you to execute the test again, if necessary.

**FIGURE 1. Diagnostics Panel**

**pppoa\_8\_35\_1 Diagnostics**

Your modem is capable of testing your DSL connection. The individual tests are listed below. If a test displays a fail status, click "Rerun Diagnostic Tests" at the bottom of this page to make sure the fail status is consistent. If the test continues to fail, click "Help" and follow the troubleshooting procedures.

**Test the connection to your local network**

Test your ENET(1-3) Connection:	<b>PASS</b>	<a href="#">Help</a>
Test your ENET4 Connection:	<b>FAIL</b>	<a href="#">Help</a>
Test your USB Connection:	<b>DOWN</b>	<a href="#">Help</a>
Test your Wireless Connection:	<b>PASS</b>	<a href="#">Help</a>

**Test the connection to your DSL service provider**

Test ADSL Synchronization:	<b>FAIL</b>	<a href="#">Help</a>
Test ATM OAM F5 segment ping:	<b>FAIL</b>	<a href="#">Help</a>
Test ATM OAM F5 end-to-end ping:	<b>FAIL</b>	<a href="#">Help</a>

**Test the connection to your Internet service provider**

Test PPP server session:	<b>FAIL</b>	<a href="#">Help</a>
Test authentication with ISP:	<b>PASS</b>	<a href="#">Help</a>
Test the assigned IP address:	<b>FAIL</b>	<a href="#">Help</a>
Ping default gateway:	<b>FAIL</b>	<a href="#">Help</a>
Ping primary Domain Name Server:	<b>PASS</b>	<a href="#">Help</a>

Test Test With OAM F4

# Management Section

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This chapter will describe the **Management Section** accessible from the *Home Page* of the **DISCUS™ Router**.



*Be aware that any configuration change could compromise your connectivity.*

The Management section gives you access to certain setups for the purpose of maintaining the system, including backing up the configurations, viewing system log, maintaining access control, updating software, etc.

## SETTINGS BACKUP

By selecting **Settings Backup**, the page, shown in Figure 1, is shown. By means of this page it will be possible to backup DSL router configuration.

**FIGURE 1. Backup Panel**

---

### Settings - Backup

Backup DSL router configurations. You may save your router configurations to a file on your PC.

Backup Settings

A pop-up screen will appear with a prompt to open or save the file to your computer.

**SETTINGS UPDATE**

To update DSL Router settings, do select the **Settings >> Update** item (see Figure 2) and select a previously saved file. Then click on **Update Settings** button.

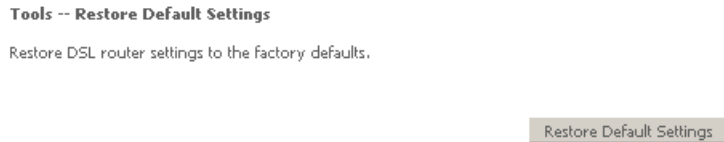
**FIGURE 2. Update Settings Panel**



**SETTINGS RESTORE**

**Settings >> Restore Default Settings** item will delete all current settings and restore the router to factory default settings (see Figure 3). Click on the **Restore Default Settings** button. Click on **OK** when the pop-up window appears confirming that you want to restore factory default settings to your router. The router will restore the default settings and reboot.

**FIGURE 3. Restore Default Panel**



**SYSTEM LOG**

The **System Log** item allows you to view the System Log and configure the System Log options. To view the System Log click on the **View System Log** button and check the log file.

**FIGURE 4. System Log Panel**

**System Log**

The System Log dialog allows you to view the System Log and configure the System Log options.

Click "View System Log" to view the System Log.

Click "Configure System Log" to configure the System Log options.



**ACCESS CONTROL >> SERVICES**

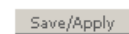
It is possible to enable or disable some services of your router by LAN or WAN. If no WAN connection is defined, then only the LAN side can be configured. Services that can be enabled include FTP, HTTP, ICMP, SSH, TELNET, and TFTP. Click on **Apply** when finished.

**FIGURE 5. Services Panel**

**Access Control -- Services**

A Service Control List ("SCL") enables or disables services from being used.

Services	LAN	WAN
FTP	<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable
HTTP	<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable
ICMP	Enable	<input type="checkbox"/> Enable
SSH	<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable
TELNET	<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable
TFTP	<input type="checkbox"/> Enable	<input type="checkbox"/> Enable



**ACCESS CONTROL >> IP ADDRESSES**

Web access to the router can be limited when Access Control Mode is enabled. The IP addresses of allowed hosts can be added using **Access Control >> IP Address**.

Add the IP address to the IP address list by clicking on the **Add** button, then select "Enabled" to enable Access Control Mode. To assign the IP address of the management station that is permitted to access the local management services, enter the IP address in the box and click on the **Save/Apply** button.

**FIGURE 6. IP Addresses Panel**

**Access Control -- IP Address**

The IP Address Access Control mode, if enabled, permits access to local management services from IP addresses contained in the Access Control List. If the Access Control mode is disabled, the system will not validate IP addresses for incoming packets. The services are the system applications listed in the Service Control List

Access Control Mode:  Disable  Enable

IP Address	Remove
Add	Remove

**ACCESS CONTROL >>  
PASSWORDS**

Access the Passwords screen under the Access Control section to change a password. Select an account and enter the current password and the new password and then click on the **Save/Apply** button.

**FIGURE 7. Passwords Panel**

**Access Control -- Passwords**

Access to your DSL router is controlled through three user accounts: admin, support, and user.

The user name "admin" has unrestricted access to change and view configuration of your DSL Router.

The user name "support" is used to allow an ISP technician to access your DSL Router for maintenance and to run diagnostics.

The user name "user" can access the DSL Router, view configuration settings and statistics, as well as, update the router's software.

Use the fields below to enter up to 16 characters and click "Apply" to change or create passwords. Note: Password cannot contain a space.

Username:	<input type="text" value="admin"/>
Old Password:	<input type="password"/>
New Password:	<input type="password"/>
Confirm Password:	<input type="password"/>

Save/Apply

**UPDATE SOFTWARE**

If your ISP releases new software for this router, follow these steps to perform an upgrade.

1. Obtain an updated software image file from your ISP.
2. Enter the path to the image file location or click on the Browse button to locate the image file.
3. Click the **Update Software** button once to upload the new image file.

---

**FIGURE 8. Update Software**

---

**Tools -- Update Software**

**Step 1:** Obtain an updated software image file from your ISP.

**Step 2:** Enter the path to the image file location in the box below or click the "Browse" button to locate the image file.

**Step 3:** Click the "Update Software" button once to upload the new image file.

NOTE: The update process takes about 2 minutes to complete, and your DSL Router will reboot.

Software File Name:

**SAVE / REBOOT**

Click the **Save/Reboot** button to reboot the router using the web interface. The router will save the current configuration and reboot itself using the new configuration.

---

**FIGURE 9. Save / Reboot Panel**

---

Click the button below to save and reboot the router.



# Troubleshooting

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## **BASIC CONNECTION CHECKS**

- Check that the Router is connected to your computers and to the telephone line, and that all the equipment is powered on. Check that the ETH or USB Status (according to your connection type) and DSL LEDs on the Router are illuminated, and that any corresponding LEDs on the NIC are also illuminated.
- Ensure that the computers have completed their start-up procedure and are ready for use. Some network interfaces may not be correctly initialized until the start-up procedure has completed.
- If the link status LED does not illuminate for a port that is connected, check that you do not have a faulty cable. Try a different cable.

## **BROWSING TO THE ROUTER CONFIGURATION SCREENS**

If you have connected your Router and computers together but cannot browse to the Router configuration screens, check the following:

- Confirm that the physical connection between your computer and the Router is OK, and that the ETH Status LEDs on the Router and NIC are illuminated. Some NICs do not have status LEDs, in which case a diagnostic program may be available that can give you this information.
- Ensure that you have configured your computer as described in “Setting Up Your Computer” on page 15. Restart your computer while it is connected to the Router to ensure that your computer receives an IP address.
- When entering the address of the Router into your web browser, ensure that you use the full URL including the “*http://*” prefix (e.g. *http://192.168.1.1*).
- Ensure that you do not have a Web proxy enabled on your computer. Go to the Control Panel and click on Internet Options. Select the Connections tab and click on the LAN Settings button at the bottom. Make sure that the Proxy Server option is unchecked.
- If you cannot browse to the Router, use the *wiipcfg* utility in Windows 98/ME to verify that your computer has received the correct address information from the Router. From the Start menu, choose Run and then enter *wiipcfg*. Check that the computer has an IP address of the form 192.168.1.xxx (where xxx is in the range 2-254), the subnet mask is 255.255.255.0, and the default Router is 192.168.1.1

(the address of the Router). If these are not correct, use the Release and Renew functions to obtain a new IP address from the Router. Under Windows 2000 and Windows XP, use the *ipconfig* command-line utility to perform the same functions.

## CONNECTING TO THE INTERNET

If you can browse to the Router configuration screens but cannot access sites on the Internet, check the following:

- Confirm that the physical connection between the Router and the telephone line is OK, and that the DSL LED on the Router is GREEN on.
- Ensure that you have entered the correct information into the Router configuration screens as required. Use the "Internet Settings" screen to verify this.
- Check that the user name and password are correct.
- Check that the INTERNET LED is green on
- Ensure that your computers are not configured to use a Web proxy. On Windows computers, this can be found under Control Panel >Internet Options > Connections.

## FORGOTTEN PASSWORD AND RESET CONFIGURATION TO FACTORY DEFAULTS

If you can browse to the Router configuration screen but cannot log on because you do not know or have forgotten the password, follow the steps below to reset the Router to its factory default configuration.



*All your configuration changes will be lost, and you will need to configure again your network before you can re-establish your Router connection to the Internet. Also, other computer users will lose their network connections whilst this process is taking place, so choose a time when this would be convenient.*

1. Switch off the Router.
2. Disconnect all your computers and the telephone line from the Router.
3. Re-apply power to the Router, and wait for it to finish booting up.
4. Press the Reset Configuration to Factory Default button on the rear panel for a while.
5. The Router will restart, and when the start-up sequence has completed, browse to: <http://192.168.1.1> and configure your network.
6. Reconnect your network as it was before.

## FREQUENTLY ASKED QUESTIONS

**How do I reset the Router to Factory Defaults?** Press the Restore Configuration to Factory Default button for more than 10 seconds.

**How many computers on the LAN does the Router support?** Up to a maximum of 256 computers on the LAN are supported.



*The Quality of Service (QoS) is related to the guaranteed level of throughput (the amount of data transferred from the Router to the clients). As many clients are connected as lower is the Quality as Service.*

**How are additional computers connected?** You can expand the number of connections available on your LAN by using hubs, switches and wireless access points connected to the Router. Wireless access points and hubs and switches provide a simple, reliable means of expanding your network; contact your supplier for more information, or visit: <http://www.pirelli.com/>

**I connected the modem before installing the USB Drivers. How should I proceed?** You must unplug the USB cable, restart your computer and start over following the procedure described at chapter “USB Connection >> MS Windows”

**Why sometimes the Internet Connection is slow?** It happens that sometimes a network congestion may produce a slower connection. Try again in a different day period: if you experience many times this fact, contact your network provider.

# Safety Information

## Important Safety Information

*This appendix contains directions that you must follow for your personal safety.*

*Follow all directions carefully. You must read the following safety information carefully before you install or remove the unit.*



- Use only the power adapter that is supplied with the unit. The use of an alternative adapter can damage the Router and invalidate the warranty.
- Use an electrical outlet within easy distance and do not damage the power cable.
- To avoid electrical shock, do not open the Router.
- To prevent fire or shock hazard, do not expose your Router to rain or moisture, liquid and toxic substances.
- Particular care must be taken during installation and removal of cables and telephone line.
- Never touch uninsulated telephone wire or terminals unless the telephone line has been disconnected at the network interface.
- Ensure the correct ventilation to the Router. Do not obstruct the air conducts and do not lean anything over.
- Verify to place the Router out of direct sunlight and away from sources of heat.
- Avoid using your Router during an electrical storm.
- The Router generates and uses Radio Frequency (RF) energy. In some environments, the use of RF energy is not permitted. The user should seek local advice on whether or not RF energy is permitted within the area of intended use.



*The crossed-out wheeled bin symbol on this electric or electronic equipment, or on its packaging, indicates that, at the end of its life, it must not be disposed of as unsorted household waste. Instead it must be separately collected.*

*As a consumer you must, therefore, use the specific collection schemes and, in particular, the municipal collection schemes provided for waste electrical and electronic equipment.*

*The separate collection and appropriate treatment of the equipment at the time of disposal helps to conserve natural resources and to ensure that it is recycled in a manner that protects human health and the environment from materials, components and substances that can be dangerous to the environment and harmful to human health.*

*Furthermore, the separate collection and appropriate treatment of the equipment, at the time of disposal, facilitates its possible reuse or possible materials recovery.*

# IP Addressing

## The Internet Protocol Suite

The Internet protocol suite consists of a well-defined set of communications protocols and several standard application protocols. Transmission Control Protocol/Internet Protocol (TCP/IP) is probably the most widely known and is a combination of two of the protocols (IP and TCP) working together. TCP/IP is an internationally adopted and supported networking standard that provides connectivity between equipment from many vendors over a wide variety of networking technologies.

## Managing the Router over the Network

To manage a device over the network, the Router must be correctly configured with the following IP information:

- An IP address
- A Subnet Mask

## IP Addresses and Subnet Masks

Each device on your network must have a unique IP address to operate correctly. An IP address identifies the address of the device to which data is being sent and the address of the destination network. IP addresses have the format n.n.n.x where n is a decimal number between 0 and 255 and x is a number between 1 and 254 inclusive.

However, an IP Address alone is not enough to make your device operate. In addition to the IP address, you need to set a subnet mask. All networks are divided into smaller sub-networks and a subnet mask is a number that enables a device to identify the sub-network to which it is connected.

For your network to work correctly, all devices on the network must have:

- The same sub-network address.
- The same subnet mask.

*The only value that will be different is the specific host device number. This value must always be unique.*

An example IP address is '192.168.10.8'. However, the size of the network determines the structure of this IP Address. In using the Router, you will probably only encounter two types of IP Address and subnet mask structures.

### Type One

In a small network, the IP address of '192.168.10.8' is split into two parts:

- Part one ('192.168.10') identifies the network on which the device resides.
- Part two ('.8') identifies the device within the network.

This type of IP Address operates on a subnet mask of '255.255.255.0'.

### Type Two

In larger networks, where there are more devices, the IP address of '192.168.10.8' is, again, split into two parts but is structured differently:

- Part one ('192.168') identifies the network on which the device resides.
- Part two ('.10.8') identifies the device within the network.

This type of IP Address operates on a subnet mask of '255.255.0.0'.

## **How does a Device Obtain an IP Address and Subnet Mask?**

There are three different ways to obtain an IP address and the subnet mask. These are:

- Dynamic Host Configuration Protocol (DHCP) Addressing
- Static Addressing
- Automatic Addressing (Auto-IP Addressing)

### **DHCP Addressing**

The Router contains a DHCP server, which allows computers on your network to obtain an IP address and subnet mask automatically. DHCP assigns a temporary IP address and subnet mask which gets reallocated once you disconnect from the network.

DHCP will work on any client Operating System. Also, using DHCP means that the same IP address and subnet mask will never be duplicated for devices on the network. DHCP is particularly useful for networks with large numbers of users on them.

### **Static Addressing**

You must enter an IP Address and the subnet mask manually on every device. Using a static IP and subnet mask means the address is permanently fixed.

### **Auto-IP Addressing**

Network devices use automatic IP addressing if they are configured to acquire an address using DHCP but are unable to contact a DHCP server. Automatic IP addressing is a scheme where devices allocate themselves an IP address at random from the industry standard subnet of 169.254.x.x (with a subnet mask of 255.255.0.0). If two devices allocate themselves the same address, the conflict is detected and one of the devices allocates itself a new address. Automatic IP addressing support was introduced by Microsoft in the Windows 98 operating system and is also supported in Windows 2000 and Windows XP.

# Technical Specifications

This section lists the technical specifications for the DISCUS™ Router.

- WAN Interface** N°1 Line port (RJ-11 plug, inner pair) supporting the following standards:
- ADSL (G.992.1, G992.2, T1.413, G994.1, G.997.1)
  - ADSL2 (G.992.3)
  - ADSL2+ (G992.5)
- Annex A/Annex B are available in different product version
- LAN Interface** - N° 4 10/100BASE-T Ethernet ports (RJ-45 plug), compliant IEEE 802.3, with auto MDIX and auto-negotiation. Ports can be configured in order to be dedicated to video traffic to/from a STB
- N° 1 USB Device v1.1
- DSL (ATM) Features**
- AAL5 (ITU-T I.363.5)
  - UBR, VBR-nrt, VBR-rt, CBR traffic classes
  - Multiple VC/PPP connections
  - Classic IP (CLIP) and ARP over ATM, RFCs 1577, 2225
  - Multiple PPPoE connections on a single VC
  - Multi-protocol encapsulation over AAL5 bridging and routing, RFCs 1483, 2684
  - PPP over AAL5 (PPPoATM), RFC 2364
  - OAM (ITU-T I.610)
  - F4, F5
  - Loop-back
- Encapsulation modes in ATM stack: LLC and VC-Mux
- Routing/Bridging Features**
- Routing:
- Static routing
  - RIPv1, RIPv2
  - IP Multicasting – IGMP v2, v3
- Bridging:
- WAN-LAN transparent bridging
  - Transparent bridging between LAN devices
  - Automatic discovery of MAC addresses
  - Spanning tree protocol
- NAT**
- NAT
  - NAT-NAPT, RFCs 3022
  - Static NAT
  - Static NAPT

**QoS**

- ATM QoS: UBR, VBR-nrt, VBR-rt, CBR.
- 802.1P/Q prioritization
- Diffserv (RFC2474, RFC2475) marking and queuing according to connection type, network interface, MAC, IP, hostname, DSCP/ToS value, port number and application
- Port based QoS

**Security**

- Stateful Packet Inspection (SPI) Firewall
- IP protocol filtering
- Access Control
- Parental control

**Remote Management**

DSL Forum TR-069 CPE Management Protocol:

- Auto- configuration and dynamic service provisioning
- Software/firmware image management
- Status and performance monitoring
- WEB GUI (HTTP-S web server
- TFTP, RFC 1350
- Telnet server

**Environmental Specifications**

Temperature:

- Operating: +10° to 40° C
- Non Operating: -20° to 65°C

Relative Humidity:

- Operating: 10 to 85% non condensing
- Non Operating: 5 to 95% non condensing

**Power Adapter**

- European Plug
- Primary: nominal voltage 220V-230V, 50 Hz;
- Secondary: 15V 0.8A.

**Declaration of Conformance**

The product conforms to the relevant standards according to the regulation in Article 3.1.a and 3.1.b of the R&TTE Directive 1999/5/EEC of the European Community



Standards applied:

- EN 55022
- EN 55024
- EN 61000-3-2
- EN 61000-3-3
- EN 60950-1

# Glossary

## 802.11b

The IEEE specification for wireless Ethernet which allows speeds of up to 11 Mbps. The standard provides for 1, 2, 5.5 and 11 Mbps data rates. The rates will switch automatically depending on range and environment.

## 802.11g

The IEEE specification for wireless Ethernet which allows speeds of up to 54 Mbps. The standard provides for 6, 12, 24, 36, 48 and 54 Mbps data rates. The rates will switch automatically depending on range and environment.

## 10BASE-T

The IEEE specification for 10 Mbps Ethernet over Category 3, 4 or 5 twisted pair cable.

## 100BASE-TX

The IEEE specification for 100 Mbps Fast Ethernet over Category 5 twisted-pair cable.

## Access Point

An Access Point is a device through which wireless clients connect to other wireless clients and which acts as a bridge between wireless clients and a wired network, such as Ethernet. Wireless clients can be moved anywhere within the coverage area of the access point and still connect with each other. If connected to an Ethernet network, the access point monitors Ethernet traffic and forwards appropriate Ethernet messages to the wireless network, while also monitoring wireless client radio traffic and forwarding wireless client messages to the Ethernet LAN.

## Ad Hoc mode

Ad Hoc mode is a configuration supported by most wireless clients. It is used to connect a peer to peer network together without the use of an access point. It offers lower performance than infrastructure mode, which is the mode the router uses. (see also Infrastructure mode.

## Auto-negotiation

Some devices in the range support auto-negotiation. Auto-negotiation is where two devices sharing a link, automatically configure to use the best common speed. The order of preference (best first) is: 100BASE-TX full duplex, 100BASE-TX half duplex, 10BASE-T full duplex, and 10BASE-T half duplex. Auto-negotiation is defined in the IEEE 802.3 standard for Ethernet and is an operation that takes place in a few milliseconds.

## Bandwidth

The information capacity, measured in bits per second, that a channel can transmit. The bandwidth of Ethernet is 10 Mbps, the bandwidth of Fast Ethernet is 100 Mbps. The bandwidth for 802.11b wireless is 11Mbps.

## Category 5 Cables

One of five grades of Twisted Pair (TP) cabling defined by the EIA/TIA-586 standard. Category 5 can be used in Ethernet (10BASE-T) and Fast Ethernet networks (100BASE-TX) and can transmit data up to speeds of 100 Mbps. Category 5 cabling is better to use for network cabling than Category 3, because it supports both Ethernet (10 Mbps) and Fast Ethernet (100 Mbps) speeds.

## Channel

Similar to any radio device, the Wireless Cable/DSL router allows you to choose different radio channels in the wireless spectrum. A channel is a particular frequency within the 2.4GHz spectrum within which the Router operates.

## Client

The term used to describe the desktop PC that is connected to your network.

## DHCP

Dynamic Host Configuration Protocol. This protocol automatically assigns an IP address for every computer on your network. Windows 95, Windows 98 and Windows NT 4.0 contain software that assigns IP addresses to workstations on a network. These assignments are made by the DHCP server software that runs on Windows NT Server, and Windows 95 and Windows 98 will call the server to obtain the address. Windows 98 will allocate itself an address if no DHCP server can be found.

## DMZ

DMZ (Demilitarized Zone) is an area outside the firewall, to let remote users to have access to items on your network (Web site, FTP download and upload area, etc.).

## DNS Server Address

DNS stands for Domain Name System, which allows Internet host computers to have a domain name (such as `pirelli.com`) and one or more IP addresses (such as `192.168.10.8`). A DNS server keeps a database of host computers and their respective domain names and IP addresses, so that when a domain name is requested (as in typing "`pirelli.com`" into your Internet browser), the user is sent to the proper IP address. The DNS server address used by the computers on your home network is the location of the DNS server your ISP has assigned.

## DSL

Short for digital subscriber line, but is commonly used in reference to the asymmetric version of this technology (ADSL) that allows data to be sent over existing copper telephone lines at data rates of from 1.5 to 9 Mbps when receiving data (known as the downstream rate) and from 16 to 640 Kbps when sending data (known as the upstream rate). ADSL requires a special ADSL modem. ADSL is growing in popularity as more areas around the world gain access.

## DSL modem

DSL stands for digital subscriber line. A DSL modem uses your existing phone lines to send and receive data at high speeds.

## Encryption

A method for providing a level of security to wireless data transmissions. The Router uses two levels of encryption; 40/64 bit and 128 bit. 128 bit is a more powerful level of encryption than 40/64 bit.

## Ethernet

A LAN specification developed jointly by Xerox, Intel and Digital Equipment Corporation. Ethernet networks use CSMA/CD to transmit packets at a rate of 10 Mbps over a variety of cables.

## Ethernet Address

See MAC address.

## Fast Ethernet

An Ethernet system that is designed to operate at 100 Mbps.

## Firewall

Electronic protection that prevents anyone outside of your network from seeing your files or damaging your computers.

## Full Duplex

A system that allows packets to be transmitted and received at the same time and, in effect, doubles the potential throughput of a link.

## IEEE

Institute of Electrical and Electronics Engineers. This American organization was founded in 1963 and sets standards for computers and communications.

## IETF

Internet Engineering Task Force. An organization responsible for providing engineering solutions for TCP/IP networks. In the network management area, this group is responsible for the development of the SNMP protocol.

## IGMP

The Internet Group Management Protocol (IGMP) is an Internet protocol that provides a way for an Internet computer to report its multicast group membership to adjacent routers. Multicasting allows one computer on the Internet to send content to multiple other computers that have identified themselves as interested in receiving the originating computer's content. Multicasting can be used for such applications as updating the address books of mobile computer users in the field, sending out company newsletters to a distribution list, and "broadcasting" high-bandwidth programs of streaming media to an audience that has "tuned in" by setting up a multicast group membership.

## Infrastructure mode

Infrastructure mode is the wireless configuration supported by the Router. You will need to ensure all of your clients are set up to use infrastructure mode in order for them to communicate with the Access Point built into your Router. (see also Ad Hoc mode)

## IP

Internet Protocol. IP is a layer 3 network protocol that is the standard for sending data through a network. IP is part of the TCP/IP set of protocols that describe the routing of packets to addressed devices. An IP address consists of 32 bits divided into two or three fields: a network number and a host number or a network number, a subnet number, and a host number.

## IP Address

Internet Protocol Address. A unique identifier for a device attached to a network using TCP/IP. The address is written as four octets separated with periods (full-stops), and is made up of a network section, an optional subnet section and a host section.

## ISP

Internet Service Provider. An ISP is a business that provides connectivity to the Internet for individuals and other businesses or organizations.

## LAN

Local Area Network. A network of end stations (such as PCs, printers, servers) and network devices (hubs and switches) that cover a relatively small geographic area (usually not larger than a floor or building). LANs are characterized by high transmission speeds over short distances (up to 1000 metres).

## MAC

Media Access Control. A protocol specified by the IEEE for determining which devices have access to a network at any one time.

## MAC Address

Media Access Control Address. Also called the hardware or physical address. A layer 2 address associated with a particular network device. Most devices that connect to a LAN have a MAC address assigned to them as they are used to identify other devices in a network. MAC addresses are 6 bytes long.

## Mbps

Megabits per second.

## MDI/MDIX

In cable wiring, the concept of transmit and receive are from the perspective of the PC, which is wired as a Media Dependant Interface (MDI). In MDI wiring, a PC transmits on pins 1 and 2. At the hub, switch, router, or

access point, the perspective is reversed, and the hub receives on pins 1 and 2. This wiring is referred to as Media Dependant Interface - Crossover (MDI-X).

## **NAT**

Network Address Translation. NAT enables all the computers on your network to share one IP address. The NAT capability of the Router allows you to access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

## **Network**

A Network is a collection of computers and other computer equipment that are connected for the purpose of exchanging information or sharing resources. Networks vary in size, some are within a single room, others span continents.

## **Network Interface Card (NIC)**

A circuit board installed into a piece of computing equipment, for example, a computer, that enables you to connect it to the network. A NIC is also known as an adapter or adapter card.

## **Protocol**

A set of rules for communication between devices on a network. The rules dictate format, timing, sequencing and error control.

## **PSTN**

Public Switched Telephone Network.

## **PPPoA**

Point-to-Point Protocol over ATM. PPP over ATM is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.

## **PPPoE**

Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a method of data transmission originally created for dial-up connections; PPPoE is for Ethernet connections.

## **RJ-45**

A standard connector used to connect Ethernet networks. The "RJ" stands for "registered jack".

## **Router**

A device that acts as a central hub by connecting to each computer's network interface card and managing the data traffic between the local network and the Internet.

## **Server**

A computer in a network that is shared by multiple end stations. Servers provide end stations with access to shared network services such as computer files and printer queues.

## **SSID**

Service Set Identifier. Some vendors of wireless products use SSID interchangeably with ESSID.

## **Subnet Address**

An extension of the IP addressing scheme that allows a site to use a single IP network address for multiple physical networks.

## **Subnet mask**

A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers configured like an IP address. It is used to create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must be assigned by InterNIC).

## **Subnets**

A network that is a component of a larger network.

## **Switch**

A device that interconnects several LANs to form a single logical LAN that comprises of several LAN segments. Switches are similar to bridges, in that they connect LANs of a different type; however they connect more LANs than a bridge and are generally more sophisticated.

## **TCP/IP**

Transmission Control Protocol/Internet Protocol. This is the name for two of the most well-known protocols developed for the interconnection of networks. Originally a UNIX standard, TCP/IP is now supported on almost all platforms, and is the protocol of the Internet.

## **TCP**

It relates to the content of the data travelling through a network — ensuring that the information sent arrives in one piece when it reaches its destination. IP relates to the address of the end station to which data is being sent, as well as the address of the destination network.

## **Traffic**

The movement of data packets on a network.

## **Universal plug and play**

Universal plug and play is a system which allows compatible applications to read some of their settings from the Router. This allows them to automatically configure some, or all, of their settings and need less user configuration.

## **URL Filter**

A URL Filter is a feature of a firewall that allows it to stop its clients from browsing inappropriate Web sites.

## **UTP**

Unshielded twisted pair is the cable used by 10BASE-T and 100BASE-Tx Ethernet networks.

## **VCI**

VCI - Virtual Channel Identifier. The identifier in the ATM (Asynchronous Transfer Mode) cell header that identifies to which virtual channel the cell belongs.

## **VPI**

VPI - Virtual Path Identifier. The field in the ATM (Asynchronous Transfer Mode) cell header that identifies to which VP (Virtual Path) the cell belongs.

## **WAN**

Wide Area Network. A network that connects computers located in geographically separate areas (for example, different buildings, cities, or countries). The Internet is an example of a wide area network.

## **WEP**

Wired Equivalent Privacy. A shared key encryption mechanism for wireless networking. Encryption strength is 40/64 bit or 128 bit.

## **Wi-Fi**

Wireless Fidelity. This is the certification granted by WECA to products that meet their inter operability criteria. (see also 802.11b, WECA)

## **Wi-Fi Alliance**

## **Wireless Client**

The term used to describe a desktop or mobile PC that is wirelessly connected to your wireless network

## **Wireless LAN Service Area**

Another term for ESSID (Extended Service Set Identifier)

## **Wizard**

A Windows application that automates a procedure such as installation or configuration.

## **WLAN**

Wireless Local Area Network. A WLAN is a group of computers and devices connected together by wireless in a relatively small area (such as a house or office).

## **WPA**

Wi-Fi Protected Access. A dynamically changing encryption mechanism for wireless networking. Encryption strength is 256 bit.





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