Wireless 11n Cable/DSL Firewall Router

User Guide

WL-602

3CRWER300-73

http://www.3Com.com/

Part No. 10016790 Rev. AA

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**3Com Corporation
350 Campus Drive,
Marlborough, MA
USA 01752-3064**

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ABOUT THIS GUIDE

This guide describes how to install and configure the 3Com Wireless 11n Cable/DSL Firewall Router (3CRWER300-73).

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.

If a release note is shipped with the 3Com Wireless 11n Cable/DSL Firewall Router and contains information that differs from the information in this guide, follow the information in the release note.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) on the 3Com World Wide Web site:

`http://www.3Com.com`

Naming Convention

Throughout this guide, the 3Com Wireless 11n Cable/DSL Firewall Router is referred to as the “Router”.

Category 3, Category 5, and Category 6 Twisted Pair Cables are referred to as Twisted Pair 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
ℹ	Information note	Information that describes important features or instructions.
⚠	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: ■ Emphasize a point. ■ Denote a new term at the place where it is defined in the text. ■ Identify menu names, menu commands, and software button names. Examples: From the *Help* menu, select *Contents*. Click *OK*.

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Your suggestions are very important to us. They will help make our documentation more useful to you. Please e-mail comments about this document to 3Com at:

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Please include the following information when commenting:

- Document title
- Document part number (on the title page)
- Page number (if appropriate)

Example:

- 3Com Wireless 11n Cable/DSL Firewall Router User Guide
- Part Number 10016790 Rev. AA
- Page 24

Do not use this e-mail address for technical support questions. For information about contacting Technical Support, please refer to Appendix E.

Related Documentation

In addition to this guide, each Router document set includes one Installation Guide. This guide contains the instructions you need to install and configure your Router.

1 INTRODUCING THE ROUTER

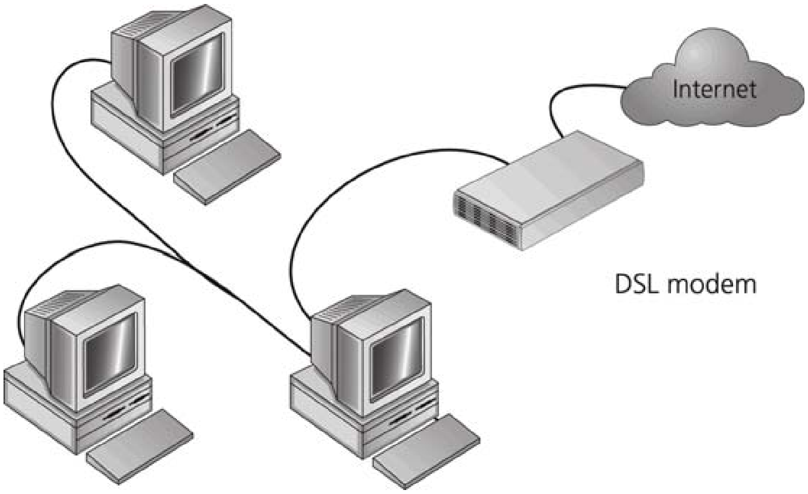
Welcome to the world of networking with 3Com®. In the modern business environment, communication and sharing information is crucial. Computer networks have proved to be one of the fastest modes of communication but, until recently, only large businesses could afford the networking advantage.

Wireless 11n Cable/DSL Firewall Router

The 3Com Wireless 11n Cable/DSL Firewall Router is designed to provide a cost-effective means of sharing a single broadband Internet connection amongst several wired and wireless 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 Router can also prevent your users from accessing Web sites which you find unsuitable.

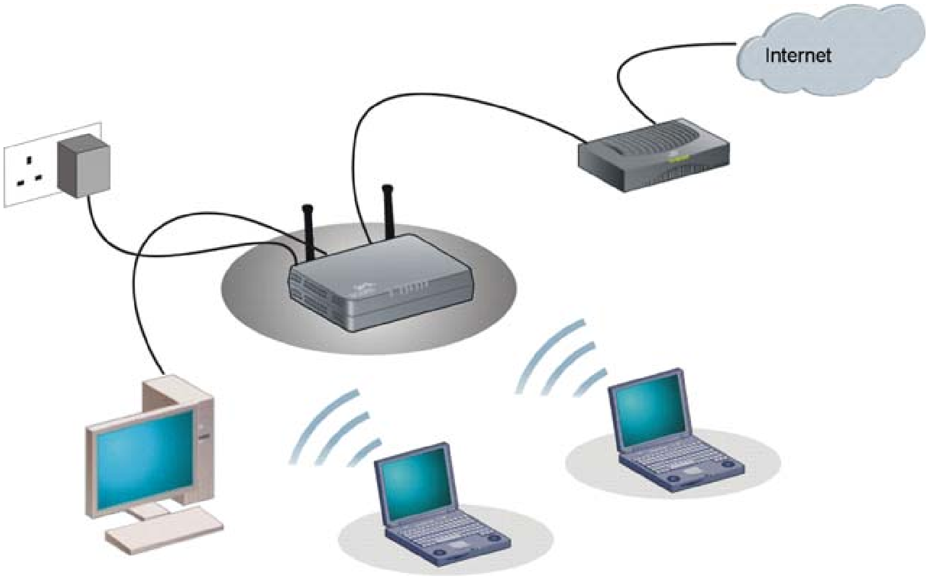
Figure 1 shows an example network without a Router. In this network, only one computer is connected to the Internet. This computer must always be powered on for the other computers on the network to access the Internet.

Figure 1 Example Network Without a Router



When you use the Router in your network (Figure 2), it becomes your connection to the Internet. Connections can be made directly to the Router, or to a 3Com Switch, expanding the number of computers you can have in your network.

Figure 2 Example Network Using a Firewall Router



Router Advantages

The advantages of the Router include:

- Shared Internet connection for both wired and wireless computers
- High speed 802.11n wireless networking
- No need for a dedicated, "always on" computer serving as your Internet connection
- Cross-platform operation for compatibility with Windows, Unix and Macintosh computers
- Easy-to-use, Web-based setup and configuration
- Provides centralization of all network address settings (DHCP)
- Acts as a Virtual server to enable remote access to Web, FTP, and other services on your network
- Security — Firewall protection against Internet hacker attacks and encryption to protect wireless network traffic

Package Contents

The Router kit includes the following items:

- One 3Com Wireless 11n Cable/DSL Firewall Router
- One power adapter for use with the Router
- Four rubber feet
- One Ethernet cable
- One CD-ROM containing this User Guide, copies of the quick install guide in various languages and the 3Com Detect application.
- Installation guide
- Support and Safety sheet
- Warranty sheet

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

Minimum System and Component Requirements

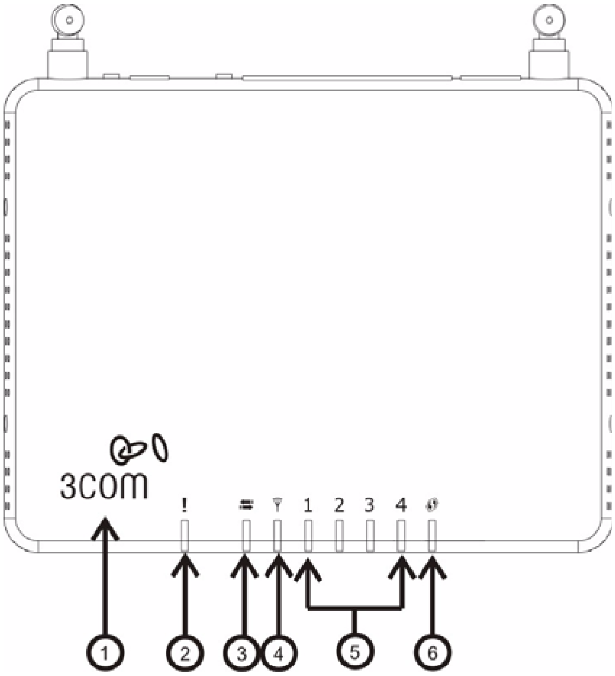
Your Router requires that the computer(s) and components in your network be configured with at least the following:

- A computer with an operating system that supports TCP/IP networking protocols (for example Windows 2000/XP/Vista, Unix, Mac OS 8.5 or higher).
- An Ethernet 10 Mbps, 10/100 Mbps or 10/100/1000 Mbps NIC for each computer to be connected to the four-port switch on your Router.
- An 802.11b, 802.11g or 802.11n draft2.0 compliant wireless NIC.
- An active ADSL or Cable subscription and connection. Note that your Cable or ADSL modem needs to have an Ethernet interface.
- A Web browser that supports JavaScript, such as Netscape 4.7 or higher, Internet Explorer 6.0 or higher, Mozilla 1.2.1 or higher, or Apple’s Safari.

Physical Features

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

Figure 3 Router - Front Panel



1 Power LED (Illuminated Logo)

White

The 3Com logo serves as power OK indicator. This LED will light if the router is receiving power from the power adapter. If it is not lit check the power adapter connections. Refer to Chapter 6 Troubleshooting.

2 Alert LED

Amber

Fast flash during self test. If self test fails the LED will remain on.
Fast flash during software upgrade.
Fast flash for software reset to the factory defaults.
Fast flash for hardware reset to the factory defaults.
The LED is on for 2 seconds when the firewall detects a hacker attack.

3 Cable/DSL

Blue

LED on indicates the physical connection is on.
Fast flash means WAN port traffic activity.

4 Wireless LAN (WLAN) Status LED

Blue

If the LED is on it indicates that wireless networking is enabled. If the LED is flashing, the link is OK and data is being transmitted or received. If the LED is off, the Wireless LAN has been disabled in the Router, or there is a problem. Refer to Chapter 6 Troubleshooting.

5 LAN Status LEDs (4 indicators)

Blue

If the LED is on, the link between the port and the next piece of network equipment is OK. If the LED is flashing, the link is OK and data is being transmitted or received. If the LED is off, nothing is connected, or the connected device is switched off, or there is a problem with the connection (refer to Chapter 6 Troubleshooting). The port will automatically adjust to the correct speed and duplex.

6 WPS LED

Blue

WiFi Protected Setup (WPS) is a standard for easy and secure establishment of a wireless network, allowing wireless clients to connect securely to routers and access points. The WPS LED shows the status of the WPS function. It has a number of modes to help monitor the status of clients connecting to the Router using the WPS protocol. The status is shown by three different flashing rates: slow, medium and quick and when light constantly.

Note: The WPS function will be enabled for 2 minutes once WPS is enabled either by pressing the button or by starting the PIN mode via the web interface. This time will end before 2 minutes if a client has successfully connected. Only one client should be connected to the Router using WPS at any one time. Attempting to connect two or more clients at once may result in connection failures.

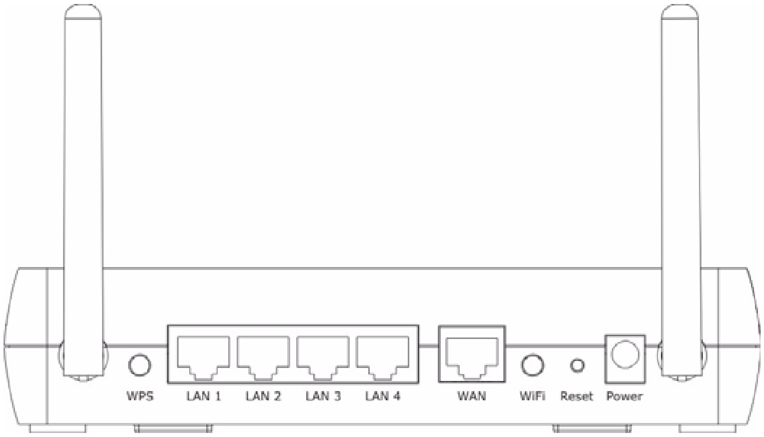
When the WPS button is pressed, or WPS is initiated using the PIN method in the web interface, the WPS LED will flash at a medium rate for up to 2 minutes to indicate that a WPS connection can be made. When a connection attempt is underway, the LED will flash slowly.

If the connection has been successful, the WPS LED will remain illuminated for 5 minutes. If the connection attempt has failed, the WPS LED will flash rapidly for 5 minutes. You can re-try the connection by pressing the WPS button, when the connection process will re-start.

If you want to add a further client to the Router, you do not need to wait for the 5 minute period to end. You can press the WPS button (or use the PIN method via the web interface) as soon as the first client is successfully connected.

The rear panel (Figure 4) of the Router contains one WPS button, four LAN ports, one WAN port, one WiFi on/off button, a reset button, and a power adapter socket.

Figure 4 Router - Rear Panel



1 Wireless Antenna

The antennas should be placed in a 'V' position when initially installed.

CAUTION: *Do not force the antennae beyond their mechanical stops. Rotating the antennae further may cause damage.*

2 WPS button

Press this button for 3 seconds when making WPS setup. Pushing the WPS button will automatically enable WPS. Then initiate the WPS procedure on the wireless NIC within two minutes. Refer to your wireless NIC's documentation on this procedure. The wireless NIC will then be securely added to your wireless network.

3 Ethernet Ports (4 ports)

Using suitable RJ-45 cables, you can connect your Router to a computer, or to any other piece of equipment that has an Ethernet connection (for example, a hub or a switch). These ports have an automatic MDI/MDIX feature, which means either straight-through or a crossover cable can be used.

4 **WAN Port**

RJ-45 port used to connect the Router with Cable/DSL modem.

5 **WiFi On/Off button**

Use this button to turn on/turn off the wireless function. Press the button for 3 seconds.

6 **Reset Button**

If you want to reset your Router to factory default settings, or cannot access the web management interface (for example, due to a lost password), then you may use this button. Refer to Forgotten Password and Reset to Factory Defaults on page 127 for further details.

7 **Power Adapter Socket**

Only use the power adapter that is supplied with this Router. Do not use any other adapter.

2 INSTALLING THE ROUTER

Introduction

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

- Connecting the Router to the Internet.
- Connecting the Router to your network.
- Setting up your computers for networking with the Router.

Safety Information

Please note the following:

WARNING: *Please read the Safety Information section in Appendix C before you start.*

VORSICHT: *Bitte lesen Sie den Abschnitt Wichtige Sicherheitshinweise sorgfältig durch, bevor Sie das Gerät einschalten.*

AVERTISSEMENT: *Veuillez lire attentivement la section Consignes importantes de sécurité avant de mettre en route.*

Positioning the Router

You should place the Router in a location that:

- is conveniently located for connection to external ADSL or Cable modem.
- is centrally located to the wireless computers that will connect to the Router. A suitable location might be on top of a high shelf or similar furniture to optimize wireless connections to computers in both horizontal and vertical directions, allowing wider coverage.
- allows convenient connection to the computers that will be connected to the four LAN ports on the rear panel, if desired.
- allows easy viewing of the LED indicator lights, and access to the rear panel connectors, if necessary.

When positioning your Router, ensure:

- It is out of direct sunlight and away from sources of heat.
- Cabling is away from power lines, fluorescent lighting fixtures, and sources of electrical noise such as radios, transmitters and broadband amplifiers.
- Water or moisture cannot enter the case of the unit.
- Air flow around the unit and through the vents in the side of the case is not restricted. 3Com recommends you provide a minimum of 25 mm (1 in.) clearance.

Using the Rubber Feet

Use the four self-adhesive rubber feet to prevent your Router from moving around on your desk or when stacking with flat top units. Only stick the feet to the marked areas at each corner of the underside of your Router.

Please be careful when you put 3COM Router on top of another unit, if the unit underneath is hot, this may impact the reliability of 3Com Router.

Wall Mounting

There are two slots on the underside of the Router that can be used for wall mounting. The Router must be mounted with the LEDs facing upwards.

When wall mounting the unit, ensure it is within reach of the power outlet. When wall mounting the unit, ensure that the rubber feet are not fixed.

Mounting Instructions for Cement Walls

To wall mount the unit:

1. Make two holes 100 mm (3.9 in.) apart and insert two nylon or similar screw anchors that are suitable for the wall construction.
2. Fix two suitable screws into the anchors, leaving their heads 3 mm (0.12 in.) clear of the wall surface. The screws should be at least 30 mm (1.2 in.) long.
3. Remove any connections in the Router and locate it over the screw heads. When in line, gently push the Router on to the wall and move it downwards to secure.

Mounting Instructions for Wood Walls

To wall mount the unit:

1. Make two holes 100 mm (3.9 in.) apart.
2. Fix two suitable screws directly into the wall, leaving their heads 3 mm (0.12 in.) clear of the wall surface. The screws should be at least 20 mm (0.75 in.) long.
3. Remove any connections in the Router and locate it over the screw heads. When in line, gently push the Router on to the wall and move it downwards to secure.

***CAUTION**: When making connections, be careful not to push the Router up and off the wall.*

Powering Up the Router

To power up the Router:

1. Plug the power adapter into the power adapter socket located on the back panel of the Router.
2. Plug the power adapter into a standard electrical wall socket.

Connecting the Router

To install your Router, simply connect it to your DSL/Cable modem, and then connect the Router to a computer in order to be able to access the Internet. Follow these simple steps:

1. Using RJ-45 cable to connect the WAN port of the Router with the DSL/Cable modem.
2. Using RJ-45 cable to connect one PC with the LAN port the Router.

You have now completed the hardware installation of your Router. Next you need to set up your computers so that they can make use of the Router to communicate with the Internet.

3Com recommends that you perform the initial Router configuration from a computer that is directly connected to one of the LAN ports.

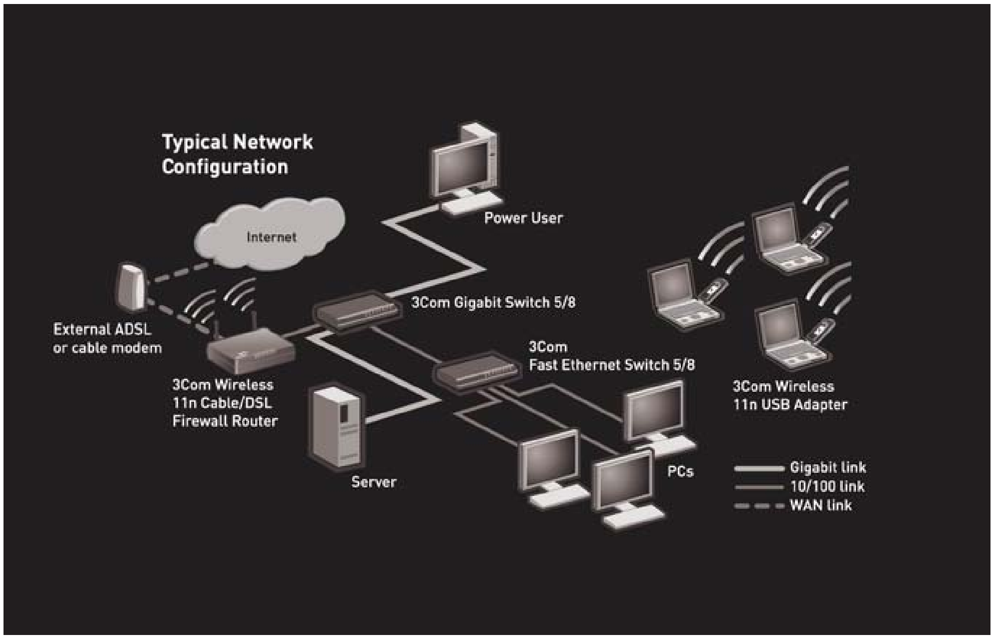
If you configure the Router from a wireless computer, note that you may lose contact with the Router if you change the wireless configuration.

To communicate wirelessly with your Router, your wireless NIC should be set as follows:

- Encryption — none
- SSID — 3Com
- Channel — 11

This following figure shows a typical network configuration for 3Com Wireless 11n Cable/DSL Firewall Router.

Figure 5 Network Configuration for the Router


Typical Network Configuration
Internet
Power User
External ADSL or cable modem
3Com Gigabit Switch 5/8
3Com Fast Ethernet Switch 5/8
3Com Wireless 11n Cable/DSL Firewall Router
3Com Wireless 11n USB Adapter
Server
PCs
Gigabit link
10/100 link
WAN link

3 SETTING UP YOUR COMPUTERS

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.

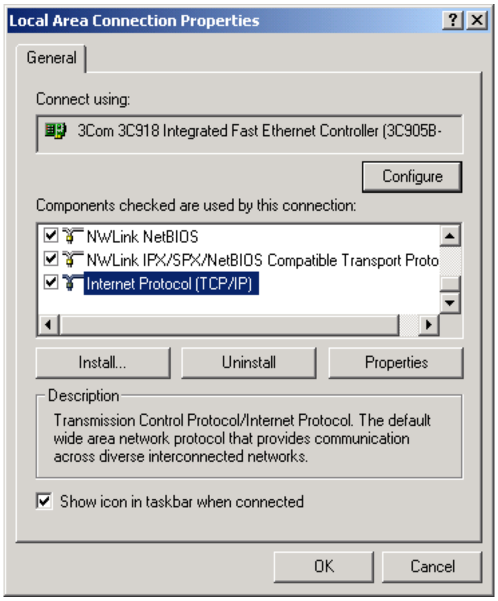
Obtaining an IP Address Automatically

Windows 2000

If you are using a Windows 2000-based computer, use the following procedure to change your TCP/IP settings:

1. From the Windows *Start* Menu, select *Settings* > *Control Panel*.
2. Double click on *Network and Dial-Up Connections*.
3. Double click on *Local Area Connection*.
4. Click on *Properties*.
5. A screen similar to Figure 6 should be displayed. Select *Internet Protocol TCP/IP* and click on *Properties*.

Figure 6 Local Area Properties Screen



Local Area Connection Properties

General

Connect using:

3Com 3C918 Integrated Fast Ethernet Controller (3C905B-

Configure

Components checked are used by this connection:

☑ NWLink NetBIOS
☑ NWLink IPX/SPX/NetBIOS Compatible Transport Proto
☑ Internet Protocol (TCP/IP)

Install... Uninstall Properties

Description

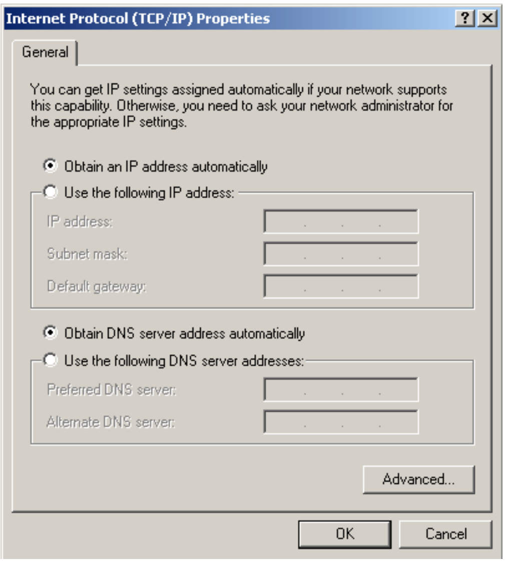
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

☑ Show icon in taskbar when connected

OK Cancel

6 Ensure that the options *Obtain an IP address automatically*, and *Obtain DNS server address automatically* are both selected as shown in Figure 7. Click *OK*.

Figure 7 Internet Protocol (TCP/IP) Properties Screen



Internet Protocol (TCP/IP) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically
○ Use the following IP address:

IP address: . . .
Subnet mask: . . .
Default gateway: . . .

● Obtain DNS server address automatically
○ Use the following DNS server addresses:

Preferred DNS server: . . .
Alternate DNS server: . . .

Advanced...

OK Cancel

7 Restart your computer.

Windows Vista

1 From the Windows Start Menu, select *Settings* > *Network*.

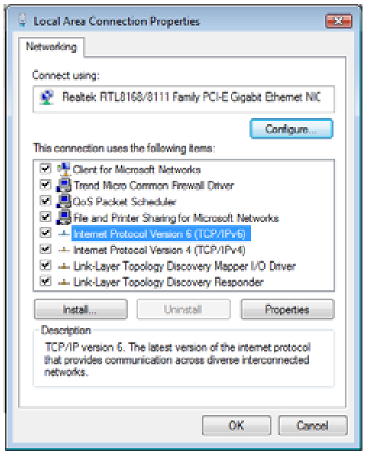
2 Click on *Organize*. Select *Properties*.

3 Click on *Manage network* > *Connections*.

4 Double click *Local Area Connection*. Select *Properties* and click *continue*.

5 A screen similar to (Figure 8) should appear. Select Internet Protocol Version 6,Version 4 (TCP/IPv6,v4) and click on *Properties*.

Figure 8 Local Area Connection Properties Screen



Local Area Connection Properties

Connect using:

Realtek RTL8168/8111 Family PCI-E Gigabit Ethernet NIC

This connection uses the following items:

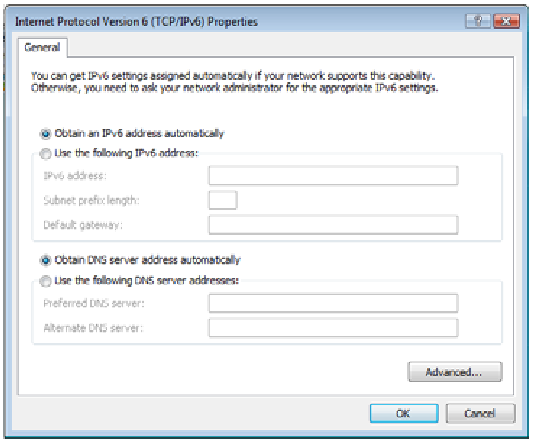
☑ Client for Microsoft Networks
☑ Trend Micro Common Firewall Driver
☑ QoS Packet Scheduler
☑ File and Printer Sharing for Microsoft Networks
☑ Internet Protocol Version 6 (TCP/IPv6)
☑ Internet Protocol Version 4 (TCP/IPv4)
☑ Link-Layer Topology Discovery Mapper I/O Driver
☑ Link-Layer Topology Discovery Responder

Description

TCP/IP version 6. The latest version of the internet protocol that provides communication across diverse interconnected networks.

6 Ensure that the options Obtain an IPv6,v4 address automatically, and Obtain DNS servers address automatically are both selected as shown in (Figure 9). Click OK.

Figure 9 Internet Protocol Version 6 (TCP/IPv6) Properties Screen



Internet Protocol Version 6 (TCP/IPv6) Properties

You can get IPv6 settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IPv6 settings.

● Obtain an IPv6 address automatically
○ Use the following IPv6 address:

IPv6 address:
Subnet prefix length:
Default gateway:

● Obtain DNS server address automatically
○ Use the following DNS server addresses:

Preferred DNS server:
Alternate DNS server:

Windows XP

1. From the Windows *Start* Menu, select *Control Panel*.
2. Click on *Network and Internet Connections*.
3. Click on the *Network Connections* icon.
4. Double click on *LAN* or *High Speed Connection* icon. A screen titled *Local Area Connection Status* will appear.
5. Select *Internet Protocol TCP/IP* and click on *Properties*.
6. Ensure that the options *Obtain an IP address automatically*, and *Obtain DNS servers automatically* are both selected. Click *OK*.
7. Restart your computer.

Macintosh

If you are using a Macintosh computer, use the following procedure to change your TCP/IP settings:

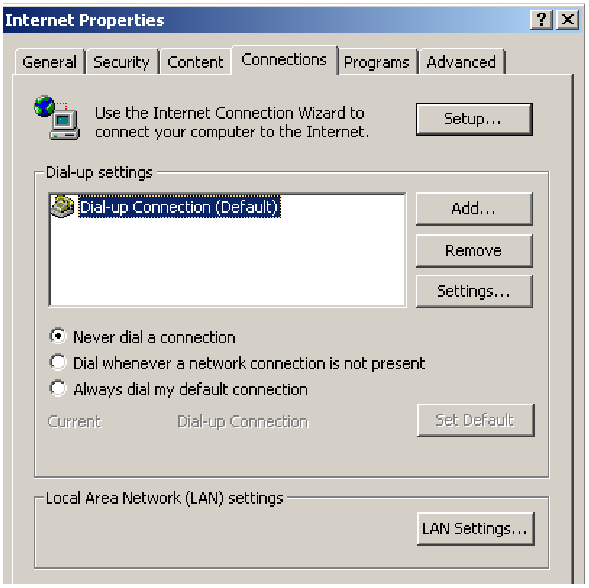
1. From the desktop, select *Apple Menu*, *Control Panels*, and *TCP/IP.*
2. In the *TCP/IP* control panel, set *Connect Via:* to *Ethernet*.
3. In the TCP/IP control panel, set *Configure:* to *Using DHCP Server.*
4. Close the *TCP/IP* dialog box, and save your changes.
5. Restart your computer.

Disabling PPPoE and PPTP Client Software

If you have PPPoE client software installed on your computer, you will need to disable it. To do this:

1. From the Windows *Start* Menu, select *Settings* > *Control Panel*.
2. Double click on *Internet* Options.
3. Select the *Connections* Tab. A screen similar to Figure 10 should be displayed.
4. Select the *Never dial a connection* option.

Figure 10 Internet Properties Screen



Use the Internet Connection Wizard to connect your computer to the Internet.

Dial-up Connection (Default)

● Never dial a connection

○ Dial whenever a network connection is not present

○ Always dial my default connection

Current Dial-up Connection

You may want to remove the PPPoE client software from your computer to free resources, as it is not required for use with the Router.

Disabling Web Proxy

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 *LAN Settings* at the bottom. Make sure that the *Use Proxy Server* option is unchecked.

4 RUNNING THE SETUP WIZARD

Accessing the Router using the 3Com Detect Application

The 3Com Detect application works by automatically locating your Router, establishing what IP address it is using and then launching your default web browser to connect directly to it.

The application will only locate your Router if it is on the same subnet as the PC on which the application is running. It will not be able to locate your Router if there is another router between your PC and the Router. Note that the 3Com Detect application is ***only*** *designed to run on Windows operating systems.*

Running the 3Com Detect Application

The CD-ROM that comes with this Router contains, in addition to the documentation, the 3Com Detect Application.

To use 3Com Detect to connect to the Web interface of your Router, do the following:

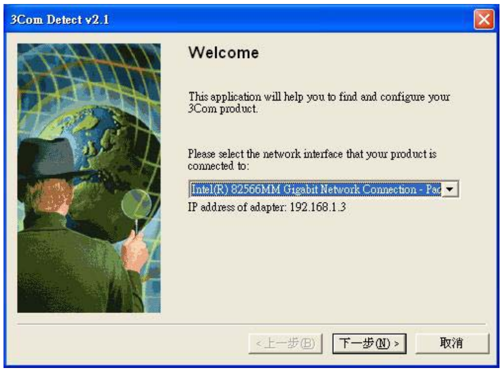
On the computer that is connected to your Router (either directly or on a network that is on the same subnet), insert the CD-ROM into its CD drive. If you have autorun enabled, you will be presented with a menu showing the contents of the CD-ROM. Select the 3Com Detect Application link to install the utility. Follow the onscreen instructions.

If the auto-run program does not start, you should browse to your CD-ROM drive, go to the /3Com detect directory and double click on setup.exe. Follow the prompts that will take you through the installation process.

Once installed, the 3Com Detect Application can be accessed from the Windows Start/Programs list.

When the 3Com Detect application starts, you will see the Welcome Screen, see Figure 11.

Figure 11 3Com Detect Application



3Com Detect v2.1

Welcome

This application will help you to find and configure your 3Com product.

Please select the network interface that your product is connected to:

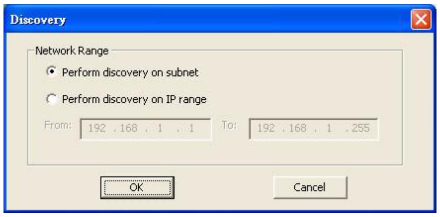
Intel(R) 82566MM Gigabit Network Connection - Pac

IP address of adapter: 192.168.1.3

If the computer has multiple network adapters, select the adapter that connects the computer to the network or the Router, click *Next*.

You will then be offered the choice of searching the same subnet that your PC is on for a connected Router (default), or specifying an IP range. Note that specifying a large range may take some time for the search to complete. (see Figure 12 and Figure 13)

Figure 12 Discovery Screen - search the same subnet



Discovery

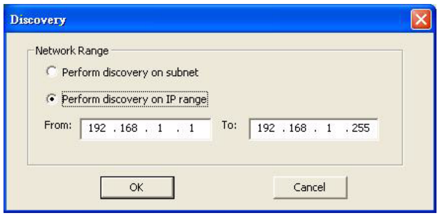
Network Range

● Perform discovery on subnet

○ Perform discovery on IP range

From: 192 . 168 . 1 . 1 To: 192 . 168 . 1 . 255

Figure 13 Discovery Screen - search IP range



Discovery

Network Range

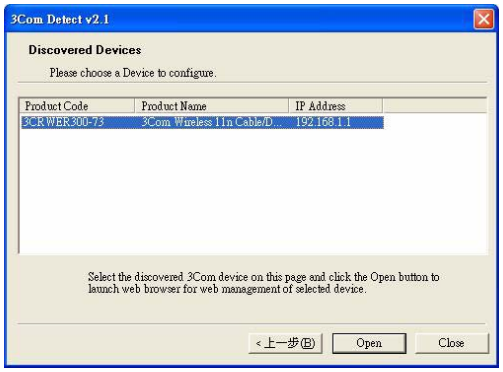
○ Perform discovery on subnet

● Perform discovery on IP range

From: 192 . 168 . 1 . 1 To: 192 . 168 . 1 . 255

Once your Router has been located, you will see the list (see Figure 14). Select the Router to which you want to connect and click *Open*. Your default Web browser will launch and connect to the home page of the Router, (see Figure 16)

Figure 14 Router List Screen



Discovered Devices

Please choose a Device to configure.

Product Code	Product Name	IP Address
3CRWER300-73	3Com Wireless 11n Cable/D...	192.168.1.1

Select the discovered 3Com device on this page and click the Open button to launch web browser for web management of selected device.

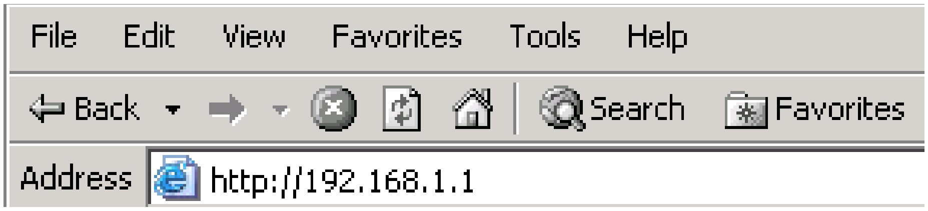
Accessing the Setup Wizard

The Router setup program is Web-based, which means that it is accessed through your Web browser (Netscape Navigator 4.7 or higher, Internet Explorer 6.0 or higher, Mozilla 1.2.1 or higher, or Apple's Safari).

To use the Setup Wizard:

1. Ensure that you have at least one computer connected to the Router. Refer to Chapter 2 for details on how to do this.
2. Launch your Web browser on the computer.
3. Enter the following URL in the location or address field of your browser: **`http://192.168.1.1`** (Figure 15). The Login screen displays.

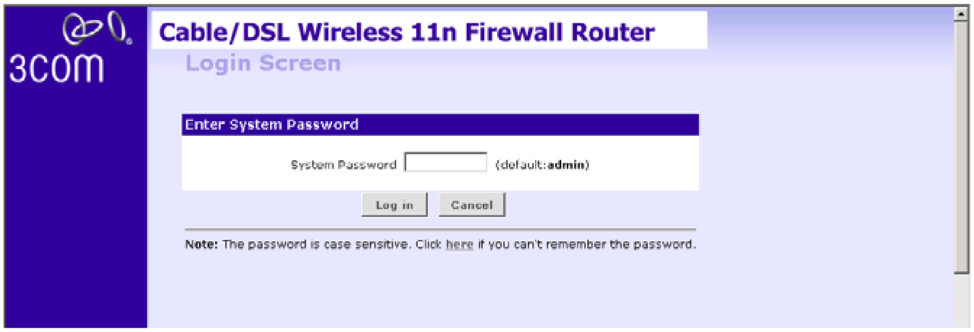
Figure 15 Web Browser Location Field (Factory Default)



Address http://192.168.1.1

4 To log in as an administrator, enter the password (the default password is *admin*) in the *System Password* field and click *Log in* (see Figure 16).

Figure 16 Router Login Screen



Cable/DSL Wireless 11n Firewall Router

Login Screen

Enter System Password

System Password (default:admin)

Note: The password is case sensitive. Click here if you can't remember the password.

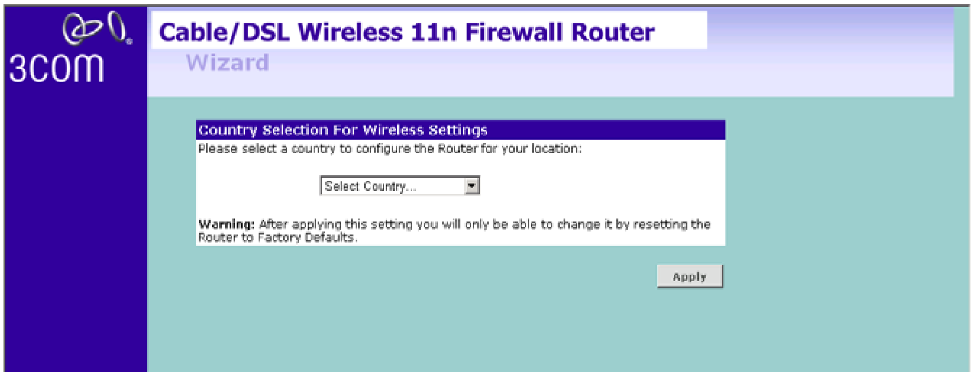
5 When you have logged in,

- if you are logging in for the first time, the Country Selection screen will appear (see Figure 17). Please select the country form the drop-down menu, and click *Apply*.

1. To comply with US FCC regulations, operation for any country is limited to channels from 1 to 11.

2. Customers outside of the US, Canada or Taiwan can download the firmware from the 3Com website (www.3com.com) which will enable operation on channels 12-13. You will be asked to verify your country before you can download the firmware what will enable the wider range of channels to be used.

Figure 17 Country Selection Screen



Cable/DSL Wireless 11n Firewall Router

Wizard

Country Selection For Wireless Settings

Please select a country to configure the Router for your location:

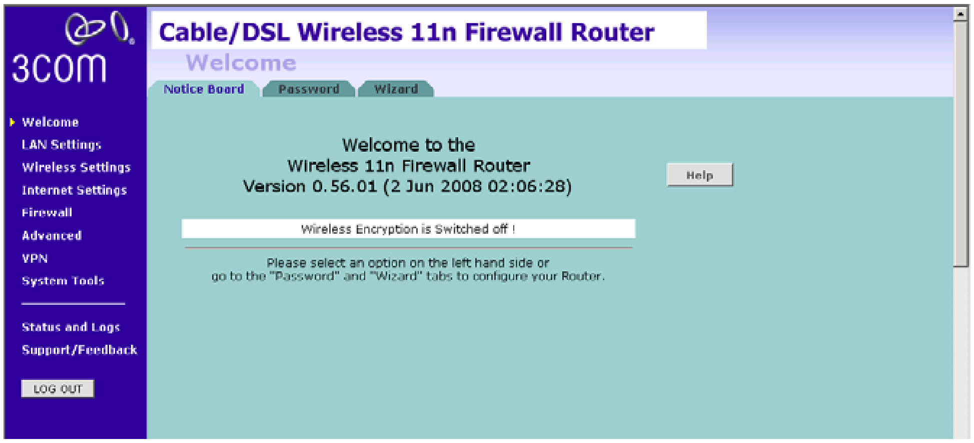
Select Country...

Warning: After applying this setting you will only be able to change it by resetting the Router to Factory Defaults.

The Wizard will then launch automatically (refer to Figure 20). You will be guided step by step through a basic setup procedure.

- if the Router has been configured previously, the *Welcome* screen will appear (Figure 18). There are three tabs: Notice Board, Password and Wizard.

Figure 18 Welcome Screen



Welcome to the
Wireless 11n Firewall Router
Version 0.56.01 (2 Jun 2008 02:06:28)

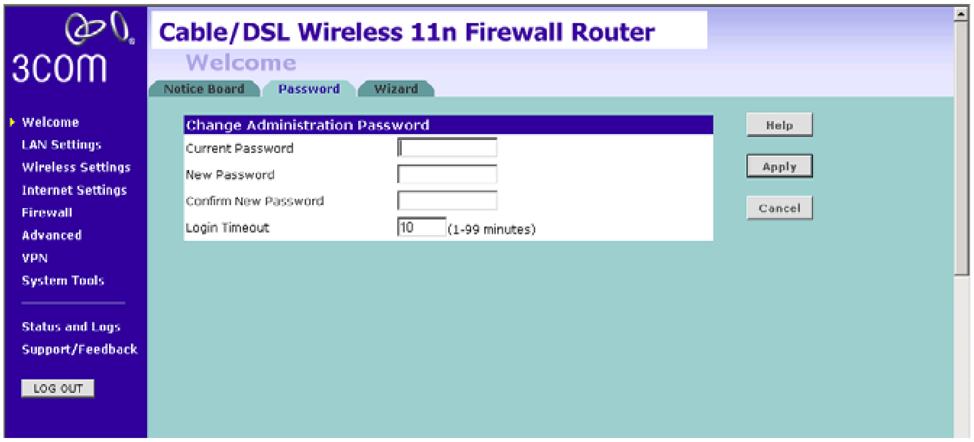
Wireless Encryption is Switched off !

Please select an option on the left hand side or
go to the "Password" and "Wizard" tabs to configure your Router.

- Go to the *Notice Board* tab to see the current software information. To view the Web help, click the *Help* button.
- Go to the *Password* tab to change the password (Figure 19).
- Go to the *Wizard* tab to do a quick setup of the Router (Figure 20).

The password screen allows you to change the current password and set the login time limit to the Router’s management interface.

Figure 19 Password Screen



Change Administration Password

Current Password

New Password

Confirm New Password

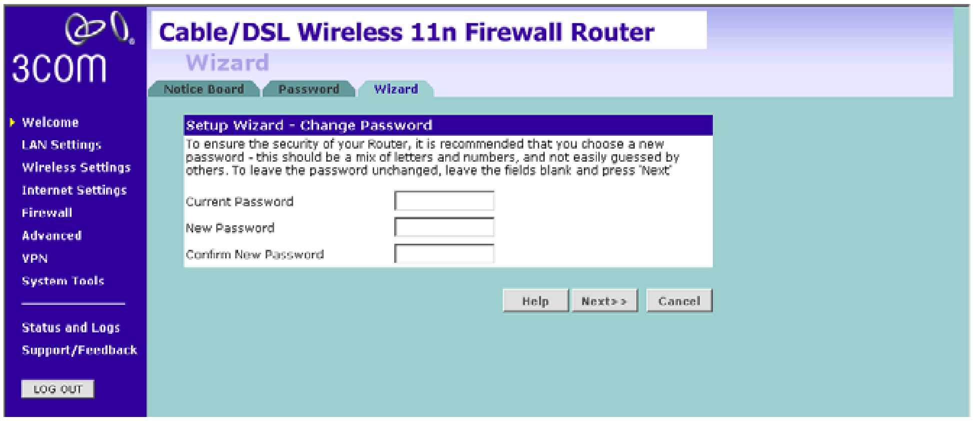
Login Timeout 10 (1-99 minutes)

1. To change the current password, enter the password in the *Current Password* field.
2. Enter the new password in the *New Password* field, and enter it again in the *Confirm New Password* field.
3. Enter the time period in *Login Timeout* to set a maximum period of time for which the login session is maintained during inactivity (Default: 10 minutes).

Wizard - Change Password

To ensure the security of your Router, it is recommended that you choose a new password - this should be a mix of letters and numbers, and not easily guessed by others. To leave the current password unchanged, leave the fields blank and click *Next*.

Figure 20 Change Password Screen



Setup Wizard - Change Password

To ensure the security of your Router, it is recommended that you choose a new password - this should be a mix of letters and numbers, and not easily guessed by others. To leave the password unchanged, leave the fields blank and press 'Next'

Current Password

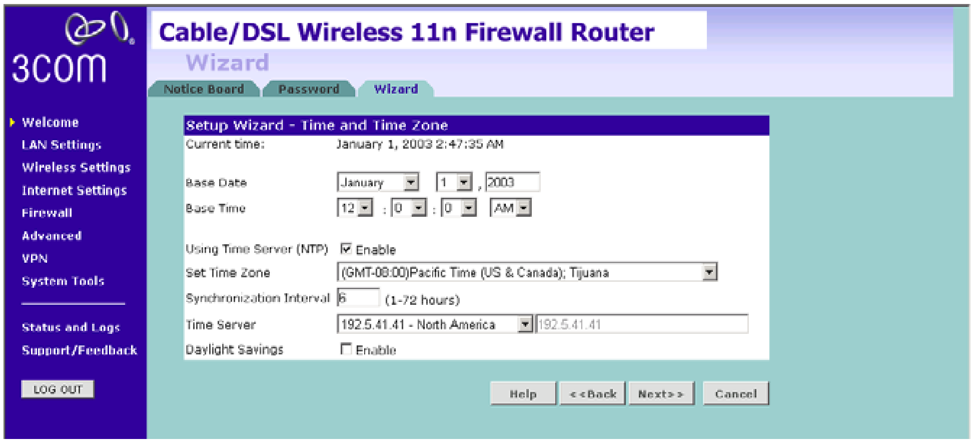
New Password

Confirm New Password

Wizard - Time and Time Zone

The *Time and Time Zone* screen allows you to set up the time for the Router.

Figure 21 Time and Time Zone Screen



Setup Wizard - Time and Time Zone

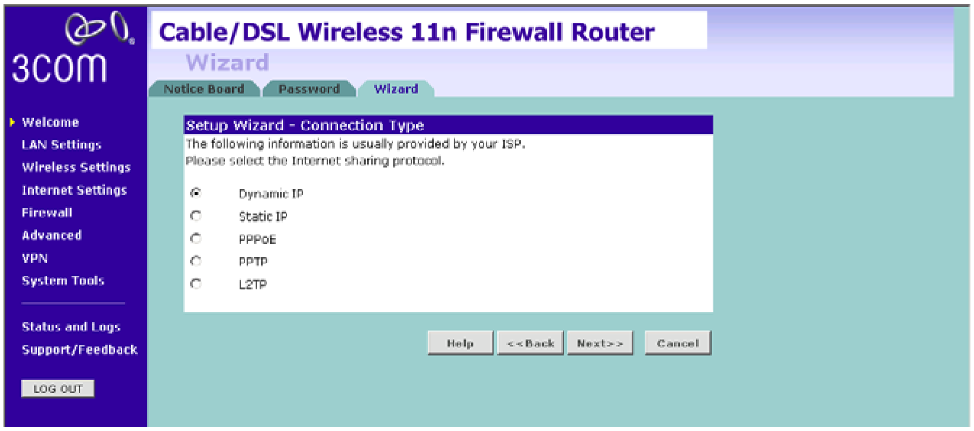
Current time:	January 1, 2003 2:47:35 AM
Base Date	January , 1 , 2003
Base Time	12 : 0 : 0 AM
Using Time Server (NTP)	☑ Enable
Set Time Zone	(GMT-08:00)Pacific Time (US & Canada); Tijuana
Synchronization Interval	6 (1-72 hours)
Time Server	192.5.41.41 - North America 192.5.41.41
Daylight Savings	□ Enable

1. Select the correct base date and time.
2. If you want to automatically synchronize the Router with a public time server, check the *Enable* box in the *Using Time Server (NTP)* field.
3. Select the time zone in the *Set Time Zone* drop-down menu.
4. Enter the time in the *Synchronization Interval* field.
5. Select the desired servers from the *Time Server* drop-down menu.
6. Check the *Enable* box in the *Daylight Savings* field, if daylight savings applies to your area.
7. Click *Next*.

Wizard - Connection Type

The *Connection Type* screen allows you to set up the Router for the type of Internet connection you have. Before setting up your connection type, have your account information from your ISP ready.

Figure 22 Connection Type Screen



Setup Wizard - Connection Type

The following information is usually provided by your ISP.
Please select the Internet sharing protocol.

● Dynamic IP
○ Static IP
○ PPPoE
○ PPTP
○ L2TP

Select a mode from the following:

- *Dynamic IP* — Using DHCP function, see page 37
- *Static IP* — Using fixed IP, see page 38
- *PPPoE* — PPP over Ethernet, providing routing for multiple PCs, see page 39
- *PPTP* — Point-to-Point Tunneling Protocol, see page 40
- *L2TP* — Layer 2 Tunneling Protocol, see page 41

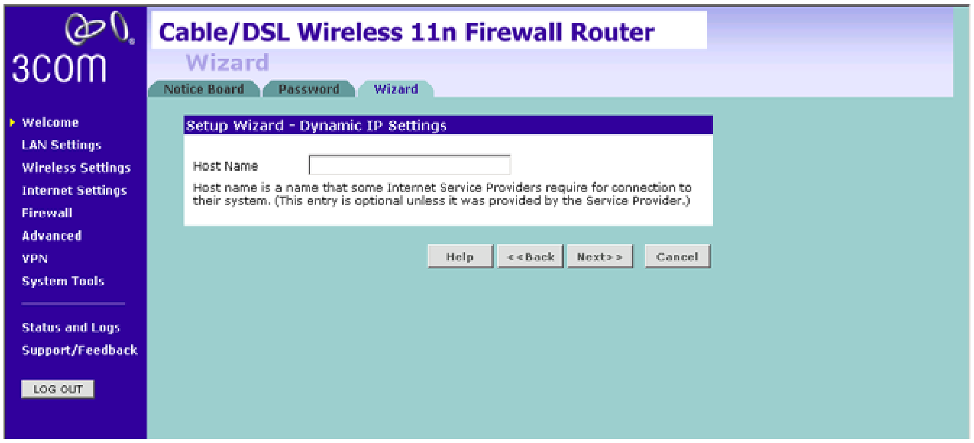
and click *Next*.

For further information on selecting a mode see Internet Settings on page 73.

Dynamic IP

This mode is often used in cable connection when the ISP assigns IP address via DHCP. To set up the Router for use with a dynamic IP connection, use the following procedure:

Figure 23 Host Name Screen



Setup Wizard - Dynamic IP Settings

Host Name

Host name is a name that some Internet Service Providers require for connection to their system. (This entry is optional unless it was provided by the Service Provider.)

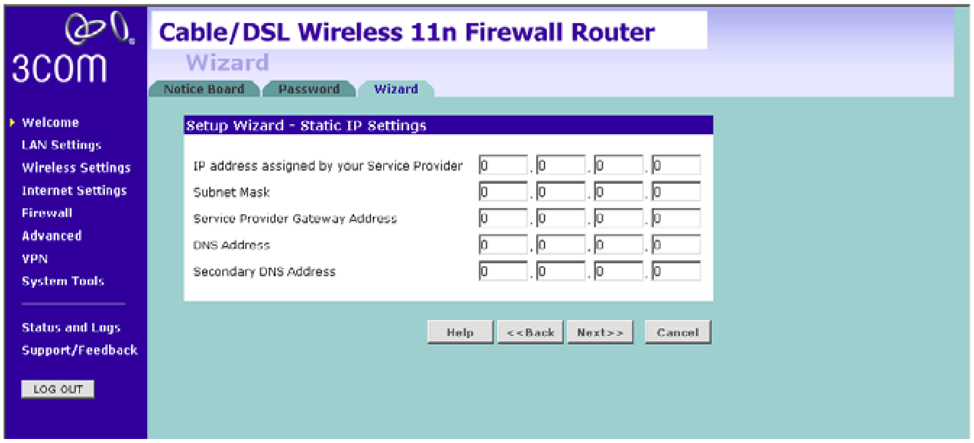
1 Host name is a name that some Internet Service Providers require for connection to their system. This entry is optional, your Internet Service Provider should provide this information.

2 Check all of your settings, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 28).

Static IP

Use this option when you have a static IP assigned by your service provider. To set up the Router for use with a static IP connection, use the following procedure:

Figure 24 Static IP Screen



Setup Wizard - Static IP Settings

IP address assigned by your Service Provider 0 . 0 . 0 . 0

Subnet Mask 0 . 0 . 0 . 0

Service Provider Gateway Address 0 . 0 . 0 . 0

DNS Address 0 . 0 . 0 . 0

Secondary DNS Address 0 . 0 . 0 . 0

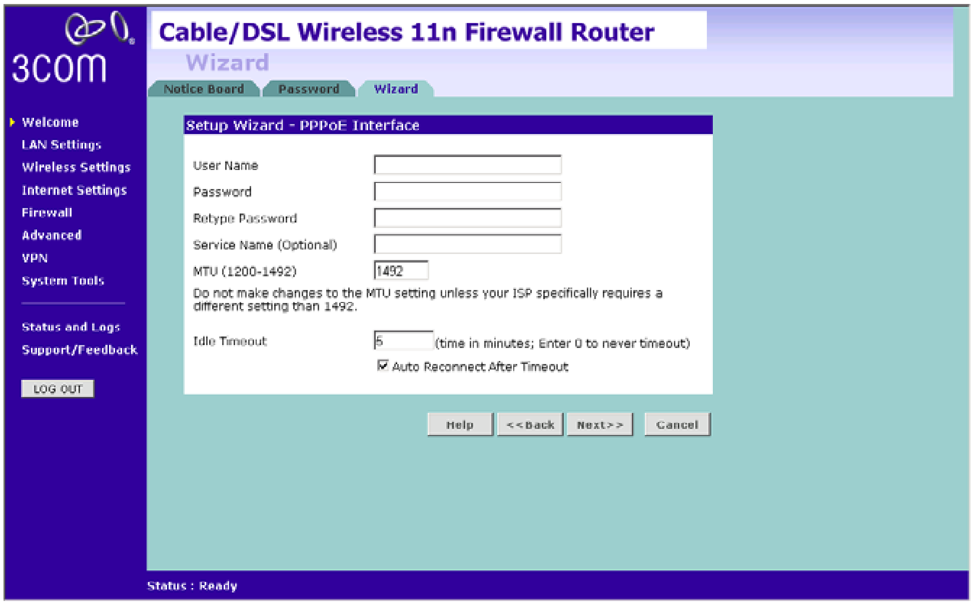
To assign a fixed IP address:

1. Enter your Internet IP address in the *IP address assigned by your Service Provider* field.
2. Enter the subnet mask in the *Subnet Mask* field.
3. Enter the default gateway IP address in the *Service Provider Gateway Address* field.
4. Enter the DNS address in the *DNS Address* field.
5. If there is a secondary DNS, enter the IP address in the *Secondary DNS Address* field.
6. Check all of your settings, and then click *Next*.
   The LAN Settings screen will then be displayed (refer to Figure 28).

PPPoE Mode

PPPoE is often used for DSL connection. To set up the Router for use with a PPPoE (PPP over Ethernet) connection, use the following procedure:

Figure 25 PPPoE Screen



Setup Wizard - PPPoE Interface

User Name	
Password	
Retype Password	
Service Name (Optional)	
MTU (1200-1492)	1492

Do not make changes to the MTU setting unless your ISP specifically requires a different setting than 1492.

Idle Timeout	5 (time in minutes; Enter 0 to never timeout)
	☑ Auto Reconnect After Timeout

1 Enter your user name in the *Username* field.

2 Enter your password in the *Password* field.

3 Re-type your password in the *Retype Password* field.

4 The *Service Name* field is optional, enter this information if your ISP requires it.

5 Enter the MTU information, the default is 1492. Do not change the MTU value unless specifically instructed by your ISP.

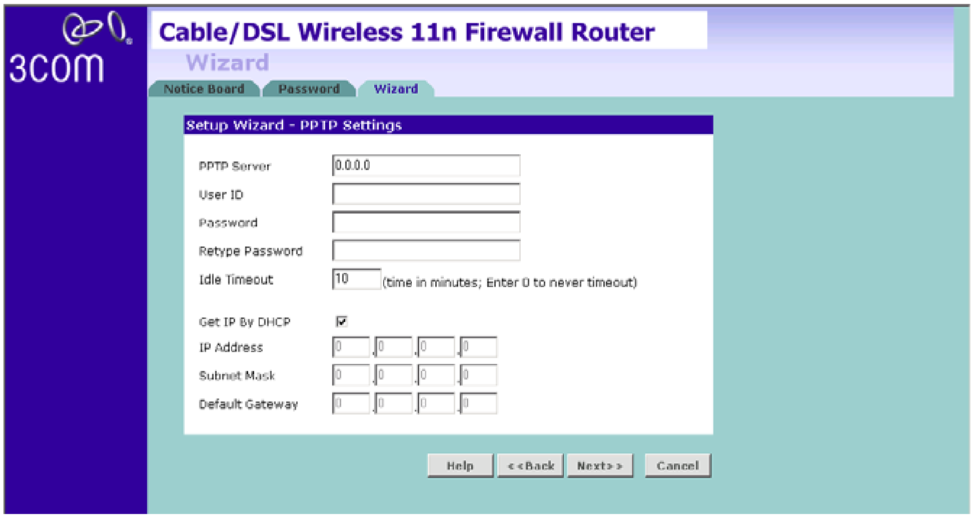
6 Enter the maximum Idle Timeout for the Internet connection. After this time has been exceeded the connection will be terminated. Check the *Auto Reconnect After Timeout* box to automatically re-establish the connection as soon as you attempt to access the Internet again.

7 Check all of your settings, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 28).

PPTP Mode

This mode allows a single computer to obtain the ISP assigned IP address via a PPTP Virtual Private Network connection (VPN). To set up the Router for use with a PPTP (Point to Point Tunneling Protocol) connection, use the following procedure:

Figure 26 PPTP Screen



Setup Wizard - PPTP Settings

PPTP Server: 0.0.0.0
User ID:
Password:
Retype Password:
Idle Timeout: 10 (time in minutes; Enter 0 to never timeout)

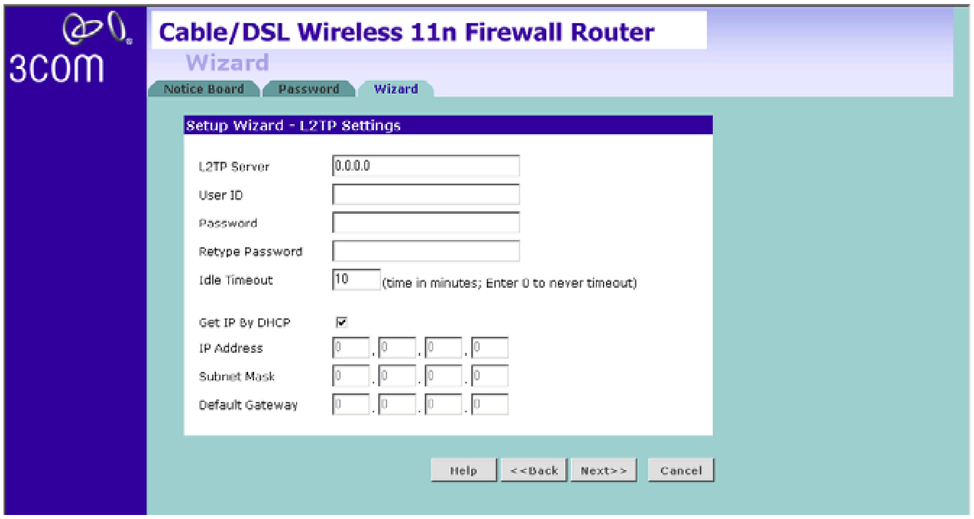
Get IP By DHCP: ☑
IP Address: 0 . 0 . 0 . 0
Subnet Mask: 0 . 0 . 0 . 0
Default Gateway: 0 . 0 . 0 . 0

1. Enter the *PPTP Server* information.
2. Enter the User ID and Password required by your ISP.
3. Retype the password.
4. Enter the maximum *Idle Timeout* for the Internet connection. After this time has been exceeded the connection will be terminated.
5. Check the *Get IP By DHCP* box to receive IP address from your ISPs' DHCP function. If this box is not checked, enter the IP address, Subnet mask, and Default Gateway information on the corresponding fields.
6. Check all of your settings, and then click *Next*.
   The LAN Settings screen will then be displayed (refer to Figure 28).

L2TP mode

The Layer Two Tunneling Protocol (L2TP) provides a standard method for transporting the link layer of the Point-to-Point Protocol (PPP) between a dial-up server and a Network Access Server, using a network connection in lieu of a physical point-to-point connection. This mode is most often used in Israel. To set up the Router for use with a L2TP (Layer 2 Tunneling Protocol) connection, use the following procedure:

Figure 27 L2TP Screen



Setup Wizard - L2TP Settings

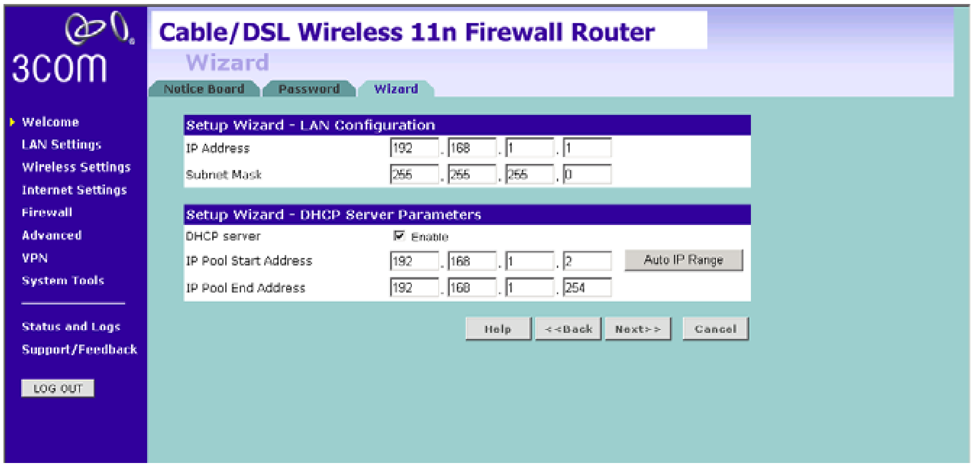
L2TP Server	0.0.0.0
User ID	
Password	
Retype Password	
Idle Timeout	10 (time in minutes; Enter 0 to never timeout)
Get IP By DHCP	☑
IP Address	0 . 0 . 0 . 0
Subnet Mask	0 . 0 . 0 . 0
Default Gateway	0 . 0 . 0 . 0

1. Enter the *L2TP Server* information.
2. Enter the User ID and Password required by your ISP.
3. Retype the password.
4. Enter the maximum *Idle Timeout* for the Internet connection. After this time has been exceeded the connection will be terminated.
5. Check the *Get IP By DHCP* box to receive IP address from your ISP's DHCP function. If this box is not checked, enter the IP address, Subnet mask, and Default Gateway information on the corresponding fields.
6. Check all of your settings, and then click *Next*.
   The LAN Settings screen will then be displayed (refer to Figure 28).

Setup Wizard - LAN Settings

The LAN Settings screen allows you to set the default IP address and DHCP client IP range for the Router.

Figure 28 The LAN Settings Screen



Setup Wizard - LAN Configuration

IP Address	192 . 168 . 1 . 1
Subnet Mask	255 . 255 . 255 . 0

Setup Wizard - DHCP Server Parameters

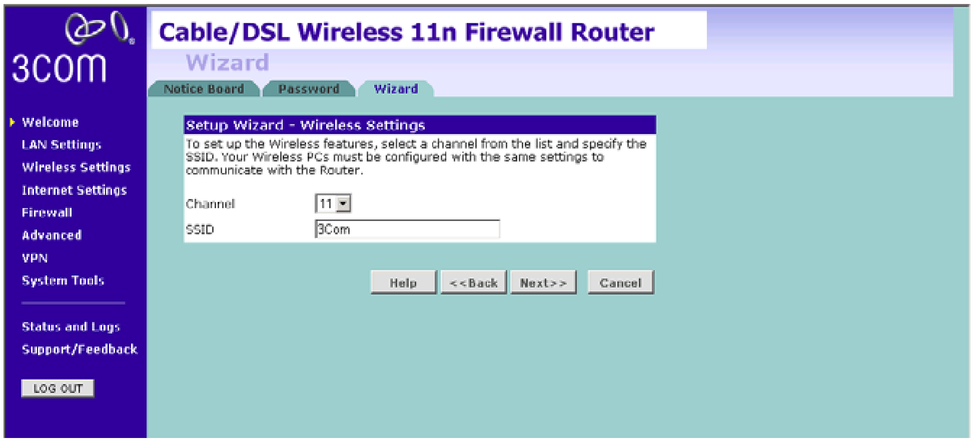
DHCP server	☑ Enable
IP Pool Start Address	192 . 168 . 1 . 2
IP Pool End Address	192 . 168 . 1 . 254

1. To change the Router's default IP address, enter the new IP address in the *IP Address* field, and then enter the subnet mask in the *Subnet Mask* field.
2. Check the *Enable DHCP Server* box to enable the DHCP function.
3. Enter the client IP address range in the *IP Pool Start Address* and *IP Pool End Address* fields. You can also click *Auto IP Range* to automatically set the starting and ending IP address: 192.168.1.2 ~ 192.168.1.254.
4. Click *Next*. The Wireless Settings screen will appear (refer to Figure 29).

Wizard - Wireless Setting

The Wireless Settings screen allows you to set up the SSID and radio channel used for the wireless connection.

Figure 29 Wireless Setting Screen



Setup Wizard - Wireless Settings

To set up the Wireless features, select a channel from the list and specify the SSID. Your Wireless PCs must be configured with the same settings to communicate with the Router.

Channel 11

SSID 3Com

1 Select the channel you want to use from the *Channel* drop-down menu.

2 Specify the SSID to be used by your wireless network in the *SSID* field. If there are other wireless networks in your area, you should give your wireless network an unique name.

For advanced settings, please click *Wireless Settings* on the left Menu bar after completing this Setup Wizard setting.

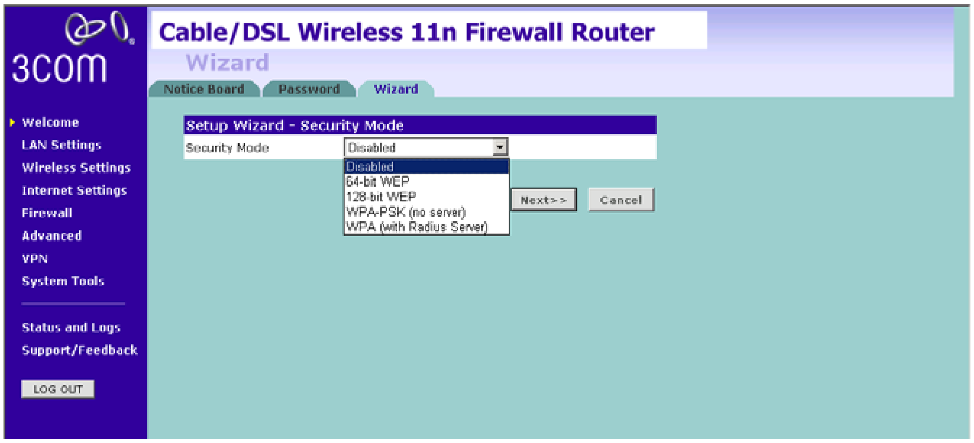
3 Click *Next*.

Security Mode

Select the security mode, five options available:

- Disabled: selecting this mode means no wireless security will be used.
- 64-bit WEP : see page 45
- 128-bit WEP: see page 46
- WPA-PSK (no server): see page 47
- WPA (with Radius server): see page 48

Figure 30 Security Mode Screen



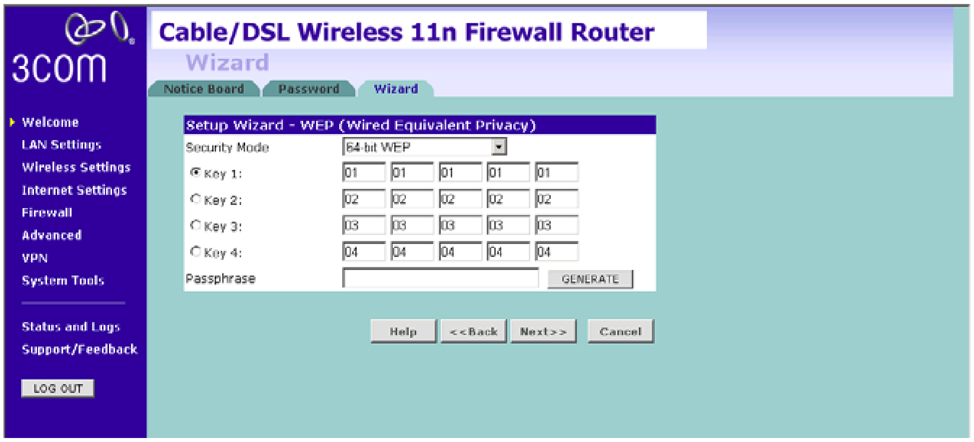
Setup Wizard - Security Mode

Security Mode: Disabled

Wireless Security: 64-bit WEP

WEP is the basic mechanism to transmit your data securely over the wireless network. Matching encryption keys must be setup on your Router and wireless client devices to use WEP. 3Com recommends to use stronger WPA/WPA2 security.

Figure 31 64-bit WEP Screen



Setup Wizard - WEP (Wired Equivalent Privacy)

Security Mode	64-bit WEP				
● Key 1:	01	01	01	01	01
○ Key 2:	02	02	02	02	02
○ Key 3:	03	03	03	03	03
○ Key 4:	04	04	04	04	04
Passphrase					

To enable 64-bit WEP:

1 You can enter the 64-bit WEP key manually. Enter the WEP key as 5 pairs of hex digits (0-9, A-F). Or you can generate the 64-bit WEP key automatically. Enter a memorable passphrase in the Passphrase box, and then click *Generate* to generate the hex keys from the passphrase.

For 64-bit WEP, you can enter up to four keys, in the fields Key 1 to Key 4. The radio button on the left hand side selects the key that is used in transmitting data.

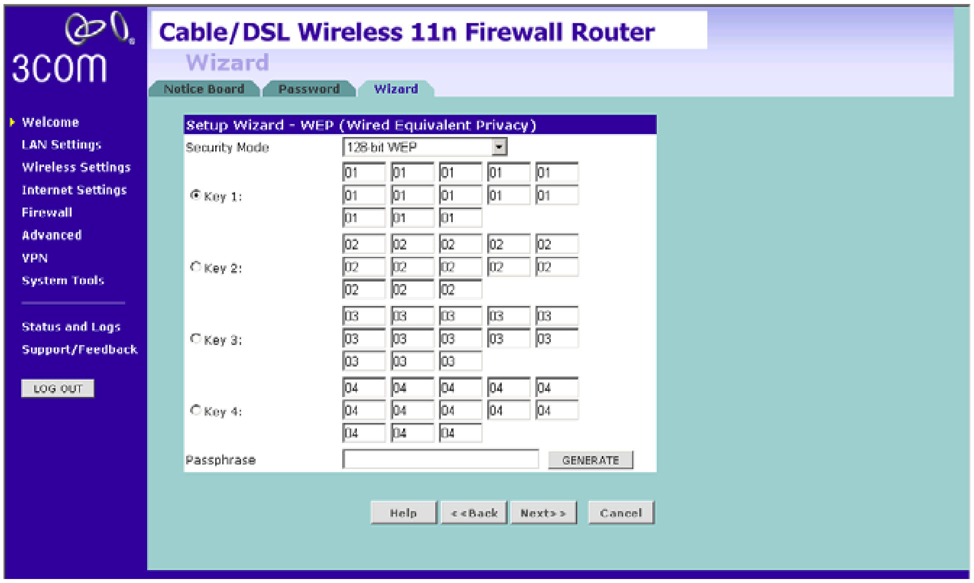
2 Click Apply.

Note that all four WEP keys on each device in the wireless network must be identical.

Wireless Security: 128-bit WEP

WEP is the basic mechanism to transmit your data securely over the wireless network. Matching encryption keys must be set up on your Router and wireless client devices to use WEP. 3Com recommends to use stronger WPA/WPA2 security.

Figure 32 128-bit WEP Screen



Setup Wizard - WEP (Wired Equivalent Privacy)

Security Mode	128-bit WEP				
● Key 1:	01	01	01	01	01
	01	01	01	01	01
	01	01	01		
○ Key 2:	02	02	02	02	02
	02	02	02	02	02
	02	02	02		
○ Key 3:	03	03	03	03	03
	03	03	03	03	03
	03	03	03		
○ Key 4:	04	04	04	04	04
	04	04	04	04	04
	04	04	04		
Passphrase		GENERATE			

To enable 128-bit WEP:

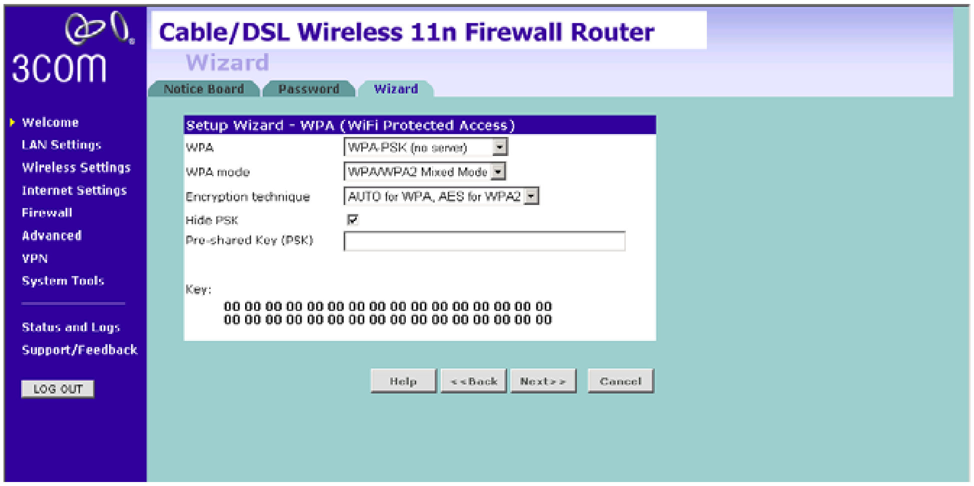
1. You can enter the 128-bit WEP key manually, enter your WEP key as 13 pairs of hex digits (0-9, A-F). Or you can generate the 128-bit WEP key automatically, enter a memorable passphrase in the Passphrase box, and then click Generate to generate the hex keys from the passphrase.
2. Click Apply.

Note that the WEP keys on each device on the wireless network must be identical. In 128-bit WEP mode, only one WEP key can be specified.

WPA-PSK (no server)

WPA (Wi-Fi Protected Access) provides dynamic key changes and constitutes the best security solution. If your network does not have a RADIUS server. Select the no server option.

Figure 33 WPA-PSK (no server) Screen



Setup Wizard - WPA (WiFi Protected Access)

WPA: WPA-PSK (no server)

WPA mode: WPA/WPA2 Mixed Mode

Encryption technique: AUTO for WPA, AES for WPA2

Hide PSK: ☑

Pre-shared Key (PSK):

Key:

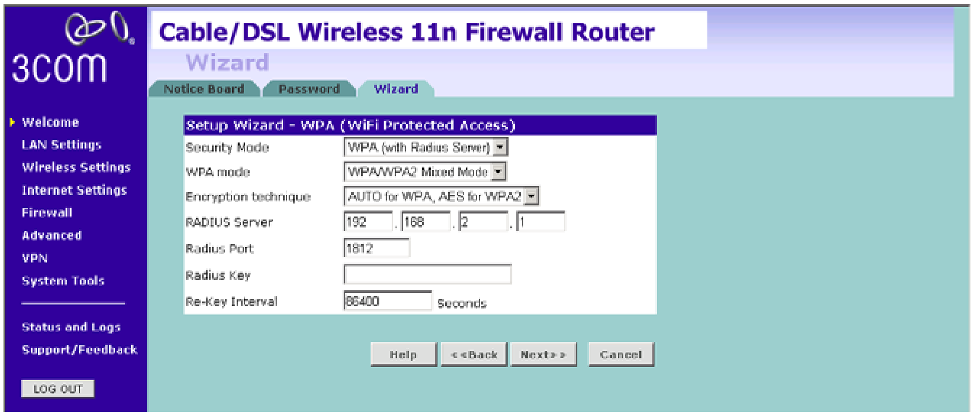
```
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

1. 1 Select WPA-PSK (no server) from the *WPA* drop-down menu.
2. Select *WPA mode* from the drop-down menu, three modes are supported: WPA, WPA2, and Mixed mode.
3. Select *Encryption technique* from the drop-down menu, four options are available: TKIP, AES, Auto for WPA AES for WPA2, and AES for both WPA and WPA2.
   WPA supports TKIP and AES Encryption technique, for some old module of wireless client cards, they may only support TKIP. In this case, we suggest you to select "AUTO for WPA, AES for WPA2". If your wireless client cards can support AES over WPA, we suggest you directly select "AES for both WPA and WPA2".
4. Enter the pre-shared key in the *Pre-shared Key* (PSK) field. The pre-shared key is a password, in the form of a word, phrase or series of letters and numbers. The key must be between 8 and 63 characters long and can include spaces and symbols. Each client that connects to the network must use the same key.
5. If you want the key that you enter to be shown on the screen as a series of asterisks (*), then check the *Hide PSK* checkbox.
6. Click *Next.*

WPA (with Radius server)

WPA (Wi-Fi Protected Access) provides dynamic key changes and constitutes the best security solution. This function requires that a RADIUS server is running on the network.

Figure 34 WPA with Radius server Screen



Setup Wizard - WPA (WiFi Protected Access)

Security Mode	WPA (with Radius Server)
WPA mode	WPA/WPA2 Mixed Mode
Encryption technique	AUTO for WPA, AES for WPA2
RADIUS Server	192 . 168 . 2 . 1
Radius Port	1812
Radius Key	
Re-Key Interval	86400 Seconds

1 Select WPA with RADIUS server from the *Security Mode* drop-down menu.

2 Select *WPA mode* from the drop-down menu, three modes are supported: WPA, WPA2, and Mixed mode.

3 Select *Encryption technique* from the drop-down menu, four options are available: TKIP, AES, Auto for WPA AES for WPA2, and AES for both WPA and WPA2.
WPA supports TKIP and AES Encryption technique, for some old module of wireless client cards, they may only support TKIP. In this case, we suggest you to select “AUTO for WPA, AES for WPA2”. If your wireless client cards can support AES over WPA, we suggest you directly select “AES for both WPA and WPA2”.

4 Enter the IP address of the RADIUS server on your network into the *RADIUS Server* field.

5 Enter the port number that the RADIUS server is operating on in the *RADIUS Port* field.

6 Enter the key for the RADIUS server in the *RADIUS Key* field.

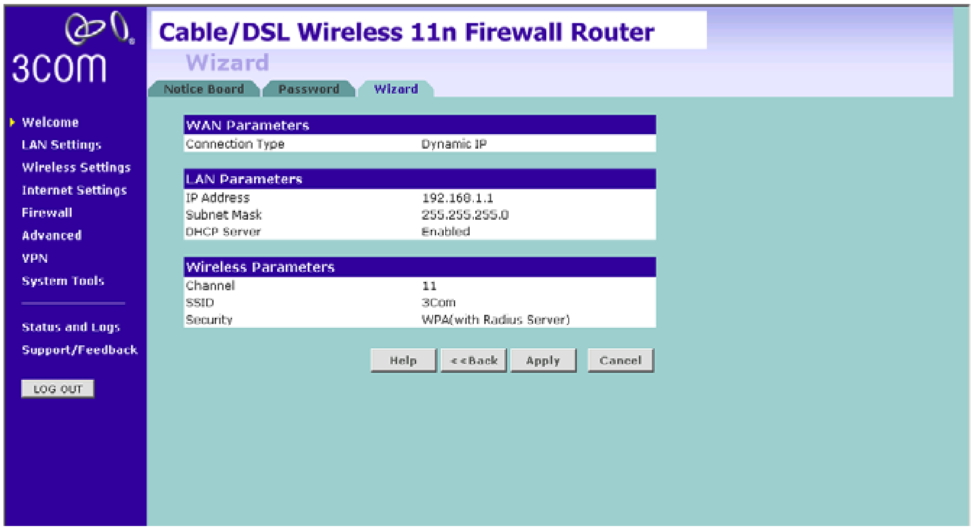
7 By default, the WPA keys are changed every hour, but if you want to change this setting, you can do so by specifying the required time in the Re-key Interval field.

8 Click *Next*.

Wizard - Configuration Summary

When you have completed the Setup Wizard, a configuration summary will appear. Verify the configuration information of the Router and then click *Apply* to save your settings. 3Com recommends that you print out this page for your records.

Figure 35 Configuration Summary Screen



WAN Parameters	
Connection Type	Dynamic IP

LAN Parameters	
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled

Wireless Parameters	
Channel	11
SSID	3Com
Security	WPA(with Radius Server)

Your Router is now configured and ready for use.

See Chapter 5 for a detailed description of the Router configuration.

5 CONFIGURING THE ROUTER

Navigating Through the Router Configuration screens

This chapter describes all the screens available through the Router configuration screens, and is provided as a reference. To get to the configuration screens, enter the Router's default IP in the location bar of your browser. The default IP is http://192.168.1.1.

However, if you changed the Router LAN IP address during initial configuration, use the new IP address instead. Enter your password to login to the management interface. (The default password is *admin*).

Main Menu

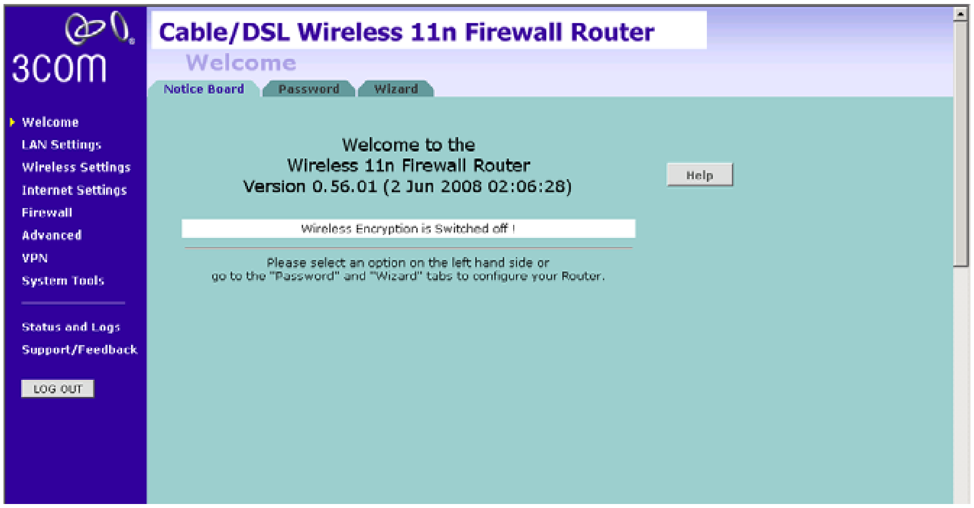
The main menu is located on the left side, as shown in Figure 36. When you click on an item from the main menu, the corresponding screen will then appear in the center.

Welcome Screen

The *Welcome* screen shows the current software information.

Status

Figure 36 Welcome Screen



Welcome to the
Wireless 11n Firewall Router
Version 0.56.01 (2 Jun 2008 02:06:28)

Wireless Encryption is Switched off !

Please select an option on the left hand side or
go to the "Password" and "Wizard" tabs to configure your Router.

LAN Settings

Your Router is equipped with a DHCP server that will automatically assign IP addresses to each computer on your network. The factory default settings for the DHCP server will work with most applications. If you need to make changes to the settings, you can do so.

The LAN settings screen allows you to:

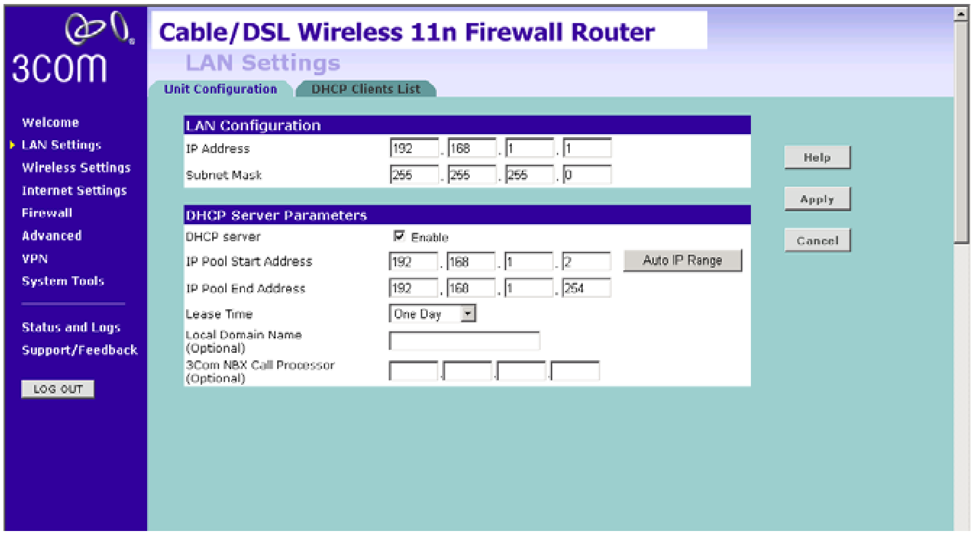
- Change the default IP address of the Router. The default IP is 192.168.1.1
- Change the Subnet Mask. The default setting is 255.255.255.0
- Enable/Disable the DHCP Server Function. The default is "*Enable*".
- Specify the Starting and Ending IP Pool address. The default is Starting: 2 / Ending: 254.
- Specify the IP address Lease Time. The default is One day.
- Specify a local Domain Name. This field is optional.
- Specify the IP address of 3Com NBX call processor.

The Router will also provide a list of all client computers connected to the Router.

LAN Settings

The LAN Settings screen is used to specify the LAN IP address of your Router, and to configure the DHCP server.

Figure 37 LAN Settings Screen



LAN Configuration

IP Address 192 . 168 . 1 . 1

Subnet Mask 255 . 255 . 255 . 0

DHCP Server Parameters

DHCP server ☑ Enable

IP Pool Start Address 192 . 168 . 1 . 2

IP Pool End Address 192 . 168 . 1 . 254

Lease Time One Day

Local Domain Name (Optional)

3Com NBX Call Processor (Optional)

1 Enter the Router’s *IP Address* and *Subnet Mask* in the appropriate fields. The default IP address is 192.168.1.1.

2 If you want to use the Router as a DHCP Server, check *Enable* in the *DHCP Server* field.

3 Enter the IP address range in the *IP Pool Start Address* and *IP Pool End Address* fields.

4 Specify the DHCP Lease time by selecting the required value from the *Lease Time* drop-down menu. The lease time is the length of time the DHCP server will reserve the IP address for each computer.

5 Specify the Local Domain Name for your network (this step is optional).

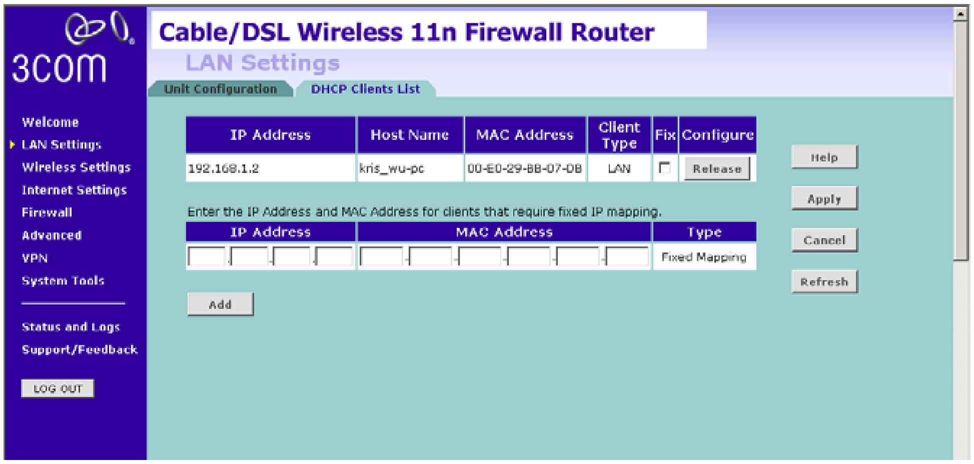
6 Enter the IP address of the NBX Call Processor in the *3Com NBX Call Processor* field (this step is optional).

7 Check all of your settings, and then click *Apply*.

DHCP Clients List

The DHCP Clients List provides details on the devices that have received IP addresses from the Router. The list is only created when the Router is set up as a DHCP server. A maximum of 253 clients can be connected to the Router.

Figure 38 DHCP Clients List Screen



IP Address	Host Name	MAC Address	Client Type	Fix	Configure
192.168.1.2	kris_wu-pc	00-E0-29-BB-07-DB	LAN	□	Release

Enter the IP Address and MAC Address for clients that require fixed IP mapping.

IP Address	MAC Address	Type
		Fixed Mapping

For each device that is connected to the LAN, the following information is displayed:

- *IP address* — The Internet Protocol (IP) address issued to the client machine.

- *Host Name* — The client machine's host name, if configured.
- *MAC Address* — The Media Access Control (MAC) address of the client's network card.
- *Client Type* — Whether the client is connected to the Router by wired or wireless connection.
- Check the *Fix* checkbox to permanently fix the IP address.
- Click *Release* to release the displayed IP address.
- Click *Add* to allocate an IP address to a MAC address. Enter the required details and click *Apply* to save your settings.

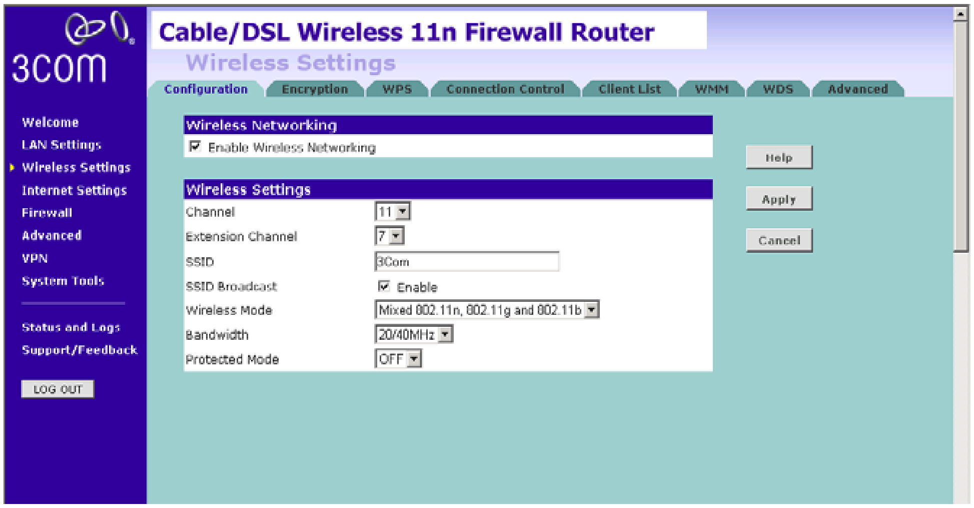
The DHCP server will give out addresses to both wired and wireless clients.

Wireless Settings

The Wireless Settings screens allow you to configure the settings for the wireless connections.

You can enable or disable the wireless connection for your LAN. When disabled, no wireless PCs can gain access to either the Internet or other PCs on your wired or wireless LAN through this Router.

Figure 39 Wireless Settings Screen



Wireless Networking

☑ Enable Wireless Networking

Wireless Settings

Channel	11
Extension Channel	7
SSID	3Com
SSID Broadcast	☑ Enable
Wireless Mode	Mixed 802.11n, 802.11g and 802.11b
Bandwidth	20/40MHz
Protected Mode	OFF

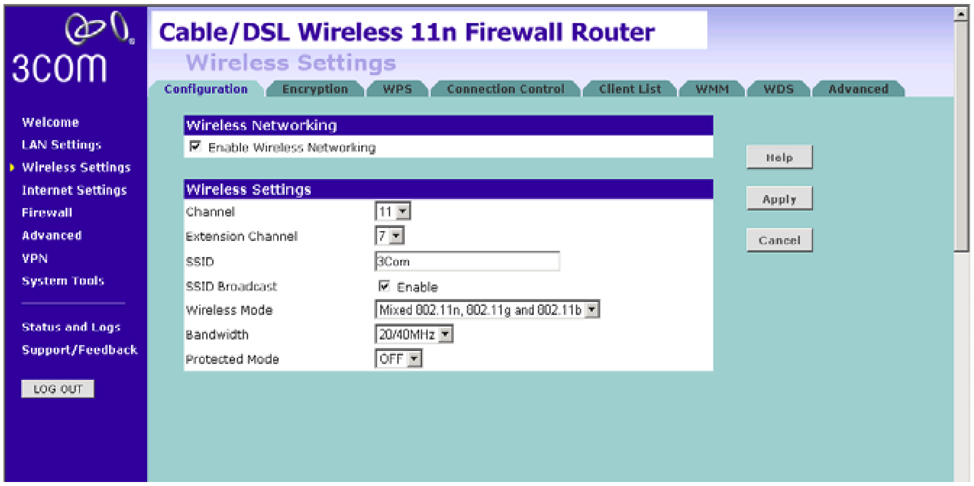
There are 8 tabs available:

- Configuration
- Encryption
- WPS
- Connection Control
- Client List
- WMM
- WDS
- Advanced

Configuration

The Wireless Configuration Screen allows you to turn on/ turn off the wireless function, and set up basic wireless settings. you can also enable/disable the Wireless function using the WiFi on/off button at the back of the unit.

Figure 40 Wireless Configuration Screen



Wireless Networking

☑ Enable Wireless Networking

Wireless Settings

Channel	11
Extension Channel	7
SSID	3Com
SSID Broadcast	☑ Enable
Wireless Mode	Mixed 802.11n, 802.11g and 802.11b
Bandwidth	20/40MHz
Protected Mode	OFF

To enable the wireless function:

1. Check *Enable Wireless Networking* checkbox.
2. Select the wireless channel you want to use from the *Channel* drop-down menu.
3. Select the Extension Channel. Extension channel is used to increase the throughput. If the Bandwidth is set to 20 MHz, then this option will not be available.
4. Specify the SSID to be used by your wireless network in the *SSID* field. If there are other wireless networks in your area, you should give your wireless network an unique name.
5. Enable or disable *SSID Broadcast*.

   A feature of many wireless network adapters is that a computer's SSID can be set to ANY, which means it looks randomly for any existing wireless network. The available networks are then displayed in a site survey, and your computer can select a network. If you disable this SSID broadcast function, you can block this random search, and set the computer's SSID to a specific network (for example, WLAN). This increases network security. If you decide to disable *SSID Broadcast*, ensure that you know the name of your network first.

6 Select whether your Router will operate in 11b mode only, 11g mode only, 11n mode only, or mixed mode from the *Wireless Mode* drop-down menu. If your network contains 11b, 11g, and 11n clients, select the mixed mode. If your network contains just one type of clients only, select 11b only, or 11g only, or 11n only, depending on your wireless network environment. Note that selecting one type of wireless network only will improve the performance, however, this will prevent clients of other type from connecting to the router.

7 Bandwidth: select the bandwidth to use. Select 20/40 MHz when your wireless mode is 802.11n or 11n with 11b, 11 g mixed mode. If your wireless network is purely 11 b only or 11g only, or 11b and 11g mixed, select 20 MHz.

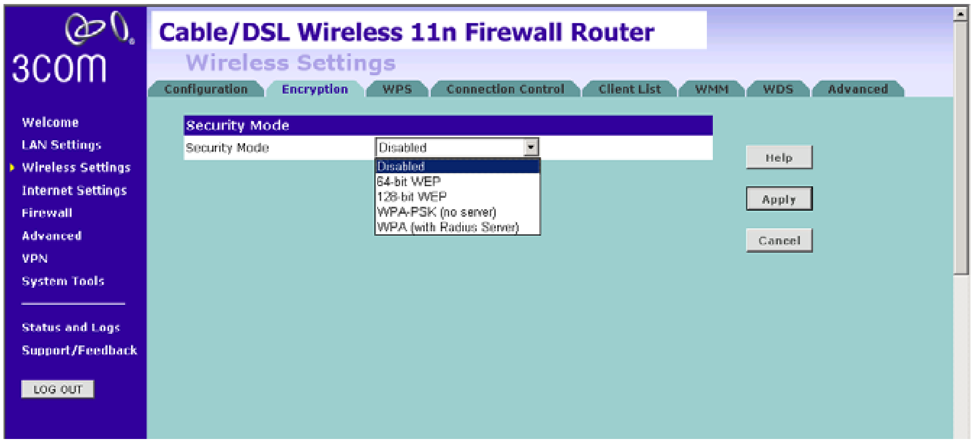
8 Select to turn on/off the *Protected Mode* function. As part of the 802.11g & 802.11n specification, Protected mode ensures proper operation of 802.11g & 802.11n clients and access points when there is heavy 802.11b traffic in the operating environment. When protected mode is ON, 802.11g & 802.11n scans for other wireless network traffic before it transmits data. Therefore, using this mode in environments with HEAVY 802.11b traffic or interference achieves best performance results. If you are in an environment with very little--or no--other wireless network traffic, your best performance will be achieved with Protected mode “OFF.”

9 Click *Apply*.

Encryption

This feature prevents any non-authorized party from reading or changing your data over the wireless network.

Figure 41 Encryption Screen



Security Mode

Security Mode: Disabled

Select the wireless security mode that you want to use from the drop-down menu, and click *Apply*. There are five selections:

- Disabled
- 64-bit WEP: (see page 58)
- 128-bit WEP: (see page 59)
- WPA-PSK (no server): this option includes both WPA and WPA2 (see page 60)
- WPA (with RADIUS Server): this option includes both WPA and WPA2 (see page 61)

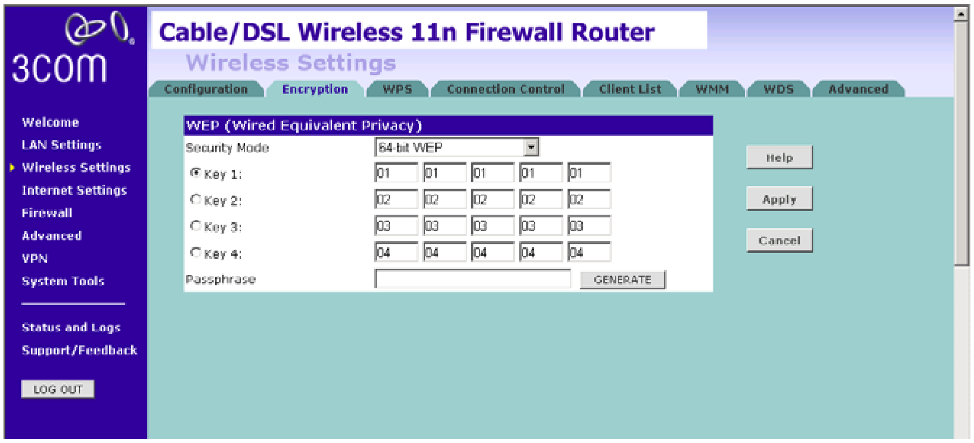
Disabled

In this mode, wireless transmissions will not be encrypted, and will be visible to everyone. However, when setting up or debugging wireless networks, it is often useful to use this security mode.

64-bit WEP

WEP is the basic mechanism to transmit your data securely over the wireless network. Matching encryption keys must be setup on your Router and wireless client devices to use WEP. Note that 3Com recommends using WPA/WPA2 to secure your wireless connection.

Figure 42 64-bit WEP Screen



WEP (Wired Equivalent Privacy)

Security Mode	64-bit WEP				
● Key 1:	01	01	01	01	01
○ Key 2:	02	02	02	02	02
○ Key 3:	03	03	03	03	03
○ Key 4:	04	04	04	04	04
Passphrase					

To setup 64-bit WEP:

1 You can enter the 64-bit WEP key manually:

- enter the WEP key as 5 pairs of hex digits (0-9, A-F).

Or you can generate the 64-bit WEP key automatically:

- enter a memorable passphrase in the *Passphrase* field, and then click *Generate* to generate the hex keys from the passphrase.

For 64-bit WEP, you can enter up to four keys, in the fields *Key 1* to *Key 4*. The radio button on the left hand side selects the key that is used in transmitting data.

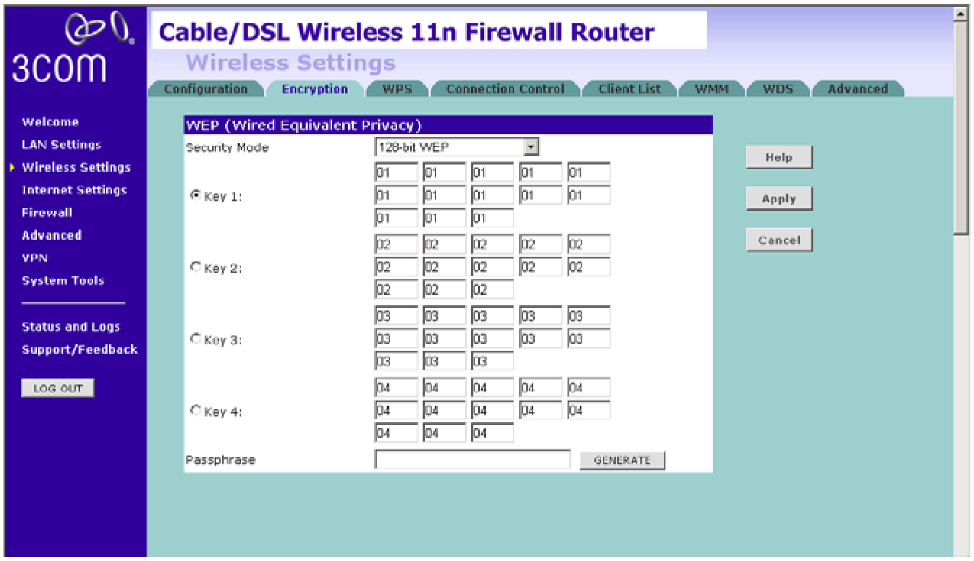
Note that all four WEP keys on each device in the wireless network must be identical.

2 Click *Apply*.

128-bit WEP

WEP is the basic mechanism to transmit your data securely over the wireless network. Matching encryption keys must be set up on your Router and wireless client devices to use WEP. Note that 3Com recommends using WPA/WPA2 to secure your wireless connection.

Figure 43 128-bit WEP Screen



WEP (Wired Equivalent Privacy)

Security Mode: 128-bit WEP

● Key 1: 01 01 01 01 01 01 01 01 01 01 01 01 01

○ Key 2: 02 02 02 02 02 02 02 02 02 02 02 02 02

○ Key 3: 03 03 03 03 03 03 03 03 03 03 03 03 03

○ Key 4: 04 04 04 04 04 04 04 04 04 04 04 04 04

Passphrase:

To setup 128-bit WEP:

1 You can enter the 128-bit WEP key manually:

- enter your WEP key as 13 pairs of hex digits (0-9, A-F).

Or you can generate the 128-bit WEP key automatically:

- enter a memorable passphrase in the *Passphrase* field, and then click *Generate* to generate the hex keys from the passphrase.

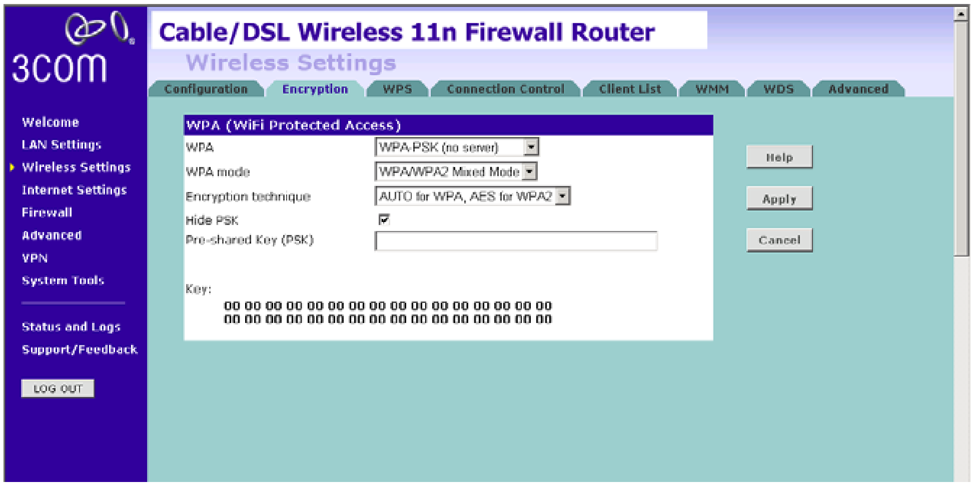
The WEP keys on each device on the wireless network must be identical. In 128-bit WEP mode, only one WEP key can be specified.

2 Click *Apply*.

WPA-PSK (no server)

WPA (Wi-Fi Protected Access) provides dynamic key changes and constitutes the best security solution. If your network does not have a RADIUS server, select the no server option. For home network or very small business networking environment, PSK is typically used.

Figure 44 WPA-PSK (no server) Screen



WPA (WiFi Protected Access)

WPA: WPA-PSK (no server)

WPA mode: WPA/WPA2 Mixed Mode

Encryption technique: AUTO for WPA, AES for WPA2

Hide PSK: ☑

Pre-shared Key (PSK):

Key:

```
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

1 Select WPA-PSK (no server) from the *WPA* drop-down menu.

2 Select WPA mode from the drop-down menu, three modes are supported: WPA, WPA2, and Mixed mode.

3 Select *Encryption technique* from the drop-down menu, four options are available: TKIP, AES, Auto for WPA, AES for WPA2, and AES for both WPA and WPA2.
WPA supports TKIP and AES Encryption technique, for some old module of wireless client cards, they may only support TKIP. In this case, we suggest you to select “AUTO for WPA, AES for WPA2”. If your wireless client cards can support AES over WPA, we suggest you directly select “AES for both WPA and WPA2”.

4 Enter the pre-shared key in the *Pre-shared Key (PSK)* field. The pre-shared key is a password, in the form of a word, phrase or series of letters and

numbers. The key must be between 8 and 63 characters long and can include spaces and symbols. Each client that connects to the network must use the same key.

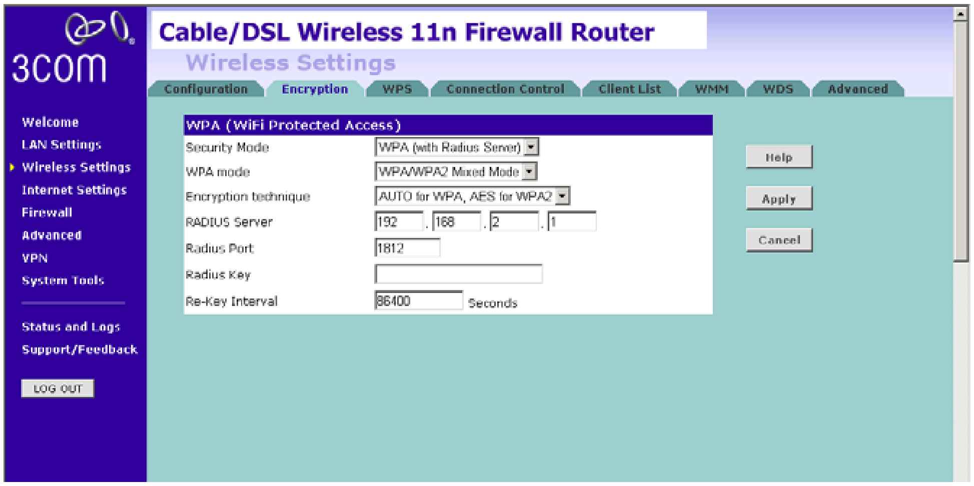
5 If you want the key that you enter to be shown on the screen as a series of asterisks (*), then check the *Hide PSK* checkbox.

6 Click *Apply*.

WPA (with RADIUS Server)

WPA (Wi-Fi Protected Access) provides dynamic key changes and constitutes the best security solution. This function requires that a RADIUS server is running on the network.

Figure 45 WPA (with RADIUS Server) Screen



WPA (WiFi Protected Access)

Security Mode	WPA (with Radius Server)
WPA mode	WPA/WPA2 Mixed Mode
Encryption technique	AUTO for WPA, AES for WPA2
RADIUS Server	192 . 168 . 2 . 1
Radius Port	1812
Radius Key	
Re-Key Interval	86400 Seconds

1 Select WPA with RADIUS server from the *Security Mode* drop-down menu.

2 Select WPA mode from the drop-down menu, three modes are supported: WPA, WPA2, and Mixed mode.

3 Select Encryption technique from the drop-down menu, four options are available: TKIP, AES, Auto for WPA AES for WPA2, and AES for both WPA and WPA2.
WPA supports TKIP and AES Encryption technique, for some old module of wireless client cards, they may only support TKIP. In this case, we suggest you to select "AUTO for WPA, AES for WPA2". If your wireless client cards can support AES over WPA, we suggest you directly select "AES for both WPA and WPA2".

4 Enter the IP address of the RADIUS server on your network into the *RADIUS Server* field.

5 Enter the port number that the RADIUS server is operating on in the *RADIUS Port* field.

6 Enter the key for the RADIUS server in the *RADIUS Key* field.

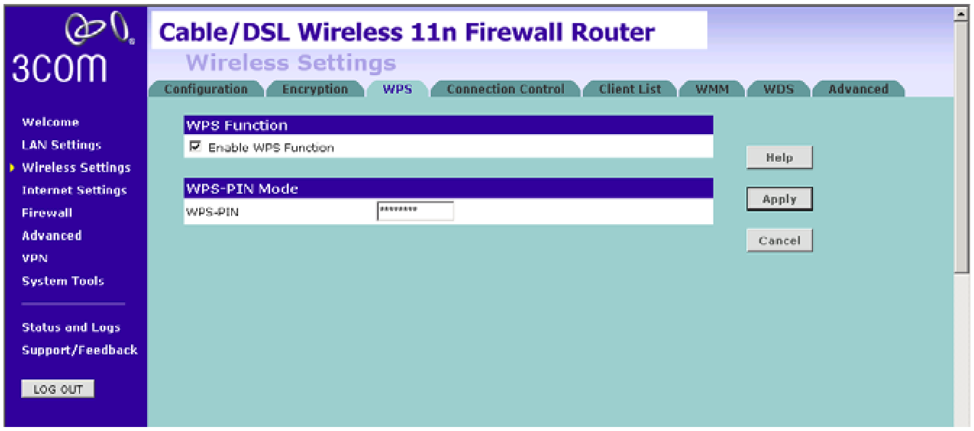
7 By default, the WPA keys are changed every hour, but if you want to change this setting, you can do so by specifying the required time in the *Re-key Interval* field.

8 Click *Apply*.

WPS

Wi-Fi Protected Setup (WPS) integrate the new WLAN clients into your wireless network easily. You can enable this function by entering the PIN code via the web UI page or by pressing the WPS button on the rear side of the device.

Figure 46 WPS Screen



WPS Function

☑ Enable WPS Function

WPS-PIN Mode

WPS-PIN ********

Two methods to setup the WPS, you can choose either one of the following method. Note that if you choose to use the PBC mode, it would be no need to enter the PIN code of the wireless NIC on this screen.

- **PIN**

1 Check the *Enable WPS Function* box. The WPS-PIN field will appear.

2 Enter the PIN code in the *WPS-PIN* field. And then click *Apply.*

Please note that the PIN code is generated this way: on the client side, run the WPS utility which is provided by the vendor of your Wi-Fi card and select the PIN method. You should get a 8-digit PIN number from the WPS utility.

Enter that 8-digit PIN number on this screen and click *Apply* to activate this PIN method. Then the Router starts to negotiate the security with the WLAN clients and WPS LED will start flashing. After the connection has been established successfully, the WPS LED will then be off.

- **WPS-PBC**

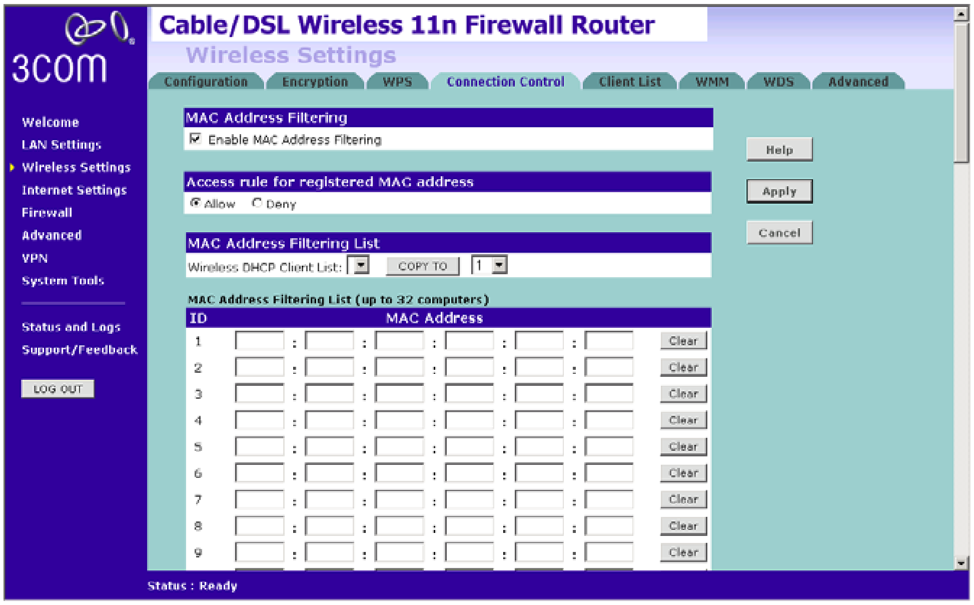
1 Press the WPS button located on the rear of the Router. Note that this setup precess will only be active for 2 minutes. Follow the instruction of your WLAN NIC to set up the WPS.

Connection Control

This feature is used to filter the clients based on their MAC addresses. Using this function, you can limit the access right of the wireless clients to this Router.

Check the *Enable MAC Address Filtering* checkbox, the Connection Control screen will appear.

Figure 47 Connection Control Screen



Cable/DSL Wireless 11n Firewall Router

Wireless Settings

MAC Address Filtering

☑ Enable MAC Address Filtering

Access rule for registered MAC address

● Allow ○ Deny

MAC Address Filtering List

Wireless DHCP Client List: [ ] COPY TO [1]

MAC Address Filtering List (up to 32 computers)

ID	MAC Address
1	: : : : :
2	: : : : :
3	: : : : :
4	: : : : :
5	: : : : :
6	: : : : :
7	: : : : :
8	: : : : :
9	: : : : :

Status : Ready

There are two options available in the *Access rule for registered MAC address* field:

- if you click *Allow*, this means only the MAC addresses registered here in the list will be allowed to access the Router via wireless link.
- if you click *Deny*, this means the registered MAC addresses will not be able to access the Router via wireless link.

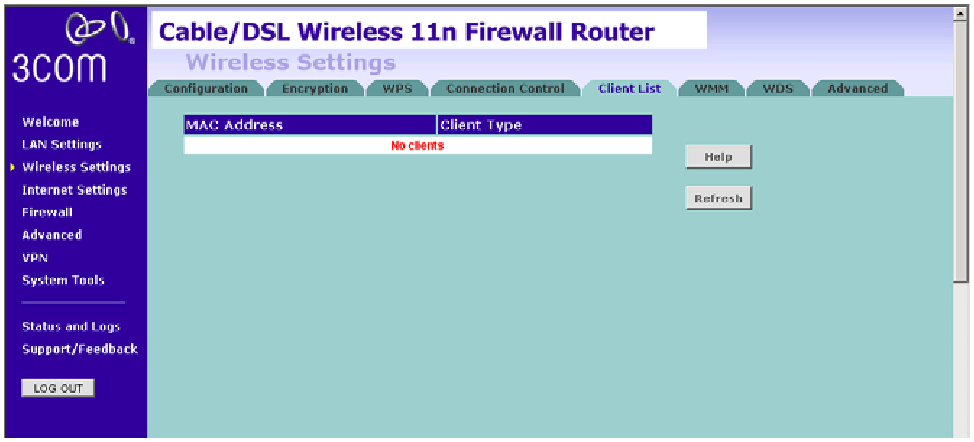
Use the *MAC Address Filtering List* to quickly copy the MAC addresses of the current wireless clients into the list table. You can define up to 32 MAC addresses to the list.

You can click *Clear* to delete the current entry in the list.

Client List

You can view the list of all wireless clients that are connected to the Router.

Figure 48 Client List Screen



Cable/DSL Wireless 11n Firewall Router

Wireless Settings

MAC Address	Client Type
No clients	

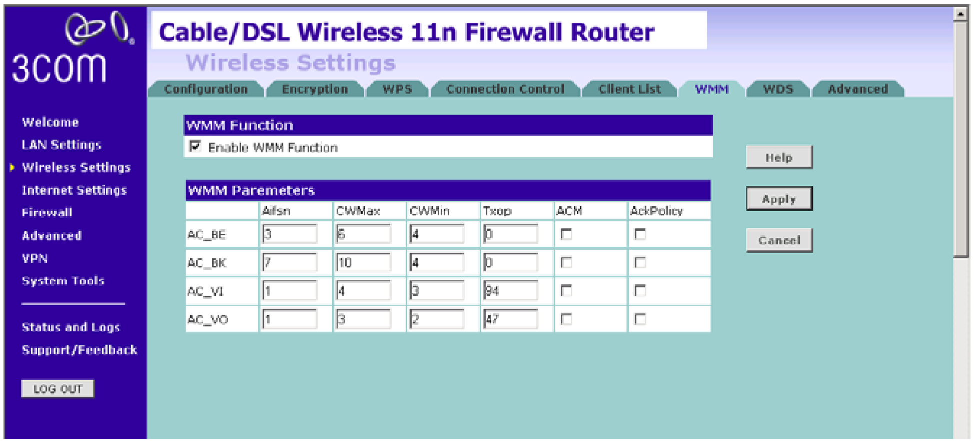
Click *Refresh* to update the list.

WMM

Wireless Multimedia (WMM) mode, which supports devices that meet the 801.11e QBSS standard. WMM uses traffic priority based on the four ACs; Voice, Video, Best Effort, and Background. The higher the AC priority, the higher the probability that data is transmitted.

Check the *Enable WMM Function* box, the WMM parameters table will appear.

Figure 49 WMM Screen



Cable/DSL Wireless 11n Firewall Router

Wireless Settings

WMM Function

☑ Enable WMM Function

WMM Paremeters

	Aifsn	CWMax	CWMin	Txop	ACM	AckPolicy
AC_BE	3	6	4	0	□	□
AC_BK	7	10	4	0	□	□
AC_VI	1	4	3	94	□	□
AC_VO	1	3	2	47	□	□

Access Categories – WMM defines four access categories (ACs): voice, video, best effort, and background. These categories correspond to traffic priority levels and are mapped to IEEE 802.1D priority tags. The direct mapping of the four ACs to 802.1D priorities is specifically intended to facilitate inter operability with other wired network QoS policies. While the four ACs are specified for specific types of traffic, WMM allows the priority levels to be configured to match any network-wide QoS policy. WMM also specifies a protocol that access points can use to communicate the configured traffic priority levels to QoS-enabled wireless clients.

The following table explains the four access categories:

Access Category	**WMM Designation**	**Description**	**802.1D Tags**
AC_BE (AC0)	Best Effort	Normal priority, medium delay and throughput. Data only affected by long delays. Data from applications or devices that lack QoS capabilities.	0, 3
AC_BK (AC1)	Background	Lowest priority. Data with no delay or throughput requirements, such as bulk data transfers.	2, 1
AC_VI (AC2)	Video	High priority, minimum delay. Time-sensitive data such as streaming video.	5, 4
AC_VO (AC3)	Voice	Highest priority, minimum delay. Time-sensitive data such as VoIP (Voice over IP) calls.	7, 6

AIFS (Arbitration Inter-Frame Space) – The minimum amount of wait time before the next data transmission attempt. Specify the AIFS value in the range 0-15 microseconds.

CWMax (Maximum Contention Window) – The maximum upper limit of the random backoff wait time before wireless medium access can be attempted. The contention window is doubled after each detected collision up to the CWMax value. Specify the CWMax value in the range 0-15 microseconds. Note that the CWMax value must be greater or equal to the CWMin value.

CWMin (Minimum Contention Window) – The initial upper limit of the random backoff wait time before wireless medium access can be attempted. The initial wait time is a random value between zero and the CWMin value. Specify the CWMin value in the range 0-15 microseconds. Note that the CWMin value must be equal or less than the CWMax value.

TXOP Limit (Transmit Opportunity Limit) – The maximum time an AC transmit queue has access to the wireless medium. When an AC queue is granted a transmit opportunity, it can transmit data for a time up to the TxOpLimit. This data bursting greatly improves the efficiency for high data-rate traffic. Specify a value in the range 0-65535 microseconds.

ACM – Admission Control Mode, for the access category. When enabled, clients are blocked from using the access category. (Default: Disabled)

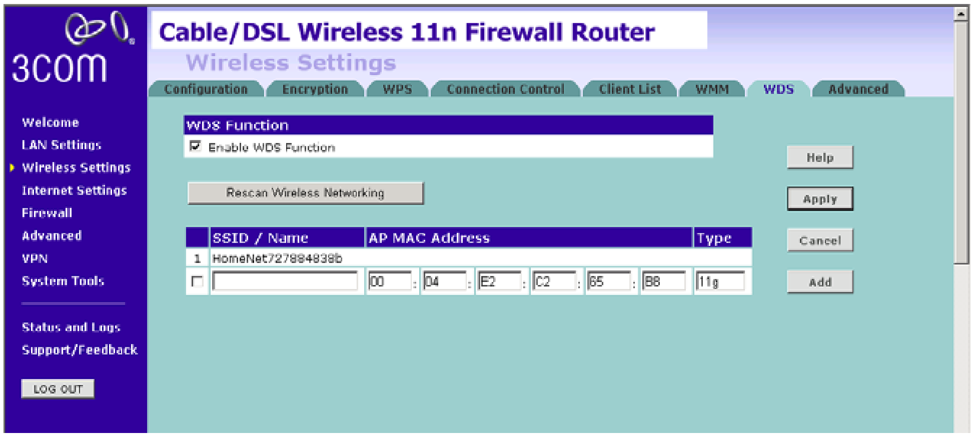
Ack Policy (WMM Acknowledge Policy) – By default, all wireless data transmissions require the sender to wait for an acknowledgement from the receiver. WMM allows the acknowledgement wait time to be turned off for each Access Category (AC). Although this increases data throughput, it can also result in a high number of errors when traffic levels are heavy. (Default: Acknowledge)

WDS

The Router supports WDS (Wireless Distribution System). WDS enables one or more Access Points to rebroadcast received signals to extend range and reach, though this can affect the overall throughput of data.

Note that WDS implementation can vary from product to product. Hence there is no guarantee that different products will interoperate. In addition, the security settings for WDS links should be the same as the one setup for your wireless clients.

Figure 50 Wireless WDS Settings Screen



Cable/DSL Wireless 11n Firewall Router

Wireless Settings

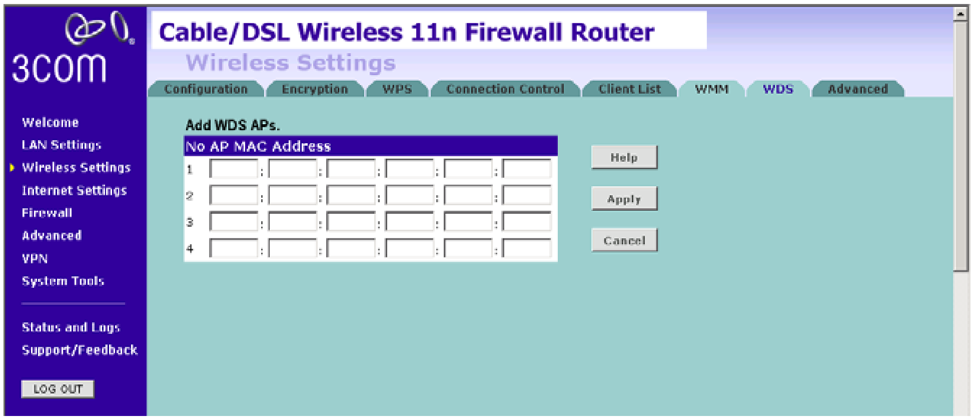
WDS Function

☑ Enable WDS Function

	SSID / Name	AP MAC Address	Type
1	HomeNet727884838b		
□		00 : 04 : E2 : C2 : 65 : B8	11g

1. Check the *Enable WDS Function* checkbox.
2. To refresh the list of available access points, click *Rescan Wireless Networking*. If the MAC address of the desired APs is in the list of scanned APs, you can simply check those APs to add them to the WDS.
3. Click *Add* to add the MAC address of the AP to the list (up to 4 APs can be added), the add WDS screen will appear (refer to Figure 51).

Figure 51 Add WDS screen



On the add WDS screen, enter the MAC address of the access point, up to 4 APs can be added to the *AP MAC Address* table, and click *Apply*.

Here is an example of how to setup two units of 3Com Router over WDS. Note that when setting up two units of 3Com Router, you should disable the DHCP function on one of the units.

Setting of the first Router:

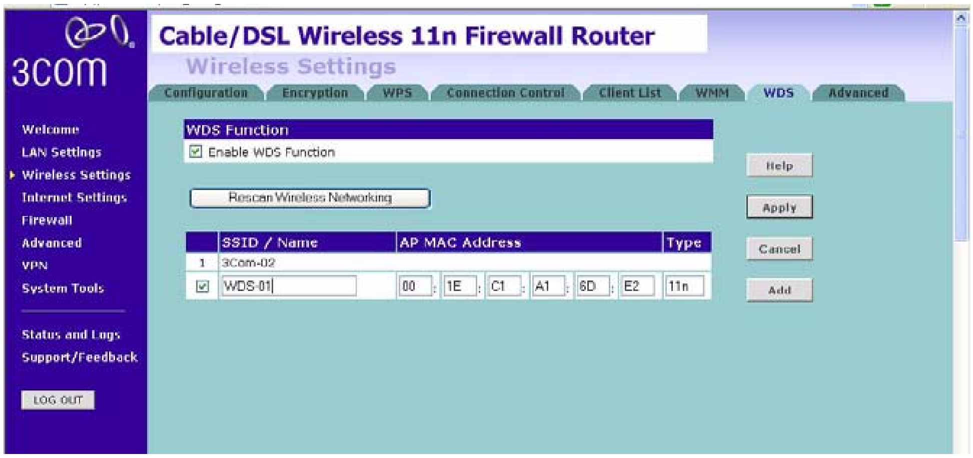
- Set the LAN IP setting, make sure the DHCP function is enabled on this Router.
- Set the wireless settings, including SSID, channel, and wireless mode.
- Set the wireless security setting, and enable wireless WDS function.

Setting of the second Router:

- Set the LAN IP setting, use a different IP address from the IP address of the first Router. Disable the DHCP function, this would allow the first Router to allocate IP address for wireless clients.
- Set the wireless channel, and security same as the first Router, but use a different SSID. Make sure that WDS function is enabled.

Access the Web UI of the first Router, use wireless WDS settings screen, make sure that WDS is enabled. Click *Rescan Wireless Networking* to scan the available APs in your area, you should see the SSID of the second Router. Check and add the second Router to the WDS table (see Figure 52).

Figure 52 First Router add WDS Screen



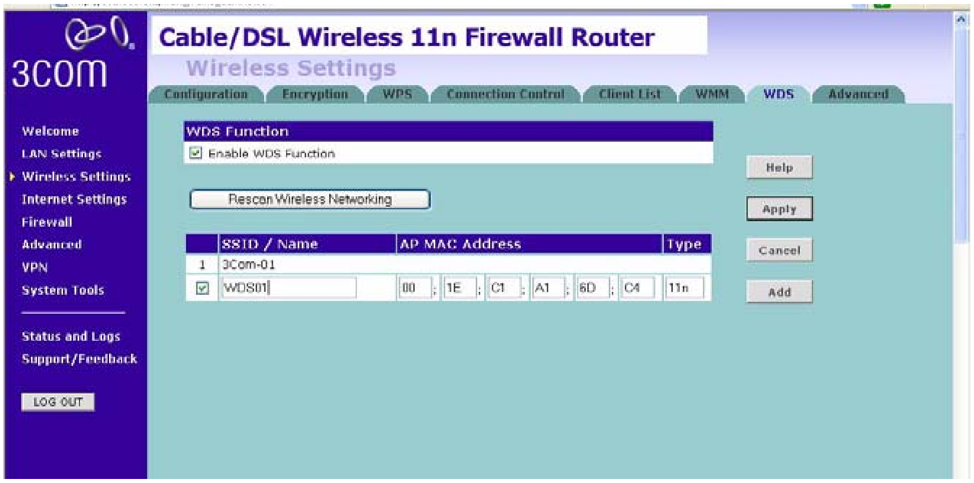
WDS Function

☑ Enable WDS Function

	SSID / Name	AP MAC Address	Type
1	3Com-02		
☑	WDS-01	00 : 1E : C1 : A1 : 6D : E2	11n

Access the Web UI of the second Router, repeat the above steps to add the first Router to the WDS table (see Figure 53).

Figure 53 Second Router add WDS Screen



WDS Function

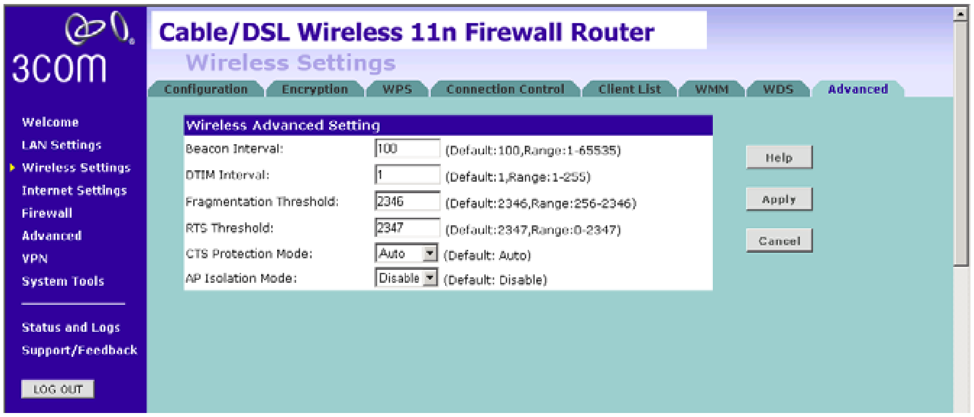
☑ Enable WDS Function

	SSID / Name	AP MAC Address	Type
1	3Com-01		
☑	WDS01	00 : 1E : C1 : A1 : 6D : C4	11n

Advanced

The Advanced screen allows you to configure detailed settings for your wireless connection. Please note that you should not change this settings unless you are an expert user. There are six parameters that you can configure:

Figure 54 Wireless Advanced Setting Screen



Cable/DSL Wireless 11n Firewall Router

Wireless Settings

Wireless Advanced Setting

Beacon Interval: 100 (Default:100,Range:1-65535)

DTIM Interval: 1 (Default:1,Range:1-255)

Fragmentation Threshold: 2346 (Default:2346,Range:256-2346)

RTS Threshold: 2347 (Default:2347,Range:0-2347)

CTS Protection Mode: Auto (Default: Auto)

AP Isolation Mode: Disable (Default: Disable)

- Beacon Interval: this represents the amount of time between beacon transmissions.
- DTIM Interval: A DTIM (Delivery Traffic Indication Message) is a countdown mechanism used to inform your wireless clients of the next window for listening to broadcast and multicast messages.
- Fragmentation Threshold: this is the maximum size for directed data packets transmitted. The use of fragmentation can increase the reliability of frame transmissions. Because of sending smaller frames, collisions are much less likely to occur.
- RTS Threshold: RTS stands for Request to Send, this parameter controls what size data packet the low level RF protocol issues to an RTS packet.
- CTS Protection Mode: CTS stands for Clear to Send. CTS Protection Mode boosts the Router's ability to intercept 802.11b/ 802.11g transmissions. Conversely, CTS Protection Mode decreases performance. Leave this feature disabled unless you encounter severe communication difficulties between the Router and your wireless clients.
- AP Isolation Mode: AP Isolation is a function to prevent wireless clients connected with the device from communicating with one another. When enabled, this creates a separate virtual network for your wireless network, each of your wireless client will be in its own virtual

network and will not be able to communicate with each other. You may want to utilize this feature if you have many guests that frequently connect to your wireless network.

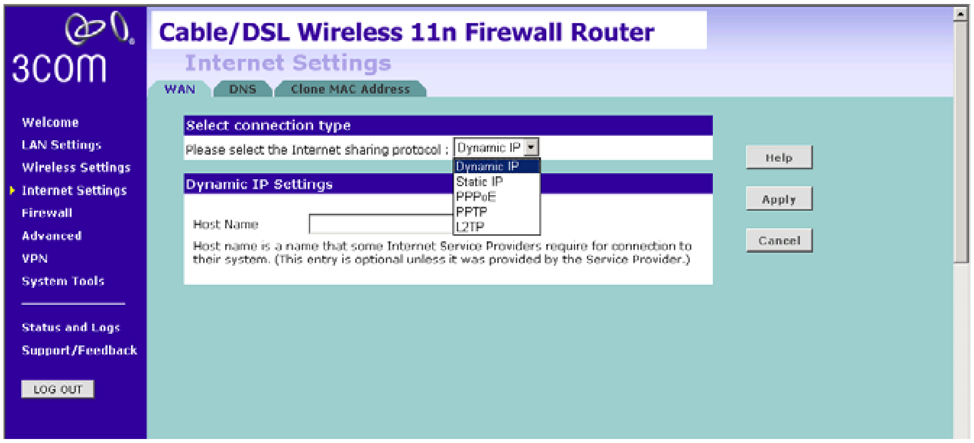
Internet Settings

You can configure the settings for your WAN port connection.

WAN

This feature is used to configure the parameters for your Internet connection. The information necessary to complete these screens should be obtained from your ISP. Check with your ISP first to find out what type of connection you should choose.

Figure 55 WAN Screen



Cable/DSL Wireless 11n Firewall Router

Internet Settings

Select connection type

Please select the Internet sharing protocol : Dynamic IP

Dynamic IP Settings

Host Name

Host name is a name that some Internet Service Providers require for connection to their system. (This entry is optional unless it was provided by the Service Provider.)

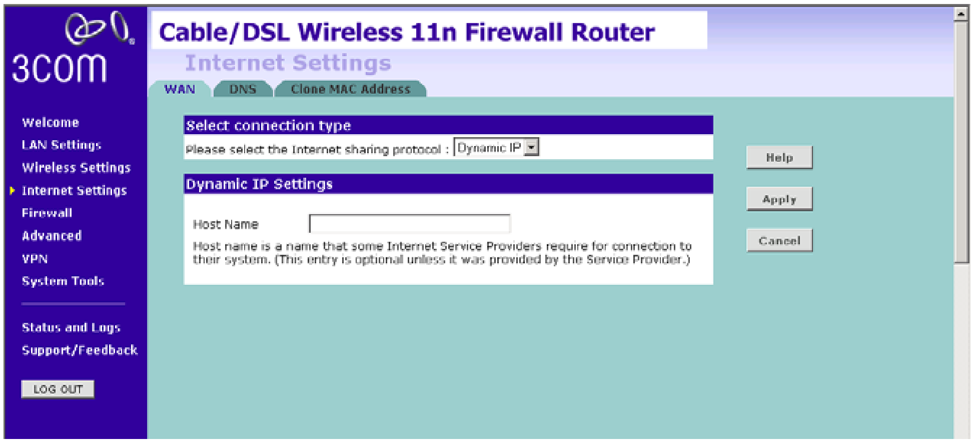
There are five options available for the connection mode:

- Dynamic IP — Using DHCP for WAN connection (see page 74)
- Static IP — Using fixed IP for WAN connection (see page 75)
- PPPoE — PPP over Ethernet, providing routing for multiple PCs (see page 76)
- PPTP — Point-to-Point Tunneling Protocol (see page 77)
- L2TP — Layer 2 Tunneling Protocol (see page 78)

Dynamic IP

You can configure the Router to obtain an IP address automatically from a DHCP server.

Figure 56 Dynamic IP Screen



Select connection type

Please select the Internet sharing protocol : Dynamic IP

Dynamic IP Settings

Host Name

Host name is a name that some Internet Service Providers require for connection to their system. (This entry is optional unless it was provided by the Service Provider.)

1 Select Dynamic IP from the *Internet sharing protocol* drop-down menu.

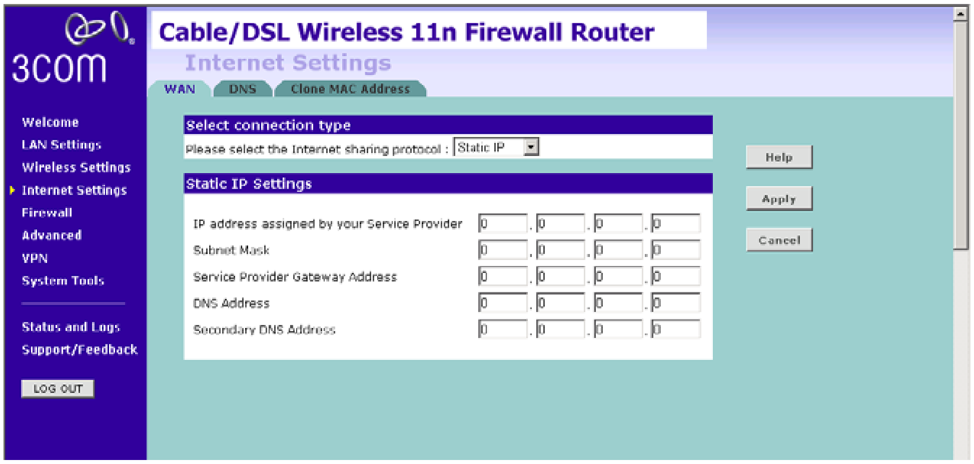
2 If the ISP requires you to input a Host Name, type it in the Host Name field.

3 Click *Apply*.

Static IP

If your Service Provider has assigned a fixed IP address, enter the assigned IP address information on the screen.

Figure 57 Static IP Screen



Cable/DSL Wireless 11n Firewall Router

Internet Settings

Select connection type

Please select the Internet sharing protocol : Static IP

Static IP Settings

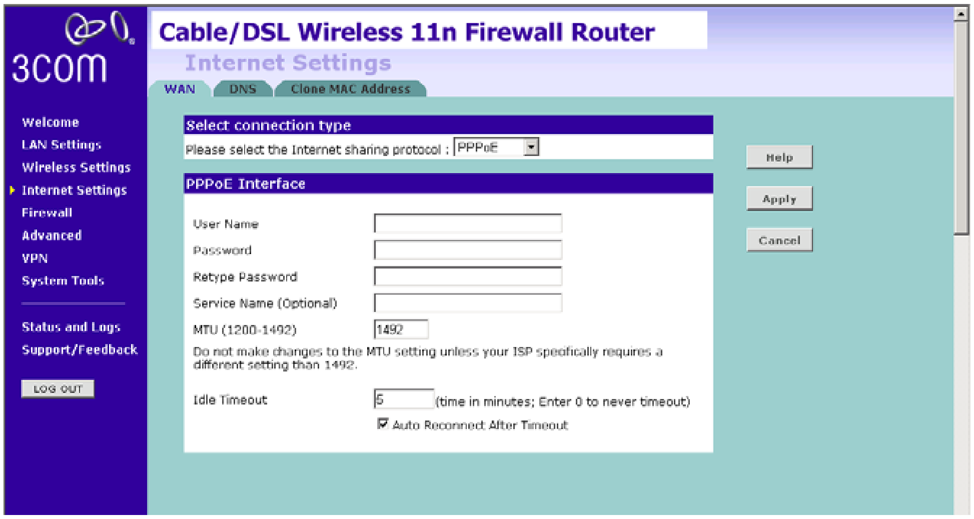
IP address assigned by your Service Provider 0 . 0 . 0 . 0
Subnet Mask 0 . 0 . 0 . 0
Service Provider Gateway Address 0 . 0 . 0 . 0
DNS Address 0 . 0 . 0 . 0
Secondary DNS Address 0 . 0 . 0 . 0

1. Select *Static IP* from the *Internet sharing protocol* drop-down menu.
2. Enter your IP address in the *IP address assigned by your service provider* field.
3. Enter the subnet mask in the *Subnet Mask* field.
4. Enter the default gateway IP address in the *Service Provider Gateway Address* field.
5. Enter DNS IP address.
6. If there is a secondary DNS, enter the IP address.
7. Click *Apply*.

PPPoE

PPP over Ethernet, provides routing for multiple PCs, this mode is often used for the DSL connection. To configure this function correctly, you should obtain the information from your ISP.

Figure 58 PPPoE Settings Screen



Select connection type

Please select the Internet sharing protocol : PPPoE

PPPoE Interface

User Name

Password

Retype Password

Service Name (Optional)

MTU (1200-1492) 1492

Do not make changes to the MTU setting unless your ISP specifically requires a different setting than 1492.

Idle Timeout 5 (time in minutes; Enter 0 to never timeout)

☑ Auto Reconnect After Timeout

1 Select *PPPoE* from the *Internet sharing protocol* drop-down menu.

2 Enter the user name assigned to you by your ISP in the *Username* field. And enter the password assigned to you by your ISP in the *Password* field. Re-enter your password in the *Retype Password* field.

3 The Service Name field is optional.

4 Enter the MTU value in the *MTU* field. Do not make changes to this setting, unless your ISP specifically requires a different setting other than 1492.

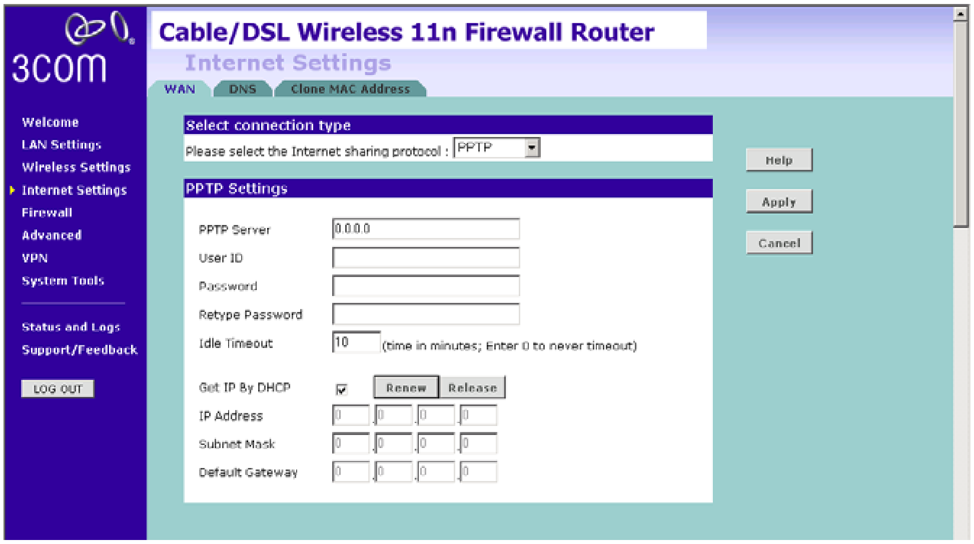
5 If you want your Router to automatically disconnect from the Internet after a period of inactivity, specify a time in the *Idle Timeout* field. (Enter a value of 0 to disable this timeout). Check the *Auto Reconnect After Timeout* box to automatically re-establish the connection as soon as you attempt to access the Internet again.

6 Click *Apply*.

PPTP

If your ISP uses PPTP as the Internet connection protocol, setup the details on this screen.

Figure 59 PPTP Screen



Select connection type

Please select the Internet sharing protocol : PPTP

PPTP Settings

PPTP Server 0.0.0.0

User ID

Password

Retype Password

Idle Timeout 10 (time in minutes; Enter 0 to never timeout)

Get IP By DHCP ☑

IP Address 0 . 0 . 0 . 0

Subnet Mask 0 . 0 . 0 . 0

Default Gateway 0 . 0 . 0 . 0

1 Select *PPTP* from the *Internet sharing protocol* drop-down menu.

2 Enter the PPTP Server information.

3 Enter the user ID in the *User ID* field. And enter the password assigned to you by your ISP in the *Password* field. Re-enter your password in the *Retype Password* field.

4 If you want your Router to automatically disconnect from the Internet after a period of inactivity, specify a time in the *Idle Timeout* field. (Enter a value of 0 to disable this timeout).

5 If you receive the IP address from your ISP via DHCP function, check the *Get IP By DHCP* box.

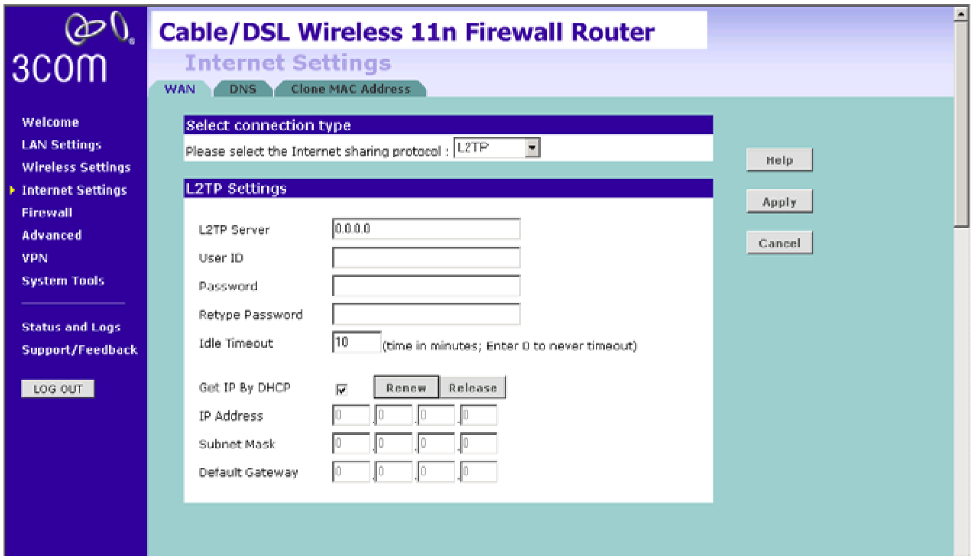
6 If no DHCP function is used, then enter the IP Address, Subnet Mask, and Default Gateway information.

7 Click *Apply*.

L2TP

If your ISP uses L2TP as the Internet connection protocol, setup the details on this screen. This options is mostly used in Israel.

Figure 60 L2TP Connection Screen



Select connection type

Please select the Internet sharing protocol : L2TP

L2TP Settings

L2TP Server 0.0.0.0

User ID

Password

Retype Password

Idle Timeout 10 (time in minutes; Enter 0 to never timeout)

Get IP By DHCP ☑

IP Address 0 . 0 . 0 . 0

Subnet Mask 0 . 0 . 0 . 0

Default Gateway 0 . 0 . 0 . 0

1 Select L2TP from the *Internet sharing protocol* drop-down menu.

2 Enter the *L2TP Server* information.

3 Enter the User ID and Password required by your ISP.

4 Retype the password.

5 Enter the maximum Idle Timeout for the Internet connection. After this time has been exceeded the connection will be terminated.

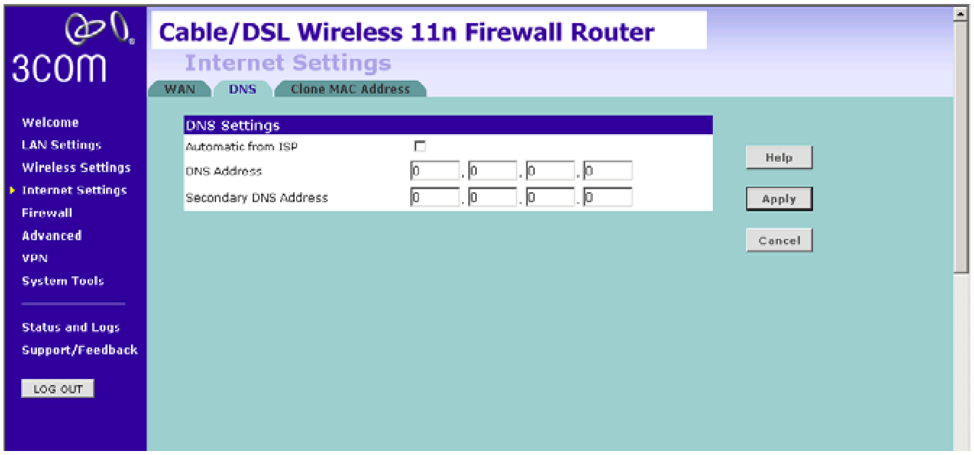
6 Check the *Get IP By DHCP* box to receive IP address from your ISP's DHCP function. If this box is not checked, enter the IP address, Subnet mask, and Default Gateway information.

7 Click *Apply*.

DNS

Domain Name Service (or Server) is an Internet service that translates domain names into IP addresses. Because domain names are alphabetic, they're easier to remember. The Internet however, is really based on IP addresses. Every time you use a domain name, a DNS service must translate the name into the corresponding IP address. For example, the domain name www.example.com might translate to 198.105.232.4.

Figure 61 DNS Screen



Cable/DSL Wireless 11n Firewall Router

Internet Settings

DNS Settings

Automatic from ISP	□
DNS Address	0 . 0 . 0 . 0
Secondary DNS Address	0 . 0 . 0 . 0

If the DNS information is automatically provided by your ISP every time you connect to it, check the *Automatic from ISP* checkbox.

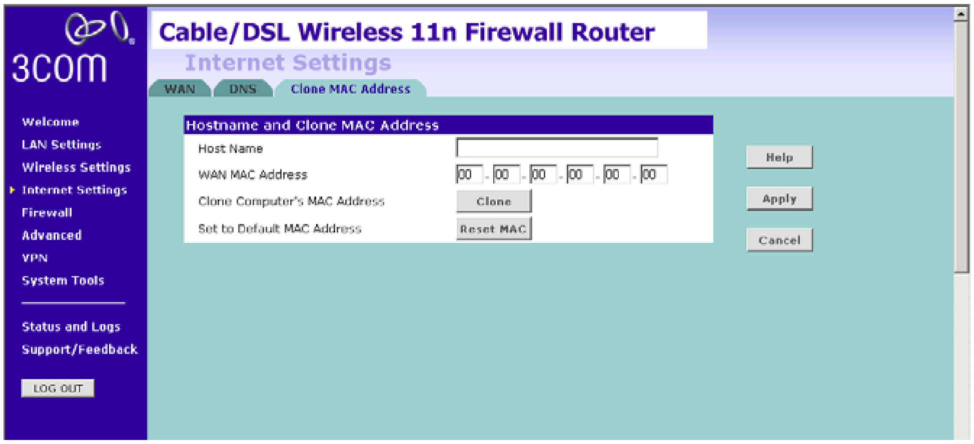
If your ISP provided you with specific DNS addresses to use, enter them into the appropriate fields on this screen and click *Apply*.

Many ISPs do not require you to enter this information into the Router. If you are using a Static IP connection type, you may need to enter a specific DNS address and secondary DNS address for your connection to work properly. If your connection type is Dynamic or PPPoE, it is likely that you do not have to enter a DNS address.

Clone MAC address

To configure the Hostname and Clone MAC Address information for your Router, select *Internet Settings*, then go to the *Clone MAC address* tab.

Figure 62 Hostname and Clone MAC Address Screen



Hostname and Clone MAC Address

Host Name	
WAN MAC Address	00 - 00 - 00 - 00 - 00 - 00
Clone Computer's MAC Address	Clone
Set to Default MAC Address	Reset MAC

1 Some ISPs require a host name. If your ISP has this requirement, enter the host name in the *Host Name* field.

2 Three different ways to configure the WAN MAC Address:

- If your ISP requires an assigned MAC address, enter the values in the *WAN MAC address* field.

  or

- If the computer that you are using is the one that was previously connected directly to the cable modem, click *Clone*.

  or

- To reset the MAC Address to the default, click *Reset MAC*.

3 Click *Apply* to save the settings.

Firewall

This section is for configuration settings of the Router’s firewall function.

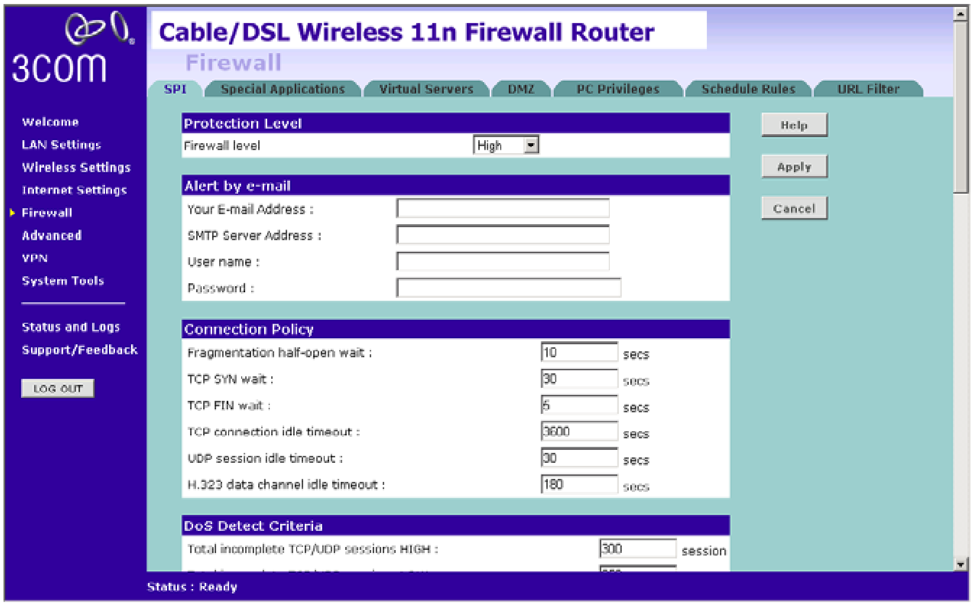
Your Router is equipped with a firewall that will protect your network from a wide array of common hacker attacks including Ping of Death (PoD) and Denial of Service (DoS) attacks. You can turn the firewall function off if needed. Turning off the firewall protection will not leave your network completely vulnerable to hacker attacks, but 3Com recommends that you leave the firewall enabled whenever possible.

SPI

Stateful Packet Inspection (SPI) - The Intrusion Detection Feature of the Router limits access for incoming traffic at the WAN port.

This feature is called a "stateful" packet inspection, because it examines the contents of the packet to determine the state of the communications; i.e., it ensures that the stated destination computer has previously requested the current communication. This is a way of ensuring that all communications are initiated by the recipient computer and are taking place only with sources that are known and trusted from previous interactions. In addition to being more rigorous in their inspection of packets, stateful inspection firewalls also close off ports until connection to the specific port is requested.

Figure 63 Firewall Screen



Protection Level

Firewall level: High

Alert by e-mail

Your E-mail Address :

SMTP Server Address :

User name :

Password :

Connection Policy

Fragmentation half-open wait : 10 secs

TCP SYN wait : 30 secs

TCP FIN wait : 5 secs

TCP connection idle timeout : 3600 secs

UDP session idle timeout : 30 secs

H.323 data channel idle timeout : 180 secs

DoS Detect Criteria

Total incomplete TCP/UDP sessions HIGH : 300 session

Status : Ready

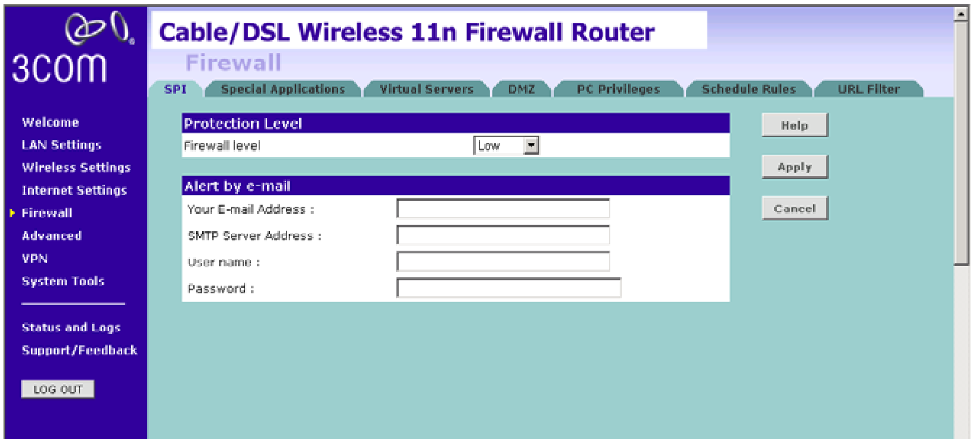
To enable the firewall function:

1 Select the level of protection (High, Medium, or Low) that you desire from the *Firewall level* drop-down menu.

2 Click *Apply*.

- For low and medium levels of firewall protection, refer to Figure 64. For low level of firewall protection, the DoS and SPI functions are both off. For medium level of firewall protection, DoS in on, but SPI is off.
- For high level of firewall protection, refer to Figure 65. Both DoS and SPI are on for this level of firewall protection. The higher the firewall level is, the safer that your network is.

Figure 64 Low and Medium Level Firewall Protection Screen



Cable/DSL Wireless 11n Firewall Router

Firewall

Protection Level

Firewall level: Low

Alert by e-mail

Your E-mail Address :

SMTP Server Address :

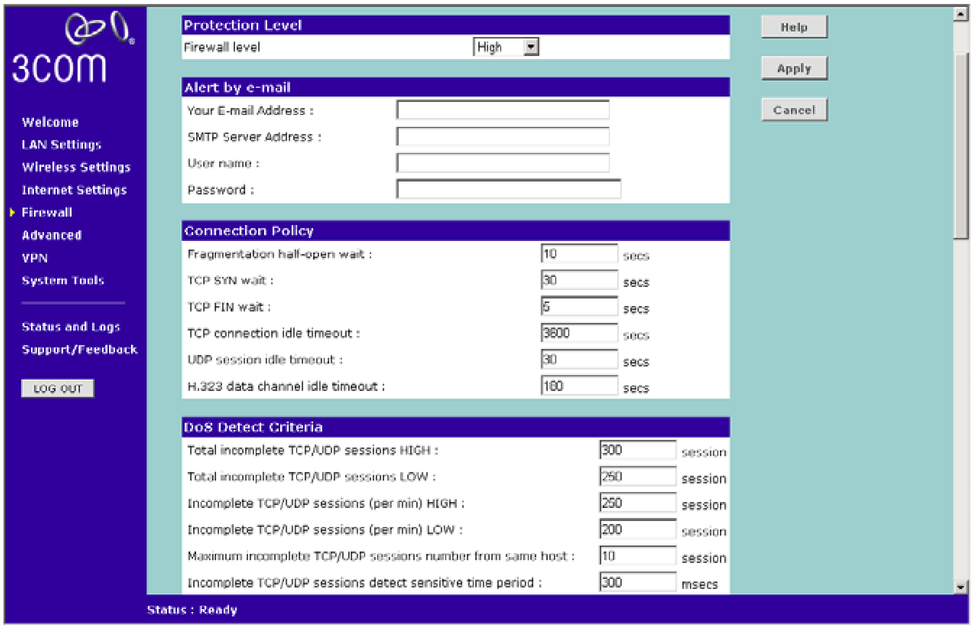
User name :

Password :

When abnormal network activity occurs, an alerting email will be sent out to you. Enter the following information to receive the email:

- Your E-mail Address
- SMTP Server Address
- User name
- Password

Figure 65 High Level Firewall Protection Screen



Protection Level

Firewall level	High

Alert by e-mail

Your E-mail Address :	
SMTP Server Address :	
User name :	
Password :	

Connection Policy

Fragmentation half-open wait :	10	secs
TCP SYN wait :	30	secs
TCP FIN wait :	5	secs
TCP connection idle timeout :	3600	secs
UDP session idle timeout :	30	secs
H.323 data channel idle timeout :	180	secs

DoS Detect Criteria

Total incomplete TCP/UDP sessions HIGH :	300	session
Total incomplete TCP/UDP sessions LOW :	250	session
Incomplete TCP/UDP sessions (per min) HIGH :	250	session
Incomplete TCP/UDP sessions (per min) LOW :	200	session
Maximum incomplete TCP/UDP sessions number from same host :	10	session
Incomplete TCP/UDP sessions detect sensitive time period :	300	msecs

Status : Ready

If you select high level of protection, you would have an option to configure additional parameters for the firewall.

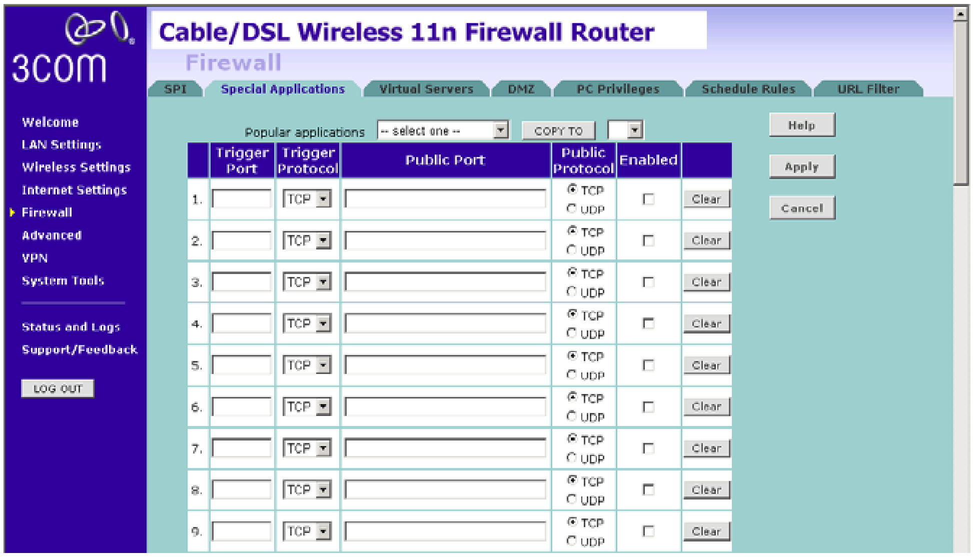
- Fragmentation half-open wait - Configures the number of seconds that a packet state structure remains active. When the timeout value expires, the Router drops the un-assembled packet, freeing that structure for use by another packet.
- TCP SYN wait - Defines how long the software will wait for a TCP session to synchronize before dropping the session.
- TCP FIN wait - Specifies how long a TCP session will be maintained after the firewall detects a FIN packet.
- TCP connection idle timeout - The length of time for which a TCP session will be managed if there is no activity.
- UDP session idle timeout - The length of time for which a UDP session will be managed if there is no activity.
- H.323 data channel idle timeout - The length of time for which an H.323 session will be managed if there is no activity.

- Total incomplete TCP/UDP sessions HIGH - Defines the rate of new unestablished sessions that will cause the software to start deleting half-open sessions.
- Total incomplete TCP/UDP sessions LOW - Defines the rate of new unestablished sessions that will cause the software to stop deleting half-open sessions.
- Incomplete TCP/UDP sessions (per min) HIGH - Maximum number of allowed incomplete TCP/UDP sessions per minute.
- Incomplete TCP/UDP sessions (per min) LOW - Minimum number of allowed incomplete TCP/UDP sessions per minute.
- Maximum incomplete TCP/UDP sessions number from same host - Maximum number of incomplete TCP/UDP sessions from the same host.
- Incomplete TCP/UDP sessions detect sensitive time period - Length of time before an incomplete TCP/UDP session is detected as incomplete.
- Maximum half-open fragmentation packet number from same host - Maximum number of half-open fragmentation packets from the same host.
- Half-open fragmentation detect sensitive time period - Length of time before a half-open fragmentation session is detected as half-open.
- Flooding cracker block time - Length of time from detecting a flood attack to blocking the attack.

Special Applications

Special Applications (port triggering) let you choose specific ports to be open for specific applications to work properly with the Network Address Translation (NAT) feature of the Router.

Figure 66 Special Applications Screen



	Trigger Port	Trigger Protocol	Public Port	Public Protocol	Enabled	
1.		TCP		● TCP ○ UDP	□	Clear
2.		TCP		● TCP ○ UDP	□	Clear
3.		TCP		● TCP ○ UDP	□	Clear
4.		TCP		● TCP ○ UDP	□	Clear
5.		TCP		● TCP ○ UDP	□	Clear
6.		TCP		● TCP ○ UDP	□	Clear
7.		TCP		● TCP ○ UDP	□	Clear
8.		TCP		● TCP ○ UDP	□	Clear
9.		TCP		● TCP ○ UDP	□	Clear

A list of popular applications has been included to choose from. Select the application from the *Popular Applications* drop-down menu. Then select the row that you want to copy the settings to from the *Copy To* drop-down menu, and click *Copy To*. The settings will be transferred to the row that you specified. Click *Apply* to save the setting for that application.

If your application is not listed, you will need to check with the application vendor to determine which ports need to be configured. You can manually enter the port information into the Router. To manually enter the port information:

1 Specify the trigger port (the one used by the application when it is initialized) in the *Trigger Port* column, and specify whether the trigger is TCP or UDP.

2 Specify the Public Ports used by the application, that will need to be opened up in the firewall for the application to work properly. Also specify whether these ports are TCP or UDP. Note that the range of the trigger port is from 1 to 65535. You can enter the port number as one single port, or in range, use comma to separate different entries.

3 Check the *Enabled* checkbox, then click *Apply*.

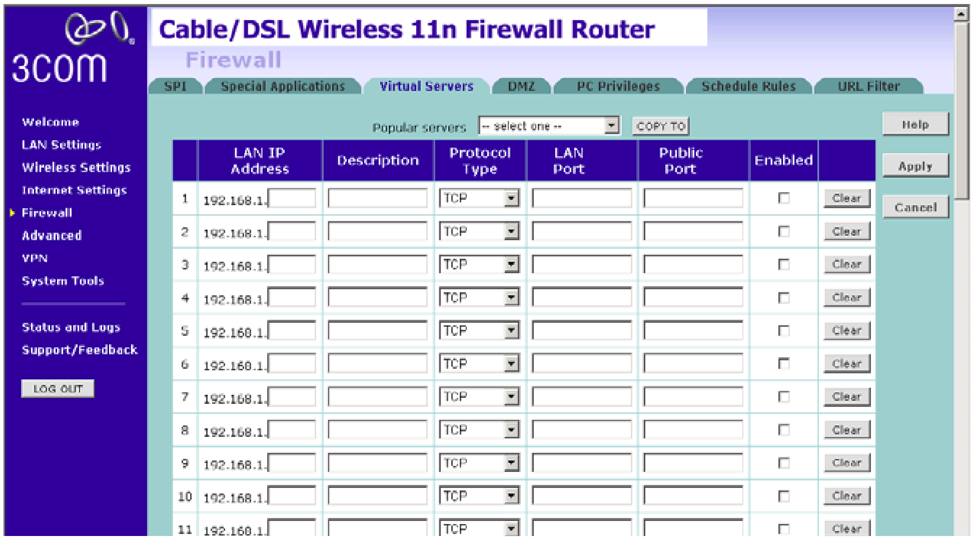
Virtual Servers

The Virtual servers feature allows you to route external (Internet) calls for services such as a web server (port 80), FTP server (Port 21), or other applications through your Router to your internal network. Since your internal computers are protected by a firewall, machines from the Internet cannot get to them because they cannot be 'seen'.

If you need to configure the Virtual Server function for a specific application, you will need to contact the application vendor to find out which port settings you need.

The maximum number of virtual servers that can be configured is 20.

Figure 67 Virtual Servers Screen



Popular servers: -- select one --

	LAN IP Address	Description	Protocol Type	LAN Port	Public Port	Enabled	
1	192.168.1.		TCP			□	Clear
2	192.168.1.		TCP			□	Clear
3	192.168.1.		TCP			□	Clear
4	192.168.1.		TCP			□	Clear
5	192.168.1.		TCP			□	Clear
6	192.168.1.		TCP			□	Clear
7	192.168.1.		TCP			□	Clear
8	192.168.1.		TCP			□	Clear
9	192.168.1.		TCP			□	Clear
10	192.168.1.		TCP			□	Clear
11	192.168.1.		TCP			□	Clear

A list of popular servers has been included to choose from. Select the server from the *Popular servers* drop-down menu. Then click *Add*, your selection will be added to the table.

If the server that you want to use is not listed in the drop-down menu, you can manually add the virtual server to the table. To manually configure your virtual servers:

1. Enter the IP address, and the description in the spaces provided for the internal machine.
2. Select the protocol type (TCP, UDP, or both TCP and UDP) from the drop-down menu.

3 Specify the public port that will be seen by clients on the Internet, and the LAN port which the traffic will be routed to.

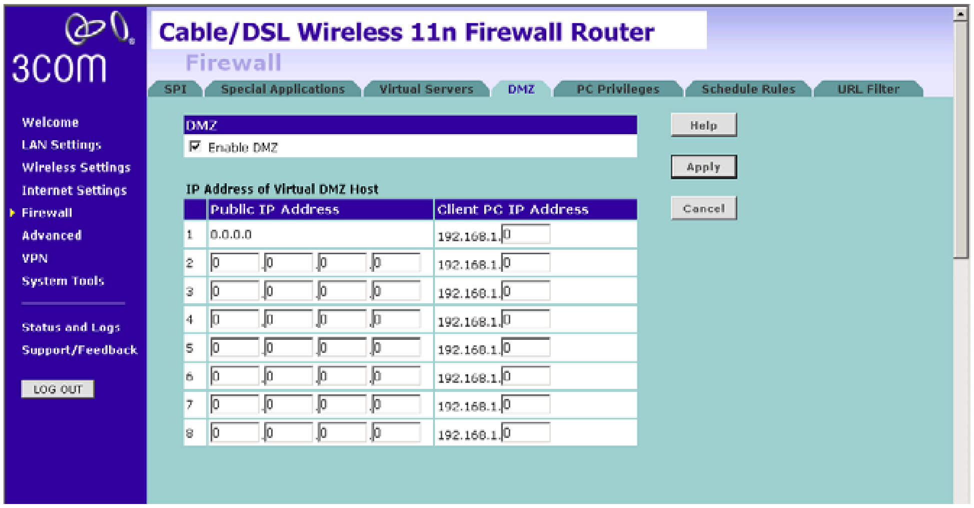
4 You can enable or disable each Virtual Server entry by checking or unchecking the appropriate *Enabled* checkbox.

5 Click *Apply* to save the changes for each Virtual Server entry.

DMZ

If you have a client PC that cannot run an Internet application properly from behind the firewall, you can open the client up to unrestricted two-way Internet access. This may be necessary if the NAT feature is causing problems with an application such as a game or video conferencing application.

Figure 68 DMZ Screen



Cable/DSL Wireless 11n Firewall Router

Firewall

DMZ

☑ Enable DMZ

IP Address of Virtual DMZ Host

	Public IP Address	Client PC IP Address
1	0.0.0.0	192.168.1. 0
2	0 . 0 . 0 . 0	192.168.1. 0
3	0 . 0 . 0 . 0	192.168.1. 0
4	0 . 0 . 0 . 0	192.168.1. 0
5	0 . 0 . 0 . 0	192.168.1. 0
6	0 . 0 . 0 . 0	192.168.1. 0
7	0 . 0 . 0 . 0	192.168.1. 0
8	0 . 0 . 0 . 0	192.168.1. 0

Use this feature on a temporary basis. The computer in the DMZ is not protected from hacker attacks.

Check the *Enable DMZ* box, the IP Address of Virtual DMZ Host will appear.

1 Enter the last digits of the LAN IP address in the *Client PC IP Address* field. Enter the IP address (if known) that will be accessing the DMZ PC into the *Public IP Address* field, so that only the computer on the Internet at this address can access the DMZ PC without firewall protection. If the IP address is not known, or if more than one PC on the Internet will need to access the DMZ PC, then set the *Public IP Address* to *0.0.0.0*.

In the default setting (line 1), Public IP address is set to 0.0.0.0 and it is automatically transformed by default WAN IP. We only allow one DMZ server to be accessed by public IPs (Many to 1 NAT). If you have more than one DMZ server, you have to set a second WAN IP in line 2 and define which IP address of DMZ server you would like to set in the Client PC IP address. For this Router, only 1 to 1 NAT function is allowed.

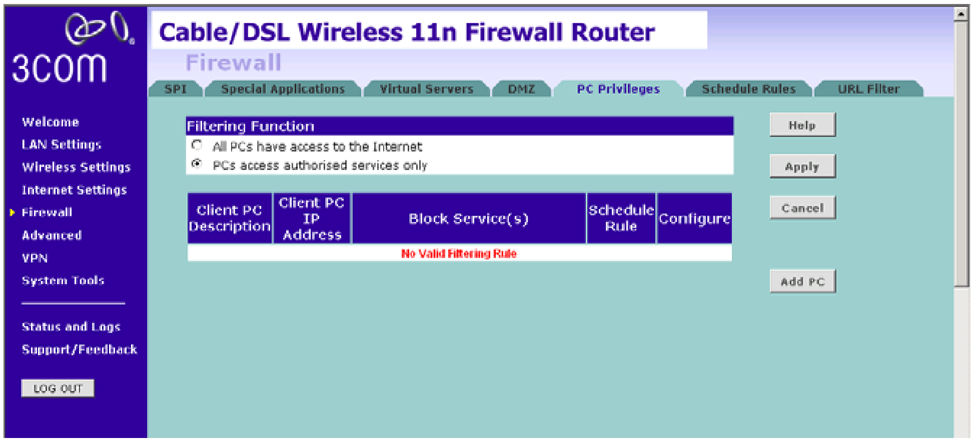
2 Click *Apply*.

PC Privileges

The Router can be configured to restrict access to the Internet, email or other network services at specific days and times. Restriction can be set for a single computer, a range of computers, or multiple computers.

You can define the traffic type permitted or not-permitted to the Internet. Note that this function requires timescheduling to be applied to access control, you will need to create schedule rules first and then use PC Privileges.

Figure 69 PC Privileges Screen



Filtering Function

○ All PCs have access to the Internet

● PCs access authorised services only

Client PC Description	Client PC IP Address	Block Service(s)	Schedule Rule	Configure
No Valid Filtering Rule				

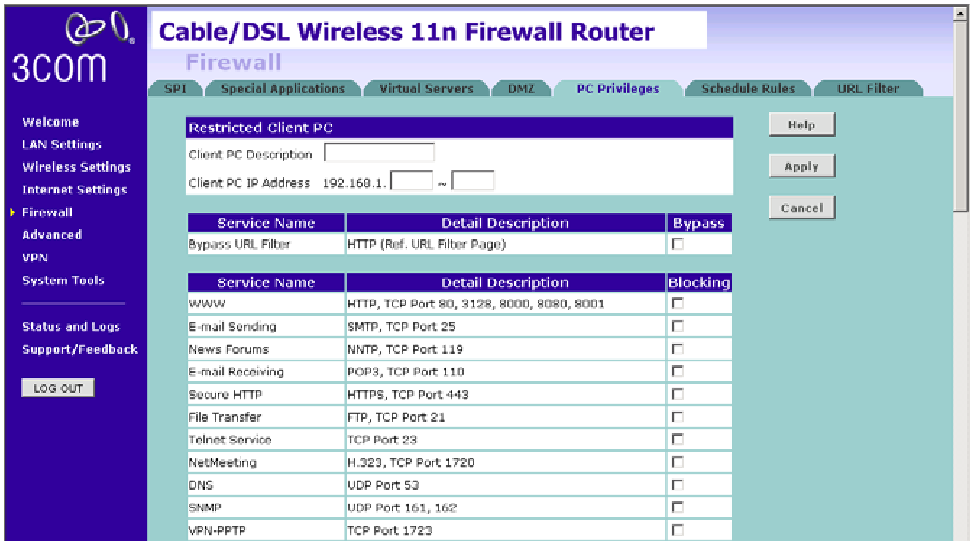
1 Select one option from filtering function:

- All PCs have access to the Internet: selecting this mode means that all clients have full access to Internet.
- PCs access authorised services only:

2 Click *Add PC* (refer to Figure 70).

To edit or delete specific existing filtering rules, click on *Edit* or *Delete* for the appropriate filtering rule.

Figure 70 PC Privileges Add PC Screen



Restricted Client PC

Client PC Description

Client PC IP Address 192.168.1. ~

Service Name	Detail Description	Bypass
Bypass URL Filter	HTTP (Ref. URL Filter Page)	□

Service Name	Detail Description	Blocking
WWW	HTTP, TCP Port 80, 3128, 8000, 8080, 8081	□
E-mail Sending	SMTP, TCP Port 25	□
News Forums	NNTP, TCP Port 119	□
E-mail Receiving	POP3, TCP Port 110	□
Secure HTTP	HTTPS, TCP Port 443	□
File Transfer	FTP, TCP Port 21	□
Telnet Service	TCP Port 23	□
NetMeeting	H.323, TCP Port 1720	□
DNS	UDP Port 53	□
SNMP	UDP Port 161, 162	□
VPN-PPTP	TCP Port 1723	□

1 Enter a description in the *Client PC Description* field, and the IP address or IP address range into the *Client PC IP Address* fields.

2 To bypass the URL Filter, check the corresponding *Bypass* checkbox. If you check this option, then the Web sites and keywords defined in this screen will not be filtered out.

3 Select the services to be blocked. A list of popular services is listed on this screen, to block a particular service, check the appropriate *Blocking* checkbox.

If the service to be restricted is not listed here, you can enter a custom range of ports at the bottom of the screen, under *User Defined Blocked Ports.*

4 If you want the restriction to apply only at certain times, select the schedule rule to apply from the *Schedule Rule* drop-down menu.

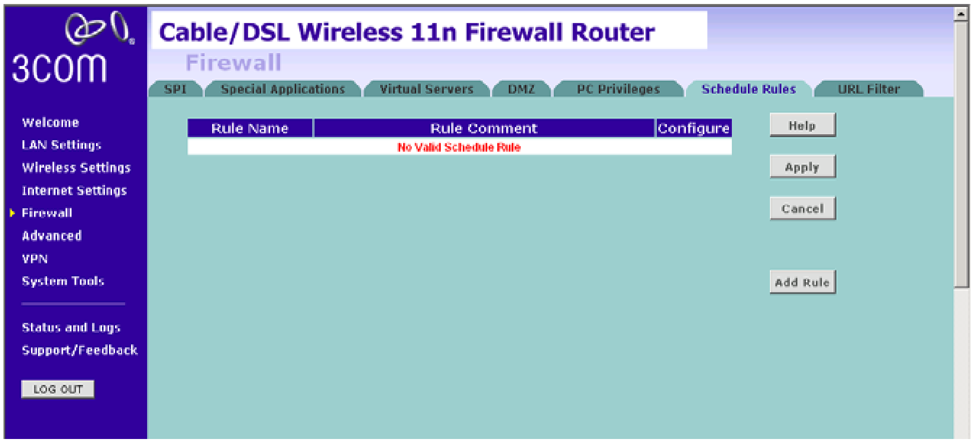
Note that schedule rules are defined on the Schedule Rules screen (see page 90).

5 Click *Apply* to add the settings.

Schedule Rule

The Router can be configured to restrict access to the Internet, email or other network services at specific days and times. Define the time in this screen, and define the rules in the *PC Privileges* screen (see page 88).

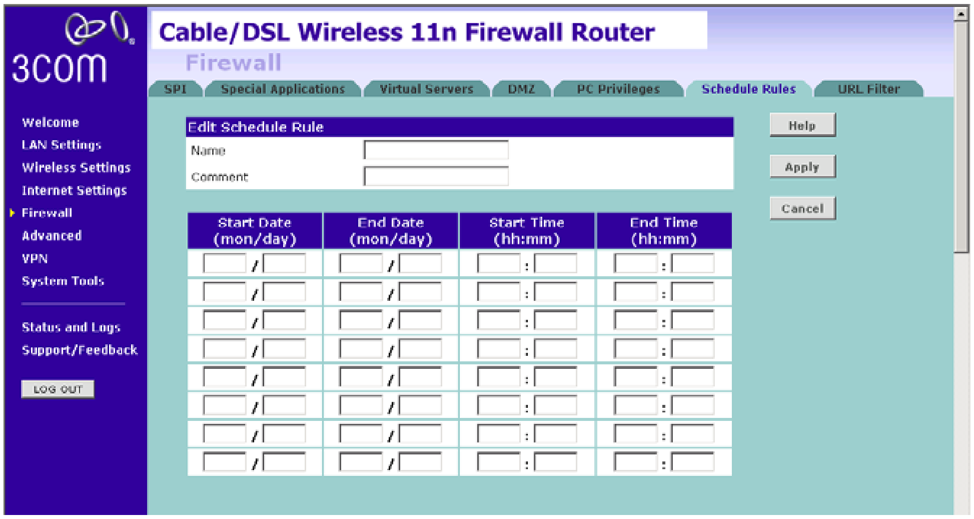
Figure 71 Schedule Rule Screen



Rule Name	Rule Comment	Configure
	No Valid Schedule Rule	

1 Click *Add Rule* to add a schedule rule (refer to Figure 72).

Figure 72 Add Schedule Rule Screen



Edit Schedule Rule

Name

Comment

Start Date (mon/day)	End Date (mon/day)	Start Time (hh:mm)	End Time (hh:mm)
/	/	:	:
/	/	:	:
/	/	:	:
/	/	:	:
/	/	:	:
/	/	:	:
/	/	:	:
/	/	:	:

2 Enter a name and comment for the schedule rule in the *Name* and *Comment* fields.

3 Specify the schedule rules for the required days and times - note that all times should be in 24 hour format.

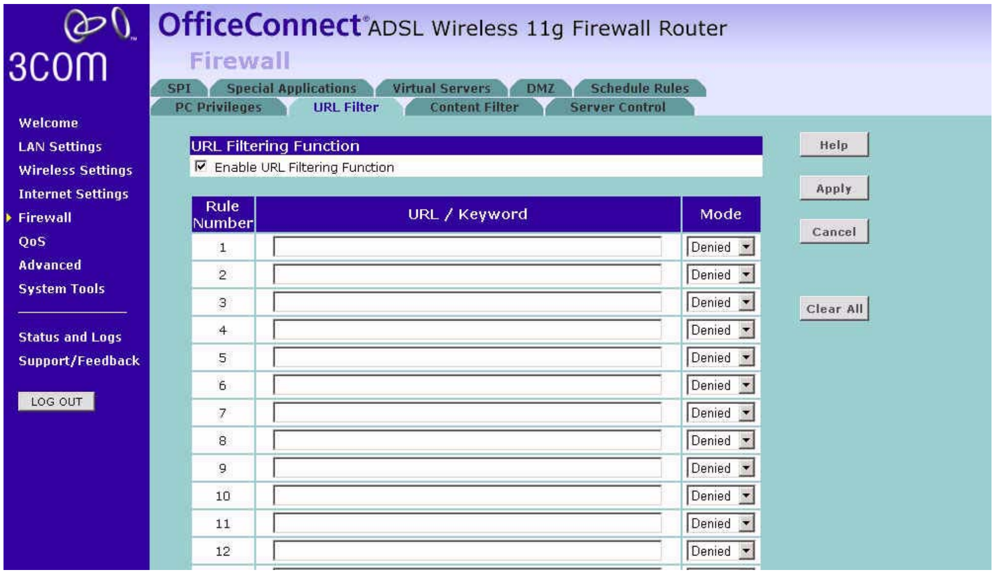
4 Click *Apply*.

URL Filter

To configure the URL filter feature, use the table on the URL Filter screen to specify the Web sites (www.somesite.com) and/or keywords you want to filter on your network.

For example, entering a keyword of ***xxx*** would block access to any URL that contains the string ***xxx***.

Figure 73 URL Filter Screen



URL Filtering Function

☑ Enable URL Filtering Function

Rule Number	URL / Keyword	Mode
1		Denied
2		Denied
3		Denied
4		Denied
5		Denied
6		Denied
7		Denied
8		Denied
9		Denied
10		Denied
11		Denied
12		Denied

1. Check the *Enable URL Filtering Function* checkbox. The rule table will appear.
2. Enter the URL address or keywords in the *URL/Keyword* field.
3. Select *Denied or Allowed* from the *Mode* drop-down menu.

To complete this configuration, you will need to create or modify the filtering rule in the PC Privileges screen (see page 88).

From the *PC Privileges Add PC* screen (Figure 70), if you check the option: *Bypass URL Filter*, then the Web sites and keywords defined in this screen will not be filtered out.

Advanced

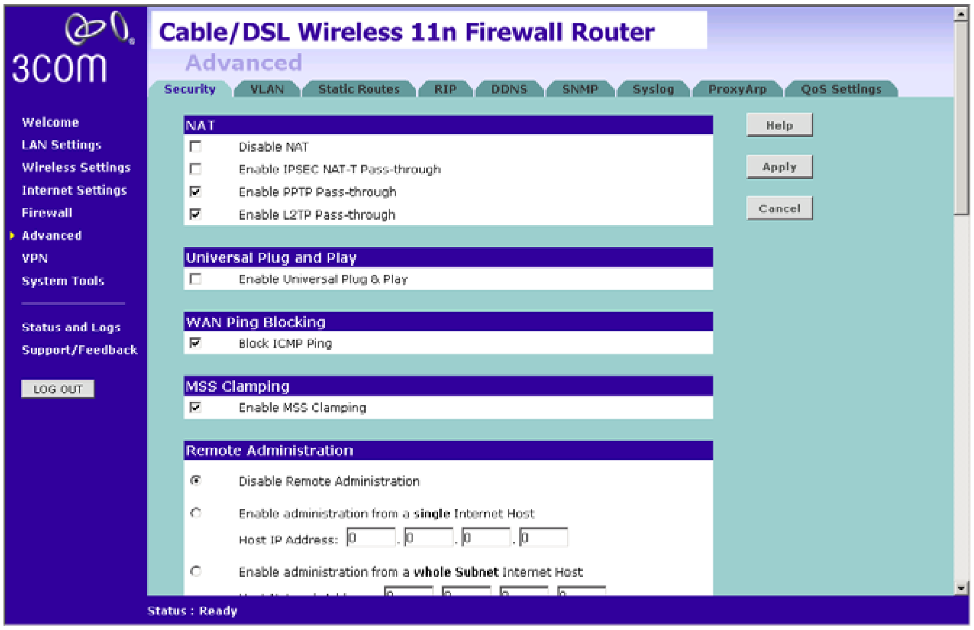
The Advanced section allows you to set additional parameter details for the Router. You can configure:

- Security
- VLAN
- Static Routes
- RIP
- DDNS
- SNMP
- Syslog
- Proxy Arp
- QoS Settings

Security

Use the Security screen to set the advanced security settings for the Router.

Figure 74 Security Screen



NAT

□ Disable NAT
□ Enable IPSEC NAT-T Pass-through
☑ Enable PPTP Pass-through
☑ Enable L2TP Pass-through

Universal Plug and Play

□ Enable Universal Plug & Play

WAN Ping Blocking

☑ Block ICMP Ping

MSS Clamping

☑ Enable MSS Clamping

Remote Administration

● Disable Remote Administration

○ Enable administration from a **single** Internet Host

Host IP Address: 0 . 0 . 0 . 0

○ Enable administration from a **whole Subnet** Internet Host

Status : Ready

- *NAT* — (Network Address Translation), NAT is the method by which the Router shares the single IP address assigned by your ISP with the computers on your network.

  This function should only be disabled by advanced users, and if your ISP assigns you multiple IP addresses or you need NAT disabled for an advanced system configuration. If you have a single IP address and you turn NAT off, the computers on your network will not be able to access the Internet. Other problems may also occur.

- IPSec NAT-T Pass-through — NAT-T (NAT Traversal) is an Internet Draft proposed to IETF in order to help the problems associated with passing IPSec traffic through NAT Routers. For NAT-T to work, both ends of the connection need to support this function. Ensure that you select NAT-T only if it is needed as it will reduce LAN-WAN throughput. This Router supports NAT-T draft 2 implementation.
- Universal Plug and Play — This is a technology that offers seamless operation of voice messaging, video messaging, games, and other applications that are Universal Plug and Play compliant. Some applications require the Router's firewall to be configured in a specific way to operate properly. This usually requires opening TCP and UDP ports and in some instances setting trigger ports. An application that is Universal Plug and Play compliant has the ability to communicate with the Router, basically "telling" the Router which way it needs the firewall configured. The Router ships with the Universal Plug and Play feature disabled. If you are using any applications that are Universal Plug and Play compliant, and want to take advantage of the Universal Plug and Play features, you can enable this feature. Simply check the *Enable Universal Plug and Play* checkbox. Click *Apply* to save the change.
- WAN Ping Blocking — Computer hackers use what is known as "Pinging" to find potential victims on the Internet. By pinging a specific IP address and receiving a response from the IP address, a hacker can determine that something of interest might be there. The Router can be set up so it will not respond to an Internet Control Message Protocol (ICMP) Ping from the outside. This heightens the level of security of your Router. To turn off the ping response, check *Block ICMP Ping* and click *Apply;* the Router will not respond to an ICMP ping from the Internet.

- MSS Clamping — You might not be able to browse some Web sites or to send email messages that contain attachments from an Internet Connection Sharing client computer if your outbound connection is through a Windows XP-based Internet Connection Sharing host computer that uses Point-to-Point Protocol over Ethernet (PPPoE). This issue may occur if the Windows XP-based Internet Connection Sharing host computer uses a smaller Maximum Transmission Unit (MTU) size on the WAN interface (the PPPoE connection to the Internet) than it uses on the private interface (the Ethernet connection to the Internet Connection Sharing client). If a packet is larger than the MTU size on the WAN interface, the client sends an Internet Control Message Protocol (ICMP) error to the external server to request that the server negotiate the TCP Maximum Segment Size (MSS). However, this message may be blocked by some firewalls. When this occurs, the packet is dropped. To allow the message to go through the firewall, enable MSS Clamping. MSS clamping will make Internet Connection Sharing set the MSS value low enough to match the external interface.
- Remote Administration — This feature allows you to make changes to your Router's settings from anywhere on the Internet. Four options are available:
  - If you do not want to use this feature, select *Disable Remote Administration*.
  - Select *Enable administration from a single Internet Host*, and enter the IP address, to allow only one computer to use the remote administration. This is more secure, as only the specified IP address will be able to manage the Router.
  - Select *Enable administration from a whole Subnet Internet Host*, and enter the IP address and subnet mask, to allow PCs from that specific subnet group to use the remote administration.
  - Select *Enable administration from any Internet Host*, this allows any computer to access the Router remotely.

Before you enable this function, ensure that you have changed the factory default Administration Password.

VLAN

A VLAN is a flexible group of devices that can be located anywhere in a network, but they communicate as if they are on the same physical segment. With VLANs, you can segment your network without being restricted by physical connections - a drawback of traditional network design. As an example, with VLANs you can segment your network according to:

- Departmental groups - For example, you can have one VLAN for the Marketing department, another for the Finance department, and another for the Development department.
- Hierarchical groups - For example, you can have one VLAN for directors, another for managers, and another for general staff.
- Usage groups - For example, you can have one VLAN for users of e-mail, and another for users of multimedia.

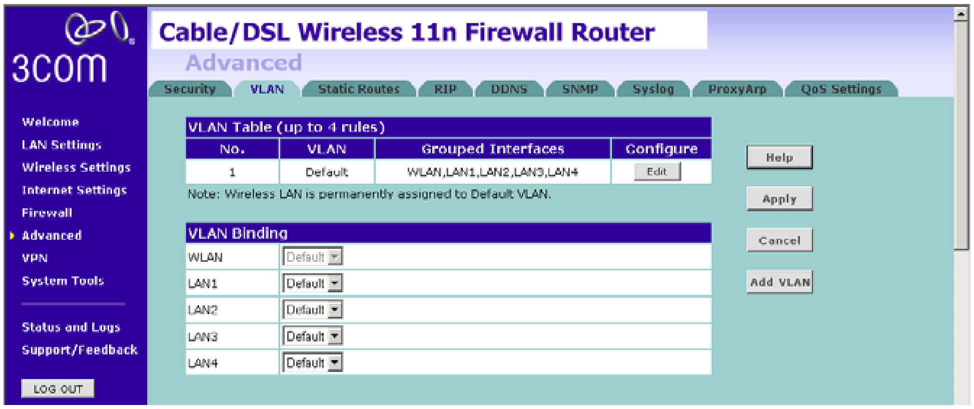
The main benefit of VLANs is that they provide a network segmentation system that is far more flexible than any traditional network. Using VLANs also provides you with three other benefits:

- It eases the change and movement of devices on IP networks: With traditional IP networks, network administrators spend much of their time dealing with moves and changes. If users move to a different IP subnet, the IP addresses of each endstation must be updated manually.

  With a VLAN setup, if an endstation in VLAN 1 is moved to a port in another part of the network, you only need to specify that the new port forwards VLAN 1 traffic.
- It provides extra security: Devices within each VLAN can only communicate directly with devices in the same VLAN. If a device in VLAN 1 needs to communicate with devices in VLAN 2, the traffic needs to pass through a routing device or Layer 3 switch.
- It helps to control broadcast traffic: With traditional networks, congestion can be caused by broadcast traffic that is directed to all network devices whether they require it or not. VLANs increase the efficiency of your network because each VLAN can be set up to contain only those devices that need to communicate with each other.

The VLAN screen allows you to setup VLAN groups. Note that Wireless LAN is permanently assigned to Default VLAN.

Figure 75 VLAN Screen



VLAN Table (up to 4 rules)

No.	VLAN	Grouped Interfaces	Configure
1	Default	WLAN,LAN1,LAN2,LAN3,LAN4	Edit

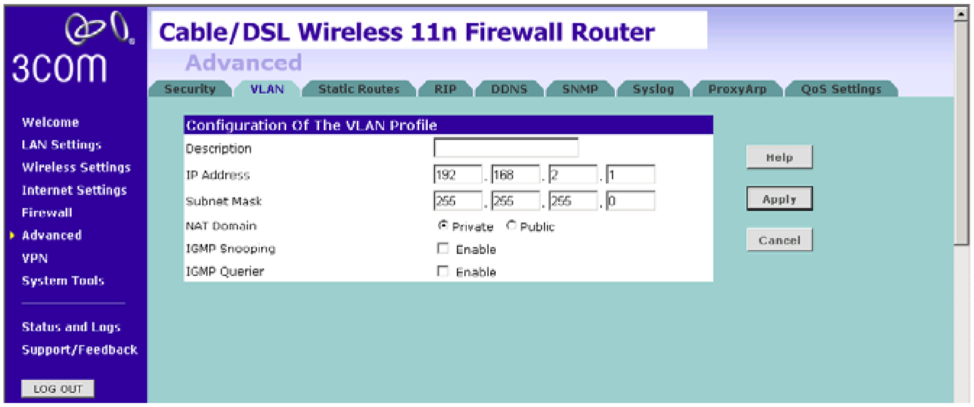
Note: Wireless LAN is permanently assigned to Default VLAN.

VLAN Binding

WLAN	Default
LAN1	Default
LAN2	Default
LAN3	Default
LAN4	Default

Click *Add VLAN* to create a new entry (see Figure 76).

Figure 76 VLAN Profile Screen



Configuration Of The VLAN Profile

Description	
IP Address	192 . 168 . 2 . 1
Subnet Mask	255 . 255 . 255 . 0
NAT Domain	● Private ○ Public
IGMP Snooping	□ Enable
IGMP Querier	□ Enable

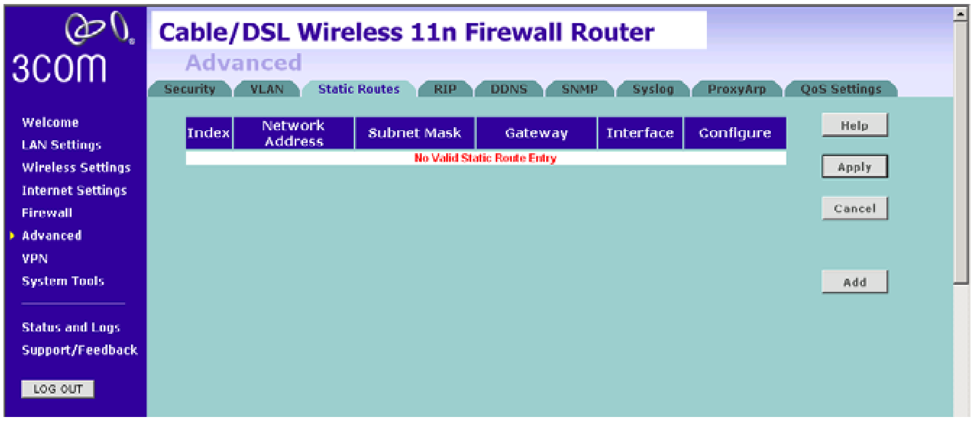
- Enter a description for your VLAN in the *Description* field.
- Enter the IP Address and subnet mask in the corresponding fields.
- Select to set the *NAT Domain* as public or private.
- IGMP Snooping: enabling it will turn on the feature that allows an Ethernet switch to “listen in” on the IGMP conversation between hosts and routers.
- IGMP Querier: enabling this function will send out periodic IGMP queries.

Click *Apply*.

Static Routes

You can configure static routes in this screen. You can setup a static route that will get all traffic with destination to business network to go through VPN tunnel and the rest outside of the VPN tunnel.

Figure 77 Static Routes Screen



Cable/DSL Wireless 11n Firewall Router

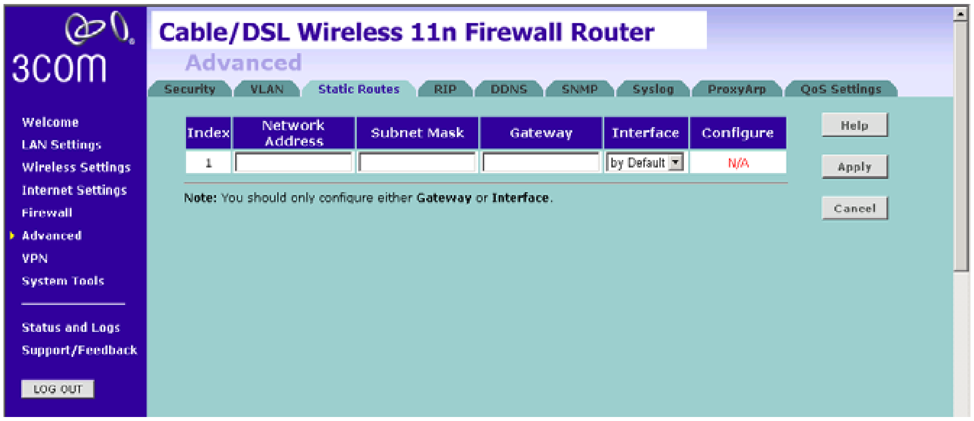
Advanced

Index	Network Address	Subnet Mask	Gateway	Interface	Configure
No Valid Static Route Entry					

To add a static route entry to the table, click *Add* (see Figure 78).

To change an existing entry, click *Edit*. To delete an entry, click *Delete*.

Figure 78 Add Static Route Screen



Cable/DSL Wireless 11n Firewall Router

Advanced

Index	Network Address	Subnet Mask	Gateway	Interface	Configure
1				by Default	N/A

Note: You should only configure either **Gateway** or **Interface**.

Enter the following information:

- *Network Address* — the network address of the static route.
- *Subnet Mask* — the subnet mask of the route.

A network address of 0.0.0.0 and a subnet mask of 0.0.0.0 indicates the default route.

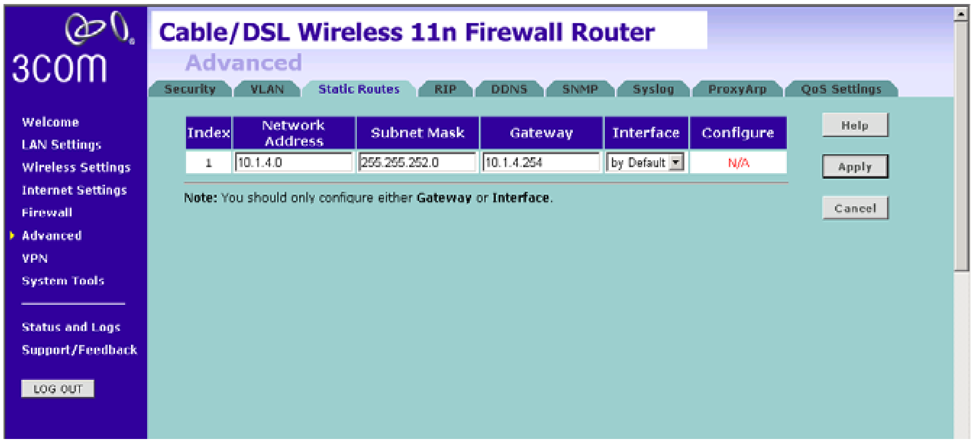
- *Gateway* — the Router used to route data to the network specified by the network address.
- Interface — select the interface.

Note that you should only confiqure either the Gateway information or select the Interface. After you have finished making changes to the table, click *Apply*.

Here is an example of setting up a static route.

- IP address of your PC: 10.1.4.52
- Subnet mask: 255.255.252.0
- Default Gateway: 10.1.4.254
- Network Address: 10.1.4.0

Figure 79 Add Static Route Example Screen

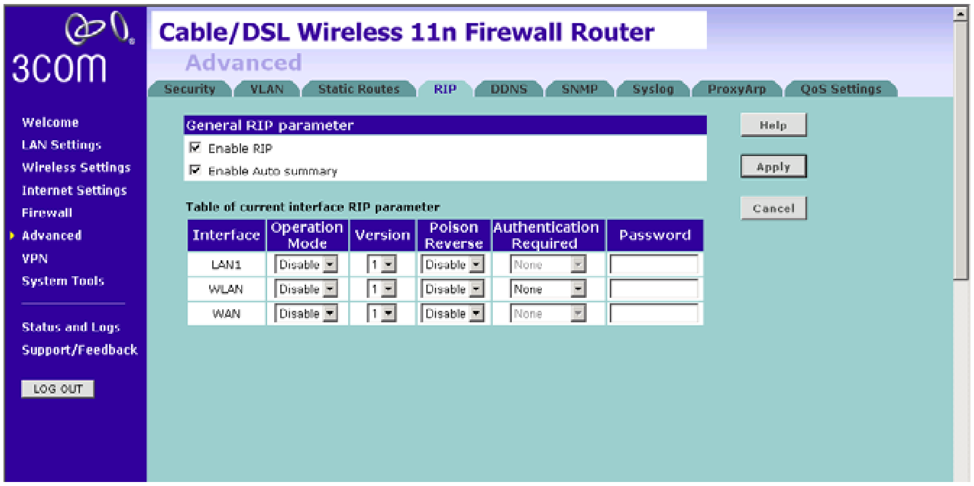


Index	Network Address	Subnet Mask	Gateway	Interface	Configure
1	10.1.4.0	255.255.252.0	10.1.4.254	by Default	N/A

Note: You should only confiqure either **Gateway** or **Interface**.

RIP RIP (Routing Information Protocol) - RIP allows the network administrator to set up routing information on one RIP-enabled device (this Router), and send that information to all RIP-enabled devices on the network.

Figure 80 RIP Parameter Screen



General RIP parameter

☑ Enable RIP

☑ Enable Auto summary

Table of current interface RIP parameter

Interface	Operation Mode	Version	Poison Reverse	Authentication Required	Password
LAN1	Disable	1	Disable	None	
WLAN	Disable	1	Disable	None	
WAN	Disable	1	Disable	None	

You can set up RIP independently on both LAN and WAN interfaces.

1 Check the *Enable RIP* checkbox.

2 Check the *Enable Auto summary* checkbox. Auto summarization sends simplified routing data to other RIP-enabled devices rather than full routing data.

3 Select the *Operation Mode*:

- *Disable* — RIP is not enabled for the WAN or LAN interface.
- *Enable* — RIP is enabled for the WAN or LAN interface. The router will transmit RIP update information to other RIP-enabled devices.
- *Silent* — RIP is enabled, however the Router only receives RIP update messages, it will not transmit any messages itself.

4 In the *Version* field, select *1* or *2*.

3Com recommends that you only use RIPv1 if there is an existing RIP-enabled device on your network that does not support RIPv2. In all other cases, you should use RIPv2.

5 Use the *Poison Reverse* drop-down menu to enable or disable *Poison Reverse* on the Router. Enabling *Poison Reverse* on your Router allows it to indicate to other RIP-enabled devices that they have both routes that point to each other, preventing data loops.

6 Use the *Authentication Required* field to choose the mode of authentication:

- *None* — Switches off authentication on the specified interface.
- *Password* — An unencrypted text password that needs to be set on all RIP-enabled devices connected to this Router. RIP information is not shared between devices whose passwords do not match.

7 In the *Password* field, enter the required password.

8 Click *Apply*.

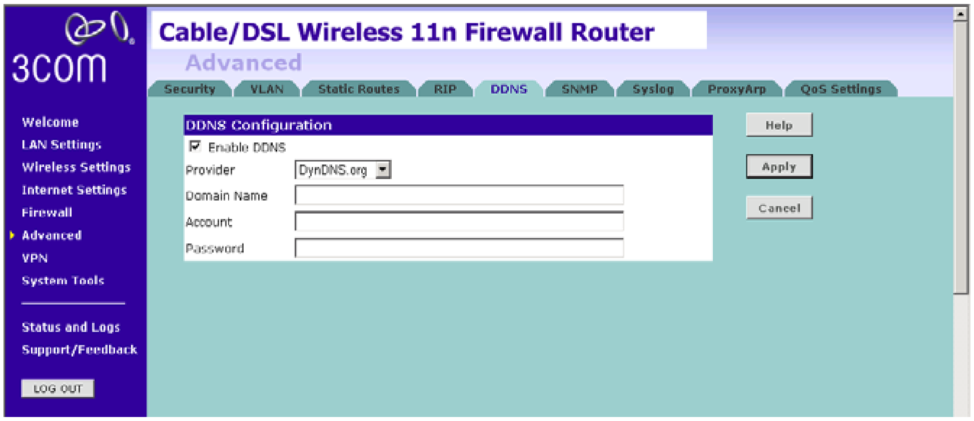
DDNS

The Router provides a list of dynamic DNS providers for you to choose from. Dynamic Domain Name Server (DDNS) enables you to map a static domain name to a dynamic IP address. This function allows you to create a hostname that points to your dynamic IP or static IP address or URL.

Before you set up DDNS, you must obtain an account, password or key and static domain name from your DDNS provider. The Router supports five DDNS providers:

- DynDNS.org
- TZO.com
- Dt DNS.com
- No-IP.com
- Zoneedit.com

Figure 81 Dynamic Domain Name Server (DDNS) Screen



DDNS Configuration

☑ Enable DDNS

Provider: DynDNS.org

Domain Name:

Account:

Password:

1 Check *Enable DDNS*.

2 Select the provider, and then enter the necessary information provided by your DDNS provider.

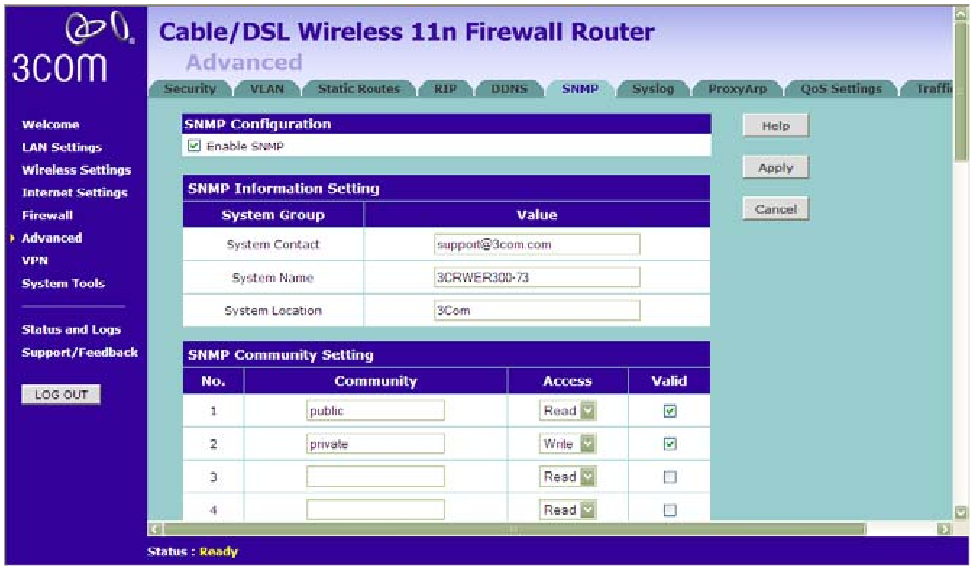
3 Click *Apply*.

SNMP

SNMP (Simple Network Management Protocol) allows remote management of your Router by a PC that has an SNMP management agent installed.

Check the *Enable SNMP* box, the table will appear.

Figure 82 SNMP Screen



SNMP Configuration

☑ Enable SNMP

SNMP Information Setting

System Group	Value
System Contact	support@3com.com
System Name	3CRWER300-73
System Location	3Com

SNMP Community Setting

No.	Community	Access	Valid
1	public	Read	☑
2	private	Write	☑
3		Read	□
4		Read	□

Status : Ready

Enter the System Contact, System Name, and System Location information.

To Configure SNMP Community:

1. In the *Community* column, enter the name of the SNMP communication channel. Your SNMP management agent needs to be configured with this name so that it can communicate with your Router.
2. In the *Access* column, select *Read* to allow the management agent to collect data (for example, bandwidth usage) from your Router. Select *Write* to allow the management agent to change the configuration of your Router.
3. Check the appropriate *Valid* checkbox to enable the communication channel.

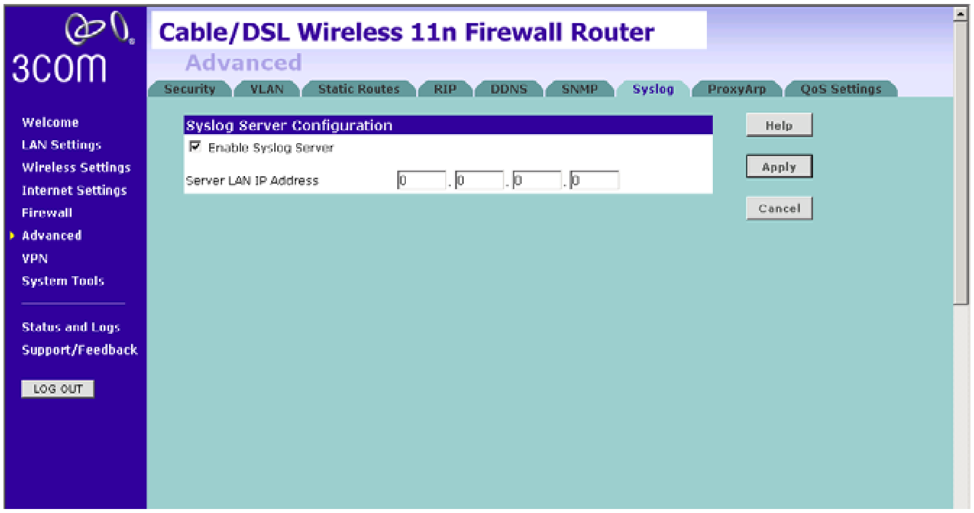
You can configure your Router to send status messages to the SNMP management agent if a problem occurs on the network. To configure SNMP traps:

1. In the *IP Address* field, enter the IP address of the PC to which you want your Router to send status messages.
2. In the *Community* field, enter the name of the SNMP communication channel to which you want your Router to send status messages.
3. Set the *Version* field to match the version of trap messaging that your SNMP management agent supports. The Router supports V1 and V2c trap messaging.

Syslog

Using third party syslog software, this Syslog Server tool will automatically send the Router log to the specified server IP address.

Figure 83 Syslog Server Screen



Syslog Server Configuration

☑ Enable Syslog Server

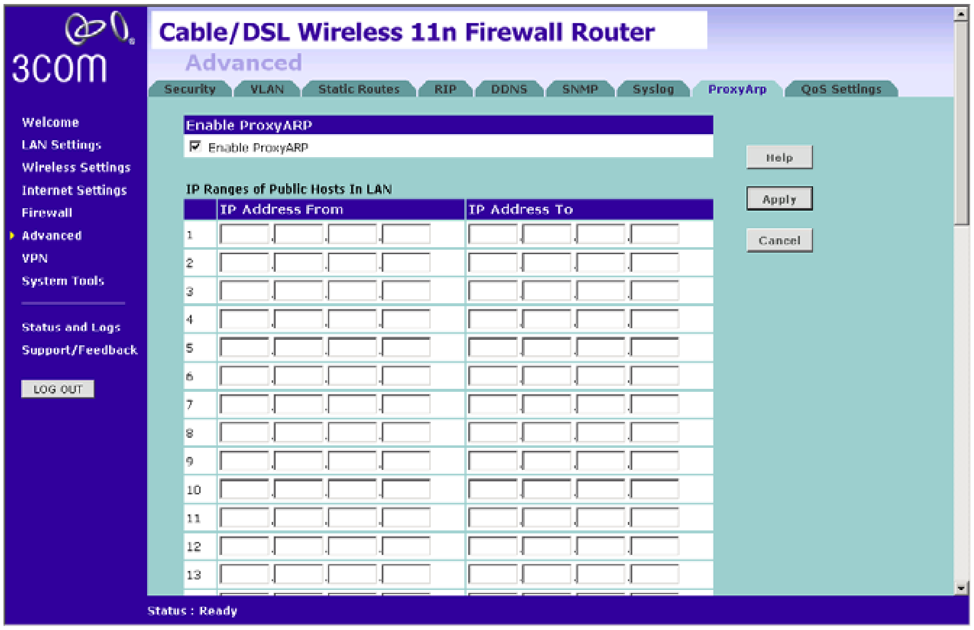
Server LAN IP Address 0 . 0 . 0 . 0

1. Check the *Enable Syslog Server* checkbox.
2. Enter the *Server LAN IP Address* in the space provided.
3. Click *Apply*.

Proxy ARP

Proxy ARP is the technique in which one host, usually a Router, answers ARP requests intended for another machine. By “faking” its identity, the Router accepts responsibility for routing packets to the “real” or intended destination. This heightens the security for your network.

Figure 84 Proxy ARP Screen



Enable ProxyARP

☑ Enable ProxyARP

IP Ranges of Public Hosts In LAN

	IP Address From	IP Address To
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		

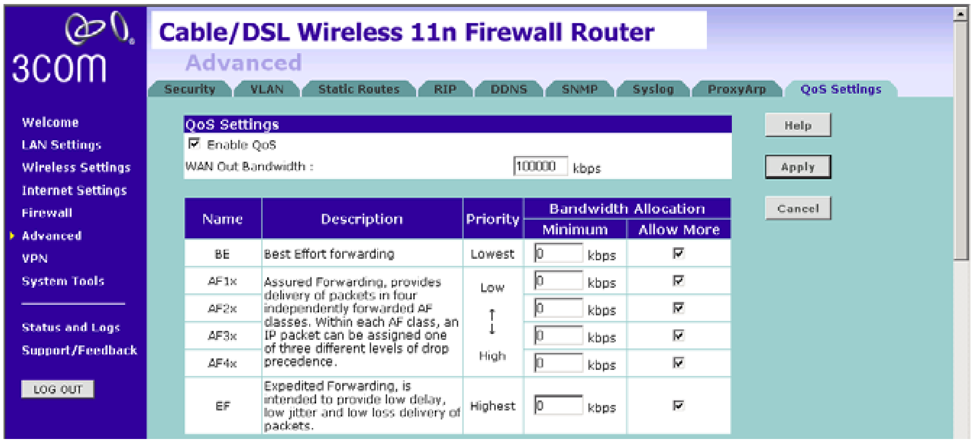
1. Check the *Enable ProxyARP* box.
2. Enter the corresponding IP address in the *IP Address From* and *IP Address To* fields.
3. Click *Apply*.

QoS Settings

The QoS (Quality of Service) function allows you to differentiate your network traffic and provide it with high-priority forwarding service.

The bandwidth gap between LAN and WAN may significantly degrade performance of critical network applications, such as VoIP, gaming, and VPN. This QoS function allows you to classify traffic of applications and provides them with differentiated services (Diffserv).

Figure 85 QoS Settings Screen



QoS Settings

☑ Enable QoS

WAN Out Bandwidth : 100000 kbps

Name	Description	Priority	Bandwidth Allocation	
			Minimum	Allow More
BE	Best Effort forwarding	Lowest	0 kbps	☑
AF1x	Assured Forwarding, provides delivery of packets in four independently forwarded AF classes. Within each AF class, an IP packet can be assigned one of three different levels of drop precedence.	Low ↑ ↓ High	0 kbps	☑
AF2x			0 kbps	☑
AF3x			0 kbps	☑
AF4x			0 kbps	☑
EF	Expedited Forwarding, is intended to provide low delay, low jitter and low loss delivery of packets.	Highest	0 kbps	☑

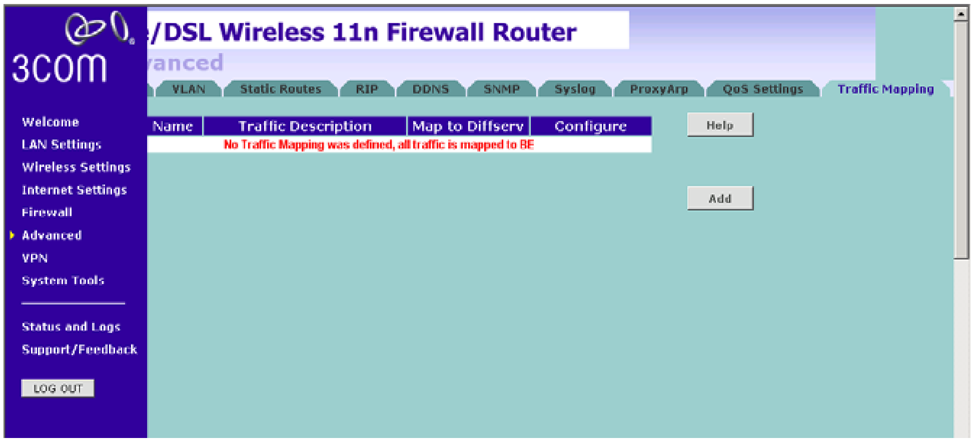
1. Check the *Enable QoS* box, and enter the value for *WAN Out Bandwidth*.
2. Define the minimum percentage of bandwidth for each type of traffic.
3. Check the corresponding box to allow more bandwidth allocation.
4. Click *Apply*.

Note that once QoS is enabled, a new tab, Traffic mapping, will become visible, see Figure 86.

Traffic mapping

Up to 16 rules can be defined to classify your network traffic into Diffserv forwarding groups and outgoing connections.

Figure 86 Traffic Mapping Screen

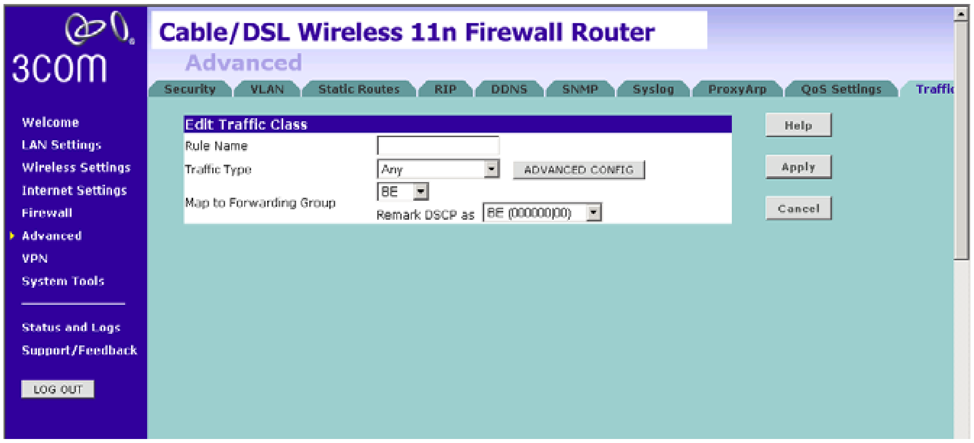


Name	Traffic Description	Map to Diffserv	Configure

No Traffic Mapping was defined, all traffic is mapped to BE

Click *Add*, the Edit Traffic Class screen will appear.

Figure 87 Edit Traffic Class Screen

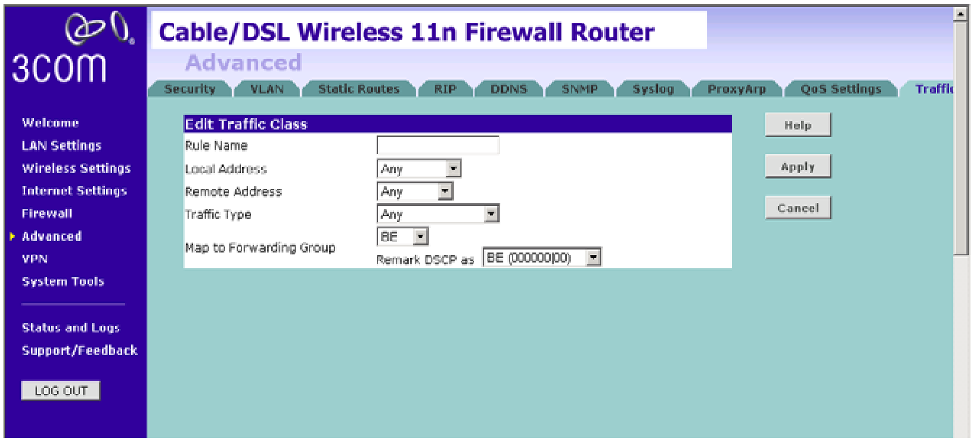


Edit Traffic Class

Rule Name
Traffic Type: Any
Map to Forwarding Group: BE
Remark DSCP as: BE (000000|00)

1. Define the Rule name.
2. Select the traffic type from drop-down menu.
3. Select the forwarding group from the *Map to Forwarding Group* drop-down menu.
4. Select the value from the *Remark DSCP as* drop-down menu.
5. Click the *ADVANCED CONFIG* button, a more detailed Edit Traffic class screen will appear, see Figure 88.

Figure 88 Detailed Edit Traffic Class Screen



Edit Traffic Class

Rule Name	
Local Address	Any
Remote Address	Any
Traffic Type	Any
Map to Forwarding Group	BE Remark DSCP as BE (000000|00)

Enter the information, then click *Apply* to make the settings to take effect.

VPN

The Router has a Virtual Private Network (VPN) feature that provides a secure link between remote users and the corporate network by establishing an authenticated and encrypted tunnel for passing secure data over the Internet. The Router supports three modes of VPN operation:

- IPSec (IP Security) — provides IP network-layer encryption. IPSec can support large encryption networks (such as the Internet) by using digital certificates for device authentication. When setting up an IPSec connection between two devices, make sure that they support the same encryption method.

Note: Enabling IPSec VPN disables pass-through to IPSec and L2TP over IPSec Virtual Servers on the LAN. Pass-through outbound from clients on the LAN to servers on the Internet is unaffected.

- PPTP (Point-to-Point Tunneling Protocol) — provides a secure tunnel for remote client access to a PPTP security gateway. It is not as secure as IPSec but is easy to administer. PPTP does not support gateway to gateway connections and is only suitable for connecting remote users. Check that your ISP's routers support this protocol before you use it.

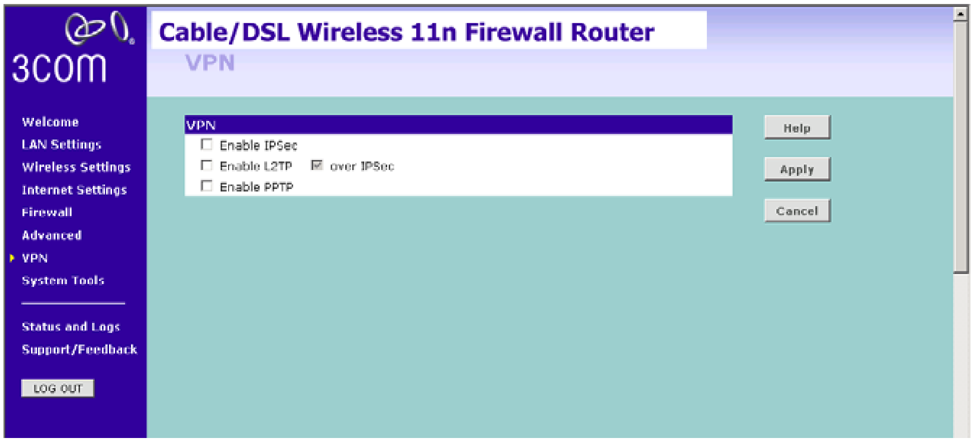
Note: Enabling the PPTP Server disables PPTP pass-through to a Virtual Server on the LAN. Pass-through outbound from clients on the LAN to servers on the Internet is unaffected.

- L2TP over IPSec — this is a combination of two protocols. L2TP is used to authenticate a user, and IPSec is used to encrypt data. L2TP over IPSec does not support gateway to gateway connections and is only suitable for connecting remote users. Check that your ISP's routers support this protocol before you use it.

Note: Enabling L2TP over IPSec disables pass-through to IPSec and L2TP over IPSec Virtual Servers on the LAN. Pass-through outbound from clients on the LAN to servers on the Internet is unaffected.

Using the VPN Tunnel Configuration screen, you can add new IPSec, L2TP over IPSec and PPTP connections, and to edit existing connections. When adding or editing values on this screen remember that both ends of the connection must contain the same information.

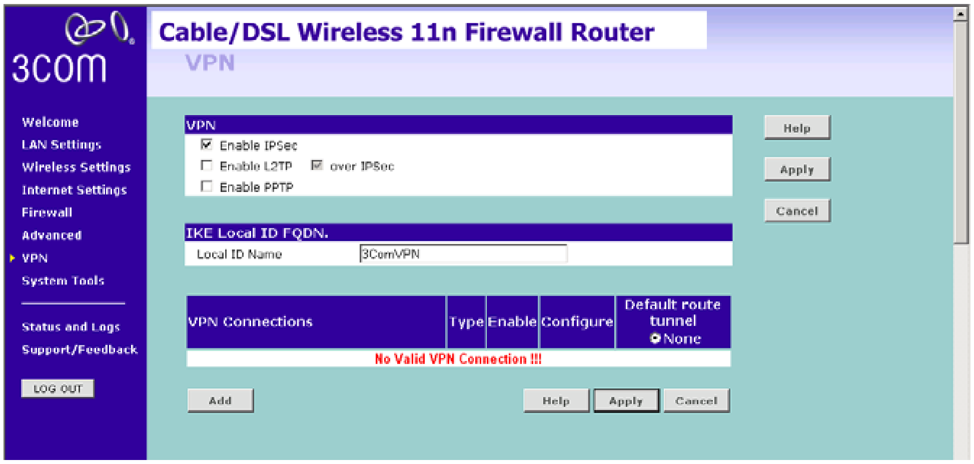
Figure 89 VPN Screen



VPN
□ Enable IPSec
□ Enable L2TP ☑ over IPSec
□ Enable PPTP

1 Check the *Enable IPsec* box, configuration details screen appears.

Figure 90 Enable IPSec Screen



VPN
☑ Enable IPSec
□ Enable L2TP ☑ over IPSec
□ Enable PPTP

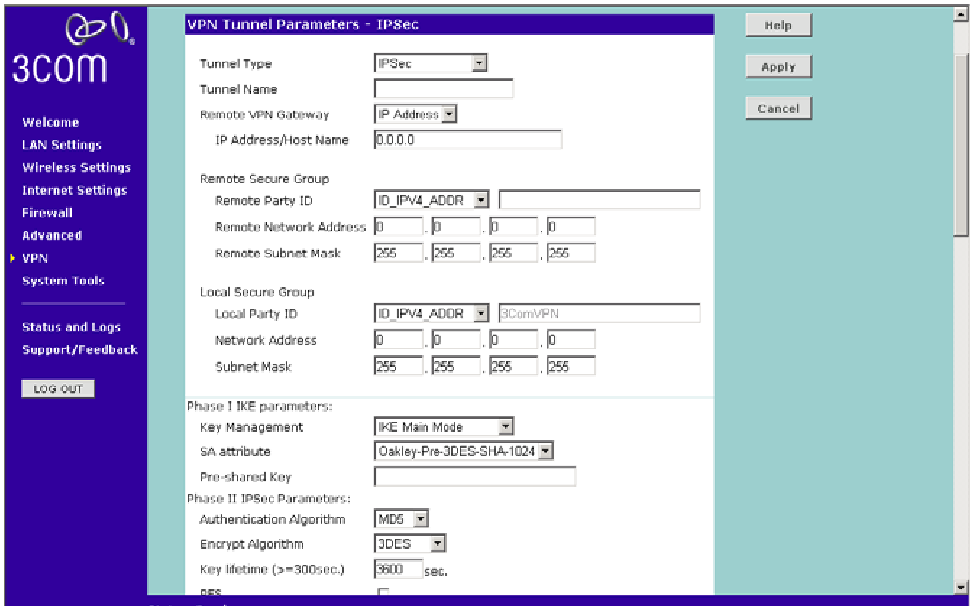
IKE Local ID FQDN.
Local ID Name 3ComVPN

VPN Connections	Type	Enable	Configure	Default route tunnel ● None
No Valid VPN Connection !!!				

2 Enter the *Local ID Name* of your VPN. (the default is 3ComVPN)

3 Click *Add* to create a new entry, see Figure 91

Figure 91 Add New VPN Tunnel Parameter Screen



VPN Tunnel Parameters - IPSec

Tunnel Type	IPSec
Tunnel Name	
Remote VPN Gateway	IP Address
IP Address/Host Name	0.0.0.0
Remote Secure Group	
Remote Party ID	ID_IPV4_ADDR
Remote Network Address	0 . 0 . 0 . 0
Remote Subnet Mask	255 . 255 . 255 . 255
Local Secure Group	
Local Party ID	ID_IPV4_ADDR 3ComVPN
Network Address	0 . 0 . 0 . 0
Subnet Mask	255 . 255 . 255 . 255
Phase I IKE parameters:	
Key Management	IKE Main Mode
SA attribute	Oakley-Pre-3DES-SHA-1024
Pre-shared Key	
Phase II IPSec Parameters:	
Authentication Algorithm	MD5
Encrypt Algorithm	3DES
Key lifetime (>=300sec.)	3600 sec.
PFS	□

On the VPN Tunnel Parameter screen,

1. Set the VPN *Tunnel Type* to *IPSec*.
2. Enter a descriptive name for the tunnel in the *Tunnel Name* field.
3. Remote VPN Gateway - select IP address, and then enter the IP address in the *IP Address/Host Name* field. If you select *ANY*, then it would be no need to enter the IP address, as any remote server can be used.
4. At the *Remote Party ID* drop-down list, select either IP_IPV4_ADDR or ID_USER_FQDN. This information must be entered identically on the IPSec software installed on the client's machine.

   If IP_IPV4_ADDR is selected, then enter the IP address and subnet mask in the Remote Network Address, and Remote Subnet Mask fields. The remote network address is usually the network address of the LAN connected to the remote server.

   If ID_USER_FQDN is selected, then enter the name for the *Remote Party ID* in the text box area next to the drop-down menu. This name must be unique for each connection rule that you create. Enter the IP address and subnet mask in the Remote Network Address, and Remote Subnet Mask fields.

Note that if you select IKE Main Mode from the Key Management drop-down menu (see step 6), you must enter IP_IPV4_ADDR here.

5 Select the *Local Party ID*, and then enter the ID, Network Address and Subnet Mask of the Local Secure Group. The network address of the local secure group is usually the network address of the local network.

6 From the *Key Management* drop-down menu, select either IKE Main Mode or IKE Aggressive Mode.

7 SA (Security Association) attribute - select the option to use for *SA attribute*.

8 In the *Pre-shared Key* field, enter the password for the connection. This must be unique for each connection rule that you create.

9 Select MD5, or SHA1from the *Authentication Algorithm* drop-down menu. Both ends of the connection must use the same value.

10 Select DES, 3DES, Null, AES-128, AES-192, or AES-256 from the *Encrypt Algorithm* drop-down menu. Both ends of the connection must use the same value.

11 Enter the *Key lifetime*, in seconds. The default is 3600 seconds. The value must be at least 300 seconds.

12 PFS - Perfect Forward Secrecy, check this box, then the Diffie-Hellman Group options become available. The use o PFS is optional, enabling PFS will add another layer of encryption security.

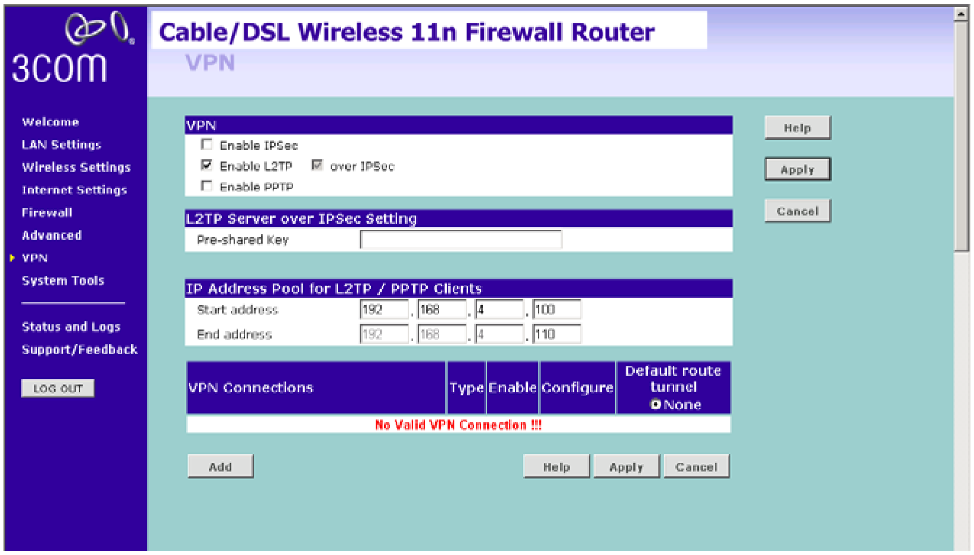
13 Diffie-Hellman Group - select the group to use for Diffie-Hellman key exchange.

14 Check the *IKE Keep Alive* box to enable this function. The time value is the number of seconds that the router waits between sending IKE keepalive packets.

15 Click *Apply*.

Check the *Enable L2TP* box, configuration details screen appears, see Figure 92

Figure 92 Enable L2TP Screen



Cable/DSL Wireless 11n Firewall Router

VPN

VPN

☐ Enable IPSec

☑ Enable L2TP ☑ over IPSec

☐ Enable PPTP

L2TP Server over IPSec Setting

Pre-shared Key

IP Address Pool for L2TP / PPTP Clients

Start address	192	168	4	100
End address	192	168	4	110

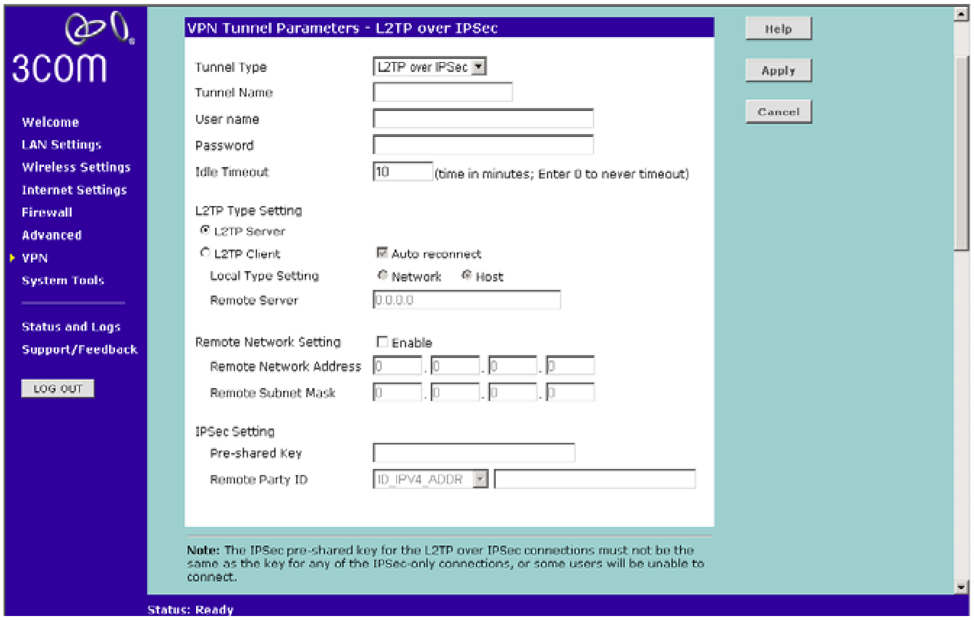
VPN Connections	Type	Enable	Configure	Default route tunnel ● None
No Valid VPN Connection !!!				

1 Enter the *Pre-shared Key* for L2TP Server over IPSec Setting.

2 Define the IP Address Pool for L2TP clients, enter the start/end address.

3 Click *Add* to create a new entry, see Figure 93

Figure 93 Add New VPN Tunnel Parameter L2TP over IPSec Screen



VPN Tunnel Parameters - L2TP over IPSec

Tunnel Type: L2TP over IPSec

Tunnel Name

User name

Password

Idle Timeout: 10 (time in minutes; Enter 0 to never timeout)

L2TP Type Setting

● L2TP Server

○ L2TP Client ☑ Auto reconnect

Local Type Setting ● Network ○ Host

Remote Server: 0.0.0.0

Remote Network Setting ☐ Enable

Remote Network Address: 0 . 0 . 0 . 0

Remote Subnet Mask: 0 . 0 . 0 . 0

IPSec Setting

Pre-shared Key

Remote Party ID: ID_IPV4_ADDR

Note: The IPSec pre-shared key for the L2TP over IPSec connections must not be the same as the key for any of the IPSec-only connections, or some users will be unable to connect.

Status: Ready

1 Set the *Tunnel Type* to *L2TP over IPSec*.

2 Enter a descriptive name for the tunnel in the *Tunnel Name* field.

3 Enter the *User name* and *Password*.

4 Enter the *Idle Timeout* value.

5 Set the L2TP Type Setting to *L2TP Server*, or *L2TP Client*.

- if you set the type as *L2TP Client*, then set the *Local Type Setting* to Network or Host, then enter the *Remote Server* IP. Check the Auto reconnect box, if you want to auto-reconnect after disconnection.
- if the L2TP Type Setting is set to *L2TP Server*, go to step 6.

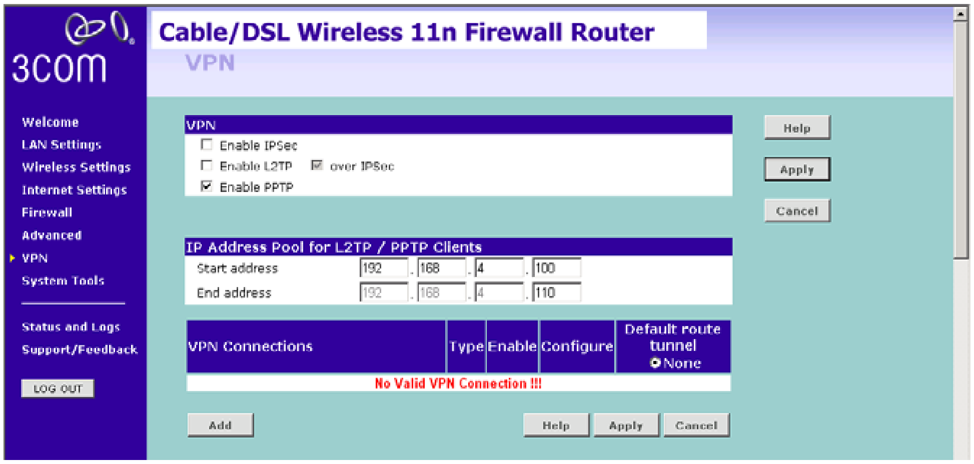
6 Check the box to enable the *Remote Network Setting*, and then enter the *Remote Network Address*, and *Remote Subnet Mask* information.

7 When the L2TP Type Setting is set to *L2TP Client*, you would then need to enter the *Pre-shared Key* information.

8 Click *Apply*.

Check the Enable PPTP box, configuration details screen appears, see Figure 94

Figure 94 Enable PPTP Screen



VPN

☐ Enable IPSec

☐ Enable L2TP ☑ over IPSec

☑ Enable PPTP

IP Address Pool for L2TP / PPTP Clients

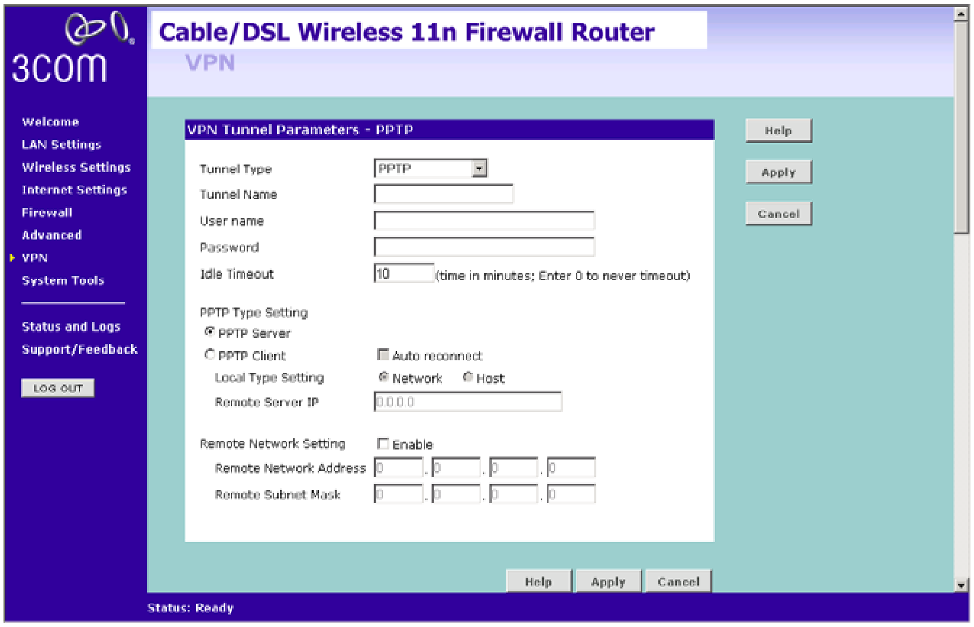
Start address	192	168	4	100
End address	192	168	4	110

VPN Connections	Type	Enable	Configure	Default route tunnel ● None
No Valid VPN Connection !!!				

1 Define the IP Address Pool for PPTP clients, enter the start/end address.

2 Click *Add* to create a new entry, see Figure 93

Figure 95 Add new PPTP VPN Tunnel Screen



VPN Tunnel Parameters - PPTP

Tunnel Type: PPTP

Tunnel Name:

User name:

Password:

Idle Timeout: 10 (time in minutes; Enter 0 to never timeout)

PPTP Type Setting

● PPTP Server

○ PPTP Client □ Auto reconnect

Local Type Setting ● Network ○ Host

Remote Server IP 0.0.0.0

Remote Network Setting □ Enable

Remote Network Address 0 . 0 . 0 . 0

Remote Subnet Mask 0 . 0 . 0 . 0

1. Set the *Tunnel Type* to *PPTP.*
2. Enter a descriptive name for the tunnel in the *Tunnel Name* field.
3. Enter the *User name* and *Password*.
4. Enter the *Idle Timeout* value.
5. Set the PPTP Type Setting to *PPTP Server*, or *PPTP Client*.
   - if you set the type as *PPTP Client*, then set the *Local Type Setting* to Network or Host, then enter the *Remote Server* IP. Check the Auto reconnect box, if you want to auto-reconnect after disconnection.
   - if the PPTP Type Setting is set to *PPTP Server*, go to step 6.
6. Check the box to enable the *Remote Network Setting*, and then enter the *Remote Network Address*, and *Remote Subnet Mask* information.
7. When the PPTP Type Setting is set to *PPTP Client*, you would then need to enter the *Pre-shared Key* information.
8. Click *Apply*.

System Tools

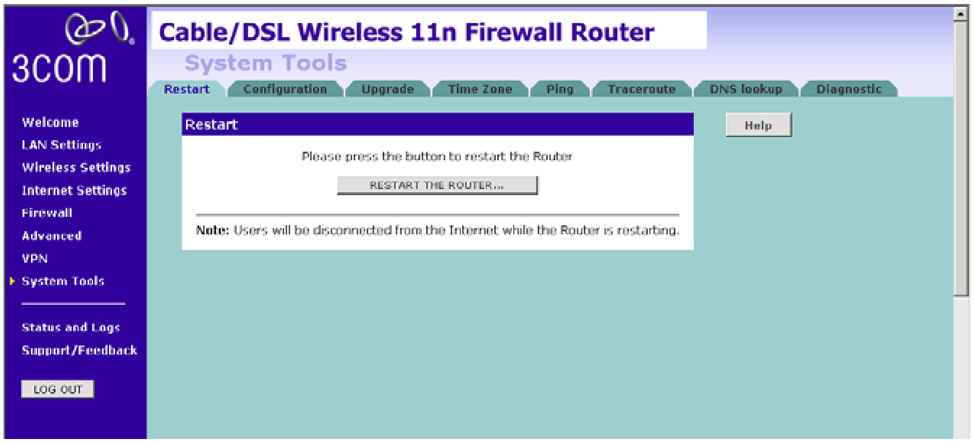
These screens allow you to manage different parameters of the Router and perform certain administrative functions.

Restart Router

Sometimes it may be necessary to restart (or reboot) the Router. Restarting the Router from this screen will not delete any of your configuration settings.

Click the *Restart the Router* button to restart the Router.

Figure 96 Restart Router Screen



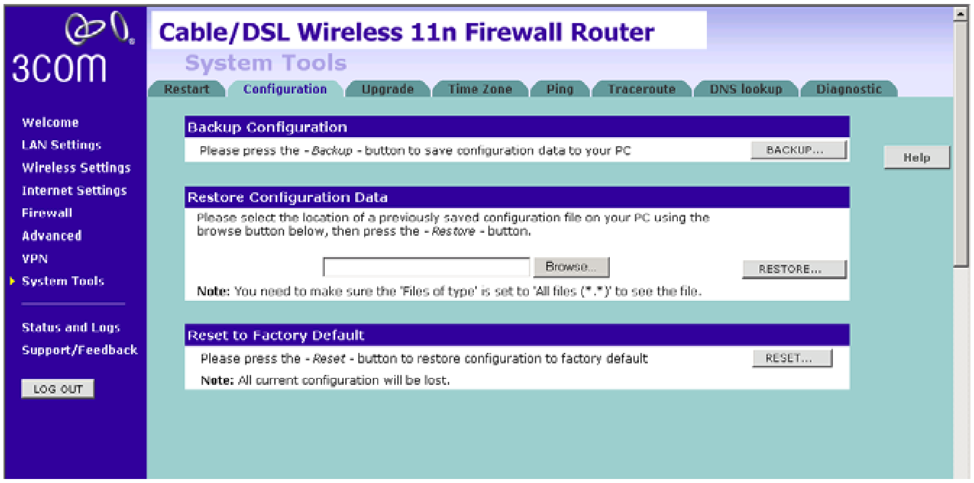
Please press the button to restart the Router

Note: Users will be disconnected from the Internet while the Router is restarting.

Configuration

Use this configuration screen to backup, restore or reset the configuration details of the Router.

Figure 97 Configuration Screen



Please press the - *Backup* - button to save configuration data to your PC

Please select the location of a previously saved configuration file on your PC using the browse button below, then press the - *Restore* - button.

Note: You need to make sure the 'Files of type' is set to 'All files (*.*)' to see the file.

Please press the - *Reset* - button to restore configuration to factory default

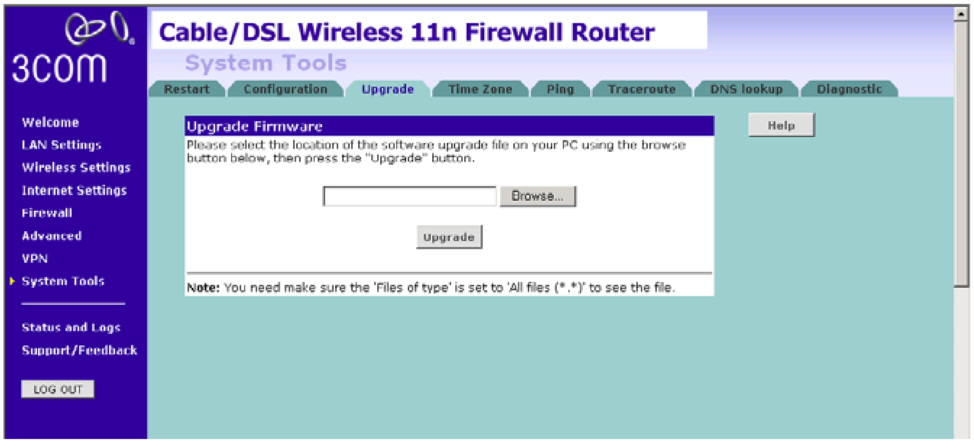
Note: All current configuration will be lost.

- Backup Configuration — You can save your current configuration by clicking the *Backup* button. Saving your configuration will allow you to restore it later if your settings are lost or changed. It is recommended that you backup your current configuration before performing a firmware update.
- Restore Configuration Data — The Restore Settings option will allow you to restore a previously saved configuration. Please select the configuration file using the *Browse* button and click *Restore*.
- Reset to Factory Default — Using this option will reset all of the settings in the Router to the factory default settings. It is recommended that you backup your settings before you restore all of the defaults. To restore the factory default settings, click *Reset*. Note that all of your current configuration will be lost.

Upgrade

From time to time 3Com may release new versions of the Router's firmware. Firmware updates contain improvements and fixes to problems that may have existed.

Figure 98 Upgrade Screen



Please select the location of the software upgrade file on your PC using the browse button below, then press the "Upgrade" button.

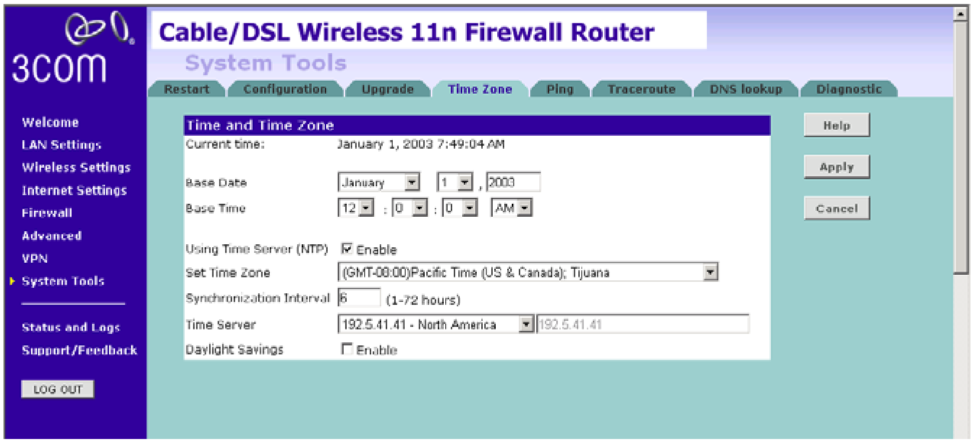
Note: You need make sure the 'Files of type' is set to 'All files (*.*)' to see the file.

Please download the firmware file to your PC first, and then click *Browse* to locate the file, and select the firmware file. Click *Upgrade* to upload the firmware to the Router.

Time Zone

You can set the time settings for the Router on this screen.

Figure 99 Time Zone Screen



Time and Time Zone

Current time: January 1, 2003 7:49:04 AM

Base Date: January, 1, 2003

Base Time: 12 : 0 : 0 AM

Using Time Server (NTP): ☑ Enable

Set Time Zone: (GMT-08:00)Pacific Time (US & Canada); Tijuana

Synchronization Interval: 6 (1-72 hours)

Time Server: 192.5.41.41 - North America | 192.5.41.41

Daylight Savings: ☐ Enable

The Router keeps time by connecting to a Network Time Protocol (NTP) server. This allows the Router to synchronize the system clock to the Internet. The synchronized clock in the Router is used to record the security log and control client filtering. Select the time zone that you reside in.

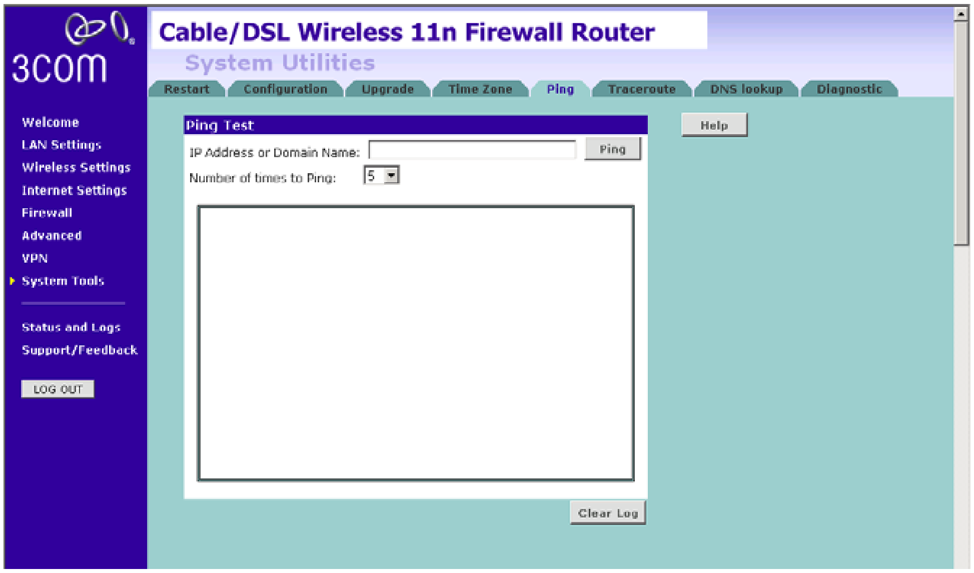
If you reside in an area that observes Daylight Saving, then check the E*nable* Daylight Savings box. The system clock may not update immediately. Allow at least 15 minutes for the Router to contact the time servers on the Internet and get a response. You cannot set the clock yourself.

You can specify which NTP servers the Router will use to update the system clock, although doing this should only be necessary if you are experiencing difficulty.

Ping

The ping tool is used to test if the network is working properly.

Figure 100 Ping Screen



IP Address or Domain Name:

Number of times to Ping: 5

1. Enter the IP address or domain name in the *IP Address or Domain Name* field, and click *Ping*.
2. Select from the *Number of times to Ping* drop-down menu.
3. The Router keeps a log of the ping test, click *Clear Log* to delete the records.

Traceroute

Traceroute is the program that shows you the route over the network between two systems, listing all the intermediate routers a connection must pass through to get to its destination. It can help you determine why your connections to a given server might be poor, and can often help you figure out where exactly the problem is. It also shows you how systems are connected to each other, letting you see how your ISP connects to the Internet as well as how the target system is connected.

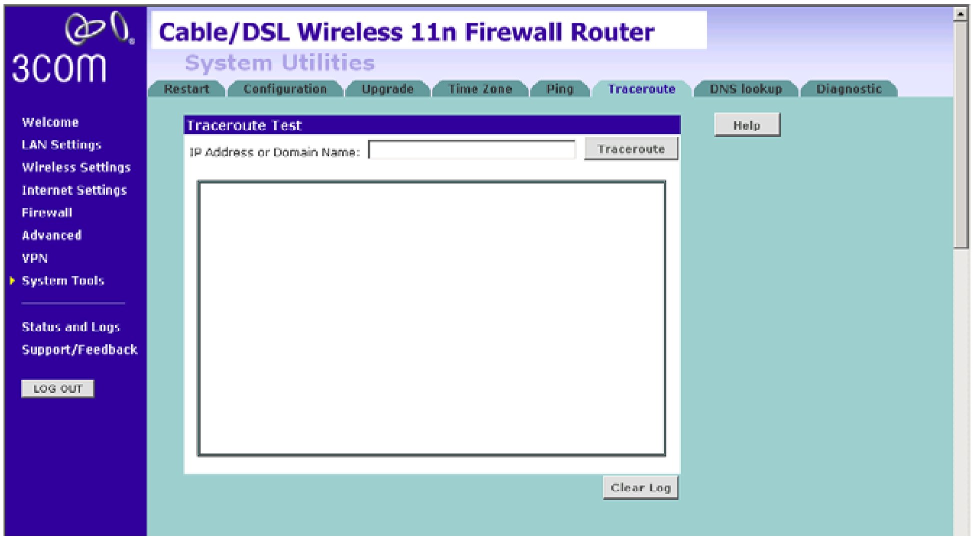


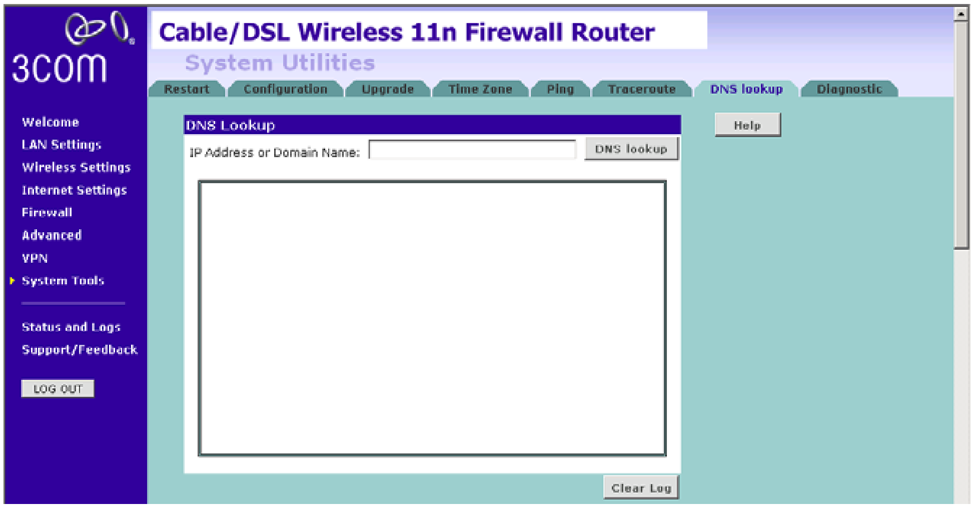
Figure 101 Traceroute Screen

1. Enter the IP address or domain name in the *IP Address or Domain Name* field, and click *Traceroute*.
2. The Router keeps a log of the traceroute test, click *Clear Log* to delete the records.

DNS Lookup

DNS Lookup is the process of resolving an IP address (i.e. 192.168.11.137) to a host name (i.e. xxxcompany.net).

Figure 102 DNS Lookup Screen



Cable/DSL Wireless 11n Firewall Router

System Utilities

DNS Lookup

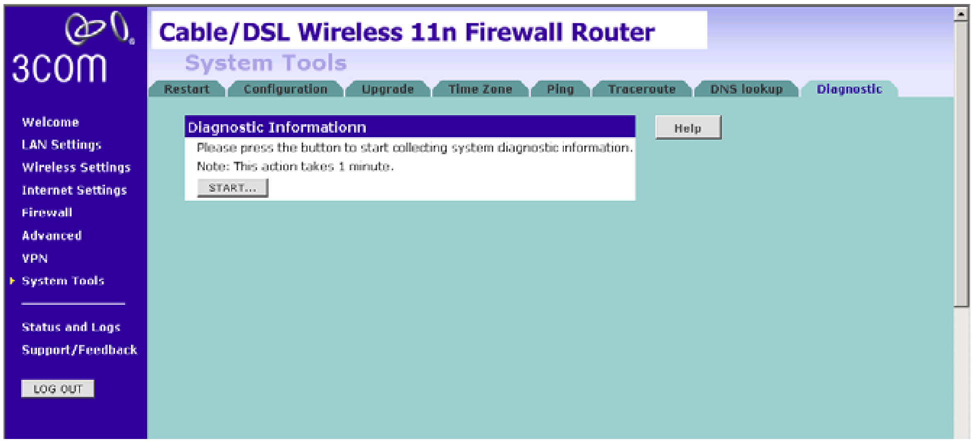
IP Address or Domain Name:

1. Enter the IP address or domain name in the *IP Address or Domain Name* field, and click *Dns lookup.*
2. The Router keeps a log of the DNS lookup test, click *Clear Log* to delete the records.

Diagnostic

This screen is designed to collect diagnostic information of this Router, click the *Start* button to start the diagnostic, then save the information in a file. You can later use this information to analyze your network.

Figure 103 Diagnostic Screen



Cable/DSL Wireless 11n Firewall Router

System Tools

Diagnostic Informationn

Please press the button to start collecting system diagnostic information.

Note: This action takes 1 minute.

Status and Logs

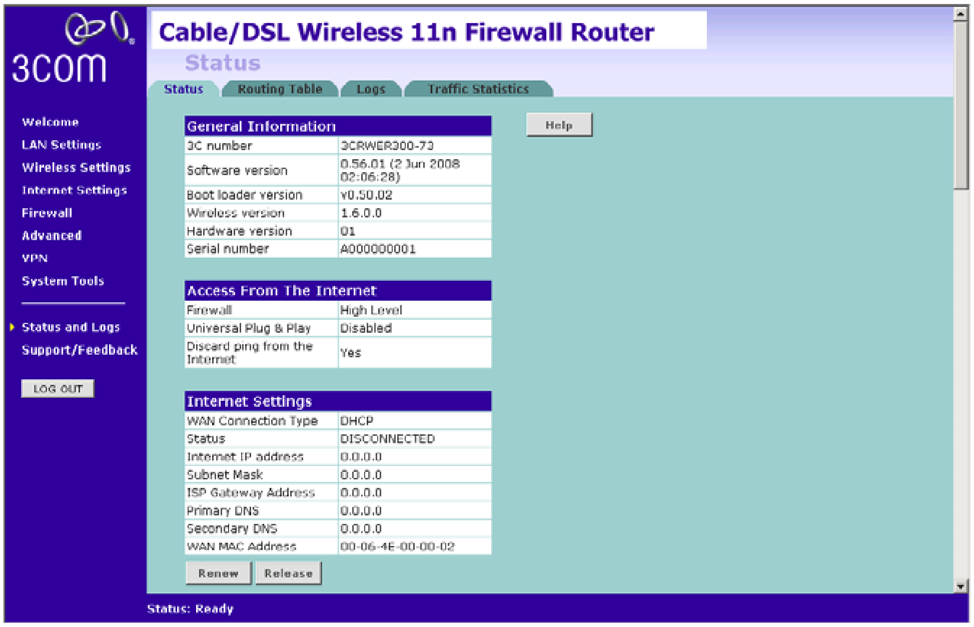
You can use the Status Screen to view version numbers for your Router’s software and hardware and check the status of connections to WAN, LAN and WLAN interfaces.

Status

This screen shows Router status and statistics.

- Release - use this button to release the current IP.
- Renew - use this button to obtain a new IP.

Figure 104 Status Screen



Cable/DSL Wireless 11n Firewall Router

Status

General Information	
3C number	3CRWER300-73
Software version	0.56.01 (2 Jun 2008 02:06:28)
Boot loader version	v0.50.02
Wireless version	1.6.0.0
Hardware version	01
Serial number	A000000001

Access From The Internet	
Firewall	High Level
Universal Plug & Play	Disabled
Discard ping from the Internet	Yes

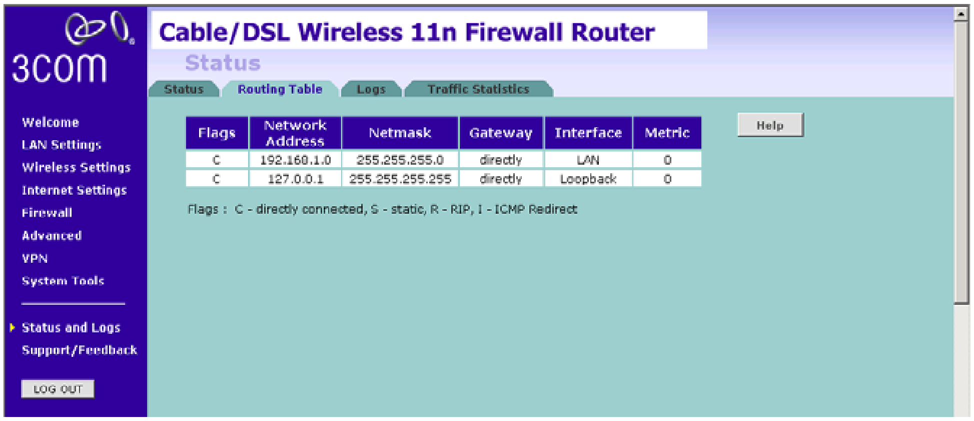
Internet Settings	
WAN Connection Type	DHCP
Status	DISCONNECTED
Internet IP address	0.0.0.0
Subnet Mask	0.0.0.0
ISP Gateway Address	0.0.0.0
Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0
WAN MAC Address	00-06-4E-00-00-02

Status: Ready

Routing Table

This screen displays details for the default routing used by your Router and any routing created using Static Routing or RIP.

Figure 105 Routing Table Screen



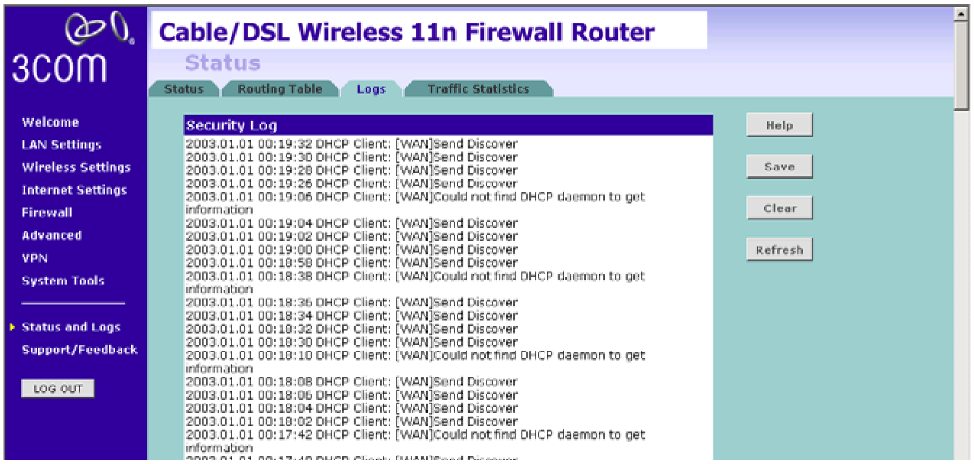
Flags	Network Address	Netmask	Gateway	Interface	Metric
C	192.168.1.0	255.255.255.0	directly	LAN	0
C	127.0.0.1	255.255.255.255	directly	Loopback	0

Flags : C - directly connected, S - static, R - RIP, I - ICMP Redirect

Logs

This screen shows any attempts that have been made to gain access to your network as well as the system activities.

Figure 106 Logs Screen



Security Log

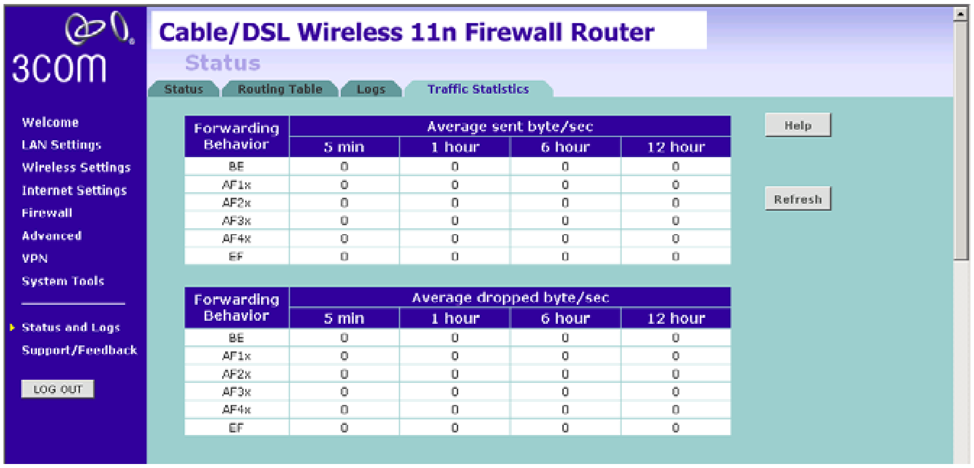
```
2003.01.01 00:19:32 DHCP Client: [WAN]Send Discover
2003.01.01 00:19:30 DHCP Client: [WAN]Send Discover
2003.01.01 00:19:28 DHCP Client: [WAN]Send Discover
2003.01.01 00:19:26 DHCP Client: [WAN]Send Discover
2003.01.01 00:19:06 DHCP Client: [WAN]Could not find DHCP daemon to get
information
2003.01.01 00:19:04 DHCP Client: [WAN]Send Discover
2003.01.01 00:19:02 DHCP Client: [WAN]Send Discover
2003.01.01 00:19:00 DHCP Client: [WAN]Send Discover
2003.01.01 00:18:58 DHCP Client: [WAN]Send Discover
2003.01.01 00:18:38 DHCP Client: [WAN]Could not find DHCP daemon to get
information
2003.01.01 00:18:36 DHCP Client: [WAN]Send Discover
2003.01.01 00:18:34 DHCP Client: [WAN]Send Discover
2003.01.01 00:18:32 DHCP Client: [WAN]Send Discover
2003.01.01 00:18:30 DHCP Client: [WAN]Send Discover
2003.01.01 00:18:10 DHCP Client: [WAN]Could not find DHCP daemon to get
information
2003.01.01 00:18:08 DHCP Client: [WAN]Send Discover
2003.01.01 00:18:06 DHCP Client: [WAN]Send Discover
2003.01.01 00:18:04 DHCP Client: [WAN]Send Discover
2003.01.01 00:18:02 DHCP Client: [WAN]Send Discover
2003.01.01 00:17:42 DHCP Client: [WAN]Could not find DHCP daemon to get
information
```

- Click *Help* to view the help file.
- Click *Save* to save the log to the hard disk as a text file. When prompted for a location to save the file to, specify a filename and location, and then click *OK*.
- Click *Clear* to clear the log (note that all current entries will be erased).
- Click *Refresh* to update the record.

Traffic Statistics

This screen shows the traffic statistics. Use the *Refresh* button to update the information. Note that the current implementation only shows traffic statistics per forwarding group. Hence if QoS is not enabled, this screen will always show zero values.

Figure 107 Traffic Statistics Screen



Forwarding Behavior	Average sent byte/sec			
	5 min	1 hour	6 hour	12 hour
BE	0	0	0	0
AF1x	0	0	0	0
AF2x	0	0	0	0
AF3x	0	0	0	0
AF4x	0	0	0	0
EF	0	0	0	0

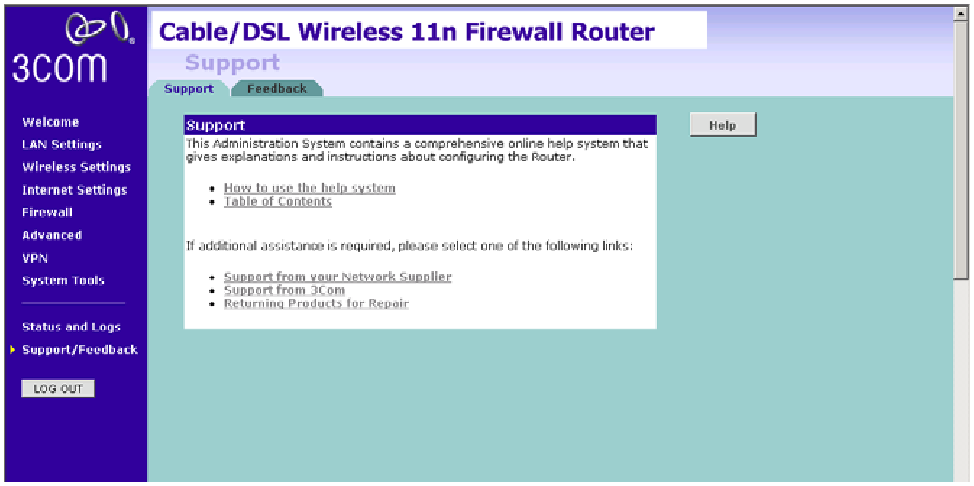
Forwarding Behavior	Average dropped byte/sec			
	5 min	1 hour	6 hour	12 hour
BE	0	0	0	0
AF1x	0	0	0	0
AF2x	0	0	0	0
AF3x	0	0	0	0
AF4x	0	0	0	0
EF	0	0	0	0

Support/Feedback

You can use the Support/Feedback screen to obtain support and help, and also provide feedback to 3Com.

Support

Figure 108 Support Screen



Support

This Administration System contains a comprehensive online help system that gives explanations and instructions about configuring the Router.

- How to use the help system
- Table of Contents

If additional assistance is required, please select one of the following links:

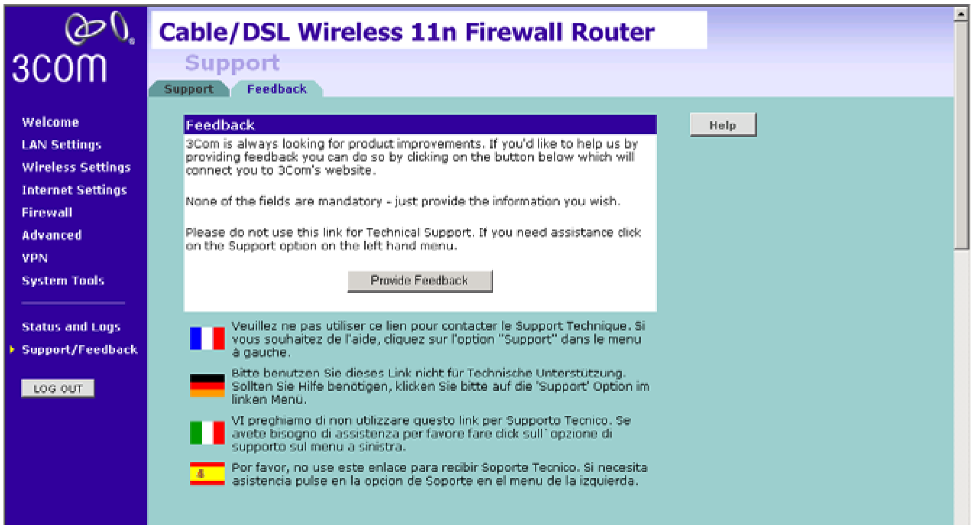
- Support from your Network Supplier
- Support from 3Com
- Returning Products for Repair

This screen shows support information.

Feedback

To provide feedback to 3Com, please click *Provide Feedback*, and this will connect you to the 3Com Web site.

Figure 109 Feedback Screen



Feedback

3Com is always looking for product improvements. If you'd like to help us by providing feedback you can do so by clicking on the button below which will connect you to 3Com's website.

None of the fields are mandatory - just provide the information you wish.

Please do not use this link for Technical Support. If you need assistance click on the Support option on the left hand menu.

Veuillez ne pas utiliser ce lien pour contacter le Support Technique. Si vous souhaitez de l'aide, cliquez sur l'option "Support" dans le menu à gauche.

Bitte benutzen Sie dieses Link nicht für Technische Unterstützung. Sollten Sie Hilfe benötigen, klicken Sie bitte auf die 'Support' Option im linken Menü.

VI preghiamo di non utilizzare questo link per Supporto Tecnico. Se avete bisogno di assistenza per favore fare click sull`opzione di supporto sul menu a sinistra.

Por favor, no use este enlace para recibir Soporte Tecnico. Si necesita asistencia pulse en la opcion de Soporte en el menu de la izquierda.

This screen shows feedback information.

6 TROUBLESHOOTING

Basic Connection Checks

The Router has been designed to aid you when detecting and solving possible problems with your network. These problems are rarely serious; the cause is usually a disconnected or damaged cable, or incorrect configuration. If this section does not solve your problem, contact your supplier for information on what to do next.

Perform these actions first:

- Ensure all network equipment is powered on.
- Power each piece of network equipment off, wait about five seconds and then power each one on.

CAUTION: *Do not power the Router off and then immediately on. Wait about five seconds between power cycles.*

Check the following symptoms and solutions:

- Check that the Router is connected to your computers and to the cable/DSL modem, and that all the equipment is powered on. Check that the LAN Status and power 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.
- Port Status LED not lit for a port that has a TP cable connected. After connection, it may take several seconds for the Port Status LEDs to illuminate. The Port Status LED should turn Blue, for each port that is connected. If the Port Status LED is not lit after several seconds, ensure that the connected device is powered on, that the TP cable is not

damaged and that it is correctly inserted at both ends. You may find that a TP cable works when connected to the Router, but does not work if disconnected from the Router and connected to another device. This may be because the other device does not have the automatic MDI/MDIX feature.

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 LAN Status LEDs on the Router and network adapter 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 Chapter 3. 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 *winipcfg* 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 **`winipcfg`**. 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, Windows XP, and Windows Vista 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 Web sites on the Internet, check the following:

- Confirm that the physical connection between the Router and the cable/DSL modem is OK, and that the Cable/DSL LED on the Router is illuminated.
- Ensure that you have entered the correct information into the Router configuration screens as required by your Internet Service Provider. Use the Internet Settings screen to verify this.
- Check that the PPPoE, or L2TP, or PPTP user name and password are correct.
- 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 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.

***CAUTION:** All your configuration changes will be lost, and you will need to run the configuration wizard again 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. Power 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 and hold the *Reset* button on the rear panel (see Figure 4 on page 17) for 5 seconds.
5. The Router will restart, and when the start-up sequence has completed, browse to:

   ```
   http://192.168.1.1
   ```

   and run the configuration wizard. You may need to restart your computer before you attempt this.
6. When the configuration wizard has completed, you may reconnect your network as it was before.

Wireless Networking

- Ensure that you have an 802.11b or 802.11g or 802.11n wireless adapter for each wireless computer, and that it is correctly installed and configured. Verify that each wireless computer has either Windows 98 or higher or MAC OS 8.5 or higher.
- Verify that your wireless computers are configured to work in Infrastructure mode and not Ad Hoc mode. The Router contains an Access Point that is designed to operate in Infrastructure mode. Ad Hoc mode is not supported by the Router.
- If you have a wired and a wireless NIC in the same computer, ensure that the wired NIC is disabled.
- Check the status of the WLAN LED, it should be lit if wireless is enabled and will flash when there is wireless activity. If not lit go to Wireless Settings on page 55 and enable wireless networking.
- Ensure that the TCP/IP settings for all devices are correct.
- Ensure that the Wireless Clients are using the same SSID or Service Area Name as the Router. The SSID is case-sensitive.
- Ensure that the encryption method and level that you use on your clients are the same as those configured on the Router. The Router cannot simultaneously support WPA and WEP encryption.
- Ensure that you have the wireless computer enabled in the list of allowed MAC addresses if you are using MAC Address Filtering on the Router.
- If you are having difficulty connecting or are operating at a low speed try changing the antenna positions on the rear of the Router.
  For more effective coverage you can try reorientating your antennae. Place one antenna vertically and one horizontally to improve coverage. Additionally consider moving the wireless computer closer to the Router to confirm that the building structure or fittings are not adversely affecting the connectivity. If this resolves the problem consider relocating the wireless computer or the Router, or trying a different channel on the Router.
- Sources of interference: The 2.4Ghz ISM band is used for 802.11b and 802.11g and 802.11n. This is generally a licence free band for low power applications, and you may have other devices at your location that operate in this frequency band. You should take care to ensure that there are no devices, like microwave ovens for example, close to the Router or wireless computers as this could affect receiver sensitivity and reduce the performance of your network. If you are

unsure try relocating both the wireless computers and the Router to establish whether this problem exists.

- Most wireless computer adapters will scan the channels for the wireless Router. If a wireless computer has not located the Router then try initiating a search manually if the client software supports this feature or manually set the channel on your wireless computer to correspond to the Router channel number. Please refer to your wireless computer adapter documentation and vendor to do this.
- Speed of connection: The 802.11b and 802.11g standards will automatically choose the best speed depending on the quality of your connection. As the signal quality weakens then the speed falls back to a lower speed. The speeds supported by 802.11g are 54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps and 6 Mbps. The speeds supported by 802.11b are 11 Mbps, 5.5 Mbps, 2 Mbps and 1 Mbps. In general the closer you are to the Router the better the speed. If you are not achieving the speed you had anticipated then try moving the antenna on the Router or moving the wireless computer closer to the Router. In an ideal network the Router should be located in the centre of the network with wireless computers distributed around it. Applications are generally available with the computer wireless card to carry out a site survey. Use this application to find the optimal siting for your wireless computer. Consult your Computer Card documentation and vendor for more details.

Recovering from Corrupted Software

If the system software has become corrupted, the Router will enter a "recovery" state; DHCP is enabled, and the LAN IP address is set to 192.168.1.1. Follow the instructions below to upload a new copy of the system software to a Router unit in this state.

Ensure that one of your computers has a copy of the new software image file stored on its hard disk or available on CD-ROM.

Check on www.3com.com for the latest version firmware.

1. Remove power from the Router and disconnect from DSL or Cable modem and all your computers, except for the one computer with the software image.
2. You will need to reconfigure this computer to obtain an IP address automatically (see Obtaining an IP Address Automatically on page 23).
3. Restart the computer, and re-apply power to the Router.
4. Using the Web browser on the computer, enter the following URL in the location bar:

   `http://192.168.1.1`.

   This will connect you to the Recovery utility in the Router.
5. Follow the on-screen instructions. Enter the path and filename of the software image file.
6. When the upload has completed, the Router will restart, run the self-test and, if successful, resume normal operation.
7. Refer to the Installation Guide to reconnect your Router to the telephone line and the computers in your network. Do not forget to reconfigure the computer you used for the software upload.

If the Router does not resume normal operation following the upload, it may be faulty. Contact your supplier for advice.

Power Adapter

Power Status Logo not lit.
This is probably because the switch does not have power. Check the following:

- Make sure the power lead from the power adapter is properly connected and the cord is not damaged.

- Ensure the power adapter is correctly fitted into the power outlet socket and that the socket switch is turned on if applicable.
- Ensure you are using only the 3Com power adapter supplied with the Router.

If there is still no power, contact 3Com Technical Support and ask for assistance

Caution: *Only use the power adapter supplied with the Router or a replacement 3Com power adapter. Do not use any other power adapter.*

For reference, the part number for the power adapter supplied for your region is:

3Com Number	Region
3C12VUS	US and Canada
3C12VUK or 3C15VUK	UK
3C12VME or 3C15VME	Europe and Middle East
3C12VAA	Australasia (except Japan and Korea)
3C12VSA	South Africa
3C12VKR	Korea
3C12VRA	Argentina

Frequently Asked Questions

How do I reset the Router to Factory Defaults?

See Forgotten Password and Reset to Factory Defaults on page 127.

How many computers on the LAN does the Router support?

Up to a maximum number of 253 total users on the LAN are supported. Please note that the maximum number of users supported will be vary depending on the amount of traffic that each user generates.

How many wireless clients does the Router support?

Up to 32 wireless clients are supported. Please note that the total practical number of wireless users depends on the network environment and the amount of bandwidth consumed by each user.

There are only 4 LAN ports on the Router. 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. 3Com 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.3com.com/`

Does the Router support virtual private networks (VPNs)?

The Router supports both VPN passthrough and VPN initiation/termination. VPN initiation/termination is useful when you need to establisha secure site-to-site communication or make your network accessible to remote teleworkers.

VPN passthrough is used when you are connected to 3Com Router and access the corporate network from your laptop with VPN client."

A 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 '192.168.100.8'. 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 '192.168.100.8' is split into two parts:

- Part one ('192.168.100') 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'.

See Table 3 for an example about how a network with three computers and a Router might be configured.

Table 3 IP Addressing and Subnet Masking

Device	IP Address	Subnet Mask
PC 1	192.168.100.8	255.255.255.0
PC 2	192.168.100.33	255.255.255.0
PC 3	192.168.100.188	255.255.255.0
Router	192.168.100.72	255.255.255.0

Type Two

In larger networks, where there are more devices, the IP address of '192.168.100.8' is, again, split into two parts but is structured differently:

- Part one ('192.168') identifies the network on which the device resides.
- Part two ('.100.8') identifies the device within the network.

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

See Table 4 for an example about how a network (only four computers represented) and a Router might be configured.

Table 4 IP Addressing and Subnet Masking

Device	IP Address	Subnet Mask
PC 1	192.168.100.8	255.255.0.0
PC 2	192.168.201.30	255.255.0.0
PC 3	192.168.113.155	255.255.0.0
PC 4	192.168.002.230	255.255.0.0
Router	192.168.002.72	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 such as Windows 98, Windows NT 4.0, Windows 2000, Windows XP, and Windows Vista. 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.

B TECHNICAL SPECIFICATIONS

This section lists the technical specifications for the 3Com Wireless 11n Cable/DSL Firewall Router.

3Com Wireless 11n Cable/DSL Firewall Router

Interfaces

WAN connection — one 10 Mbps/100Mbs dual speed Ethernet port (10BASE-T/100BASE-TX)

LAN connection — four 10 Mbps/100 Mbps dual speed Ethernet ports (10BASE-T/100BASE-TX)

Antenna

Two external Dipole antennas for TX/RX function and the gain value is 2 dBi.

One internal PIFA antenna for RX function only and the gain value is 2 dBi.

WLAN Interfaces

IEEE draft 802.11n, Orthogonal Frequency Division Multiplexing (OFDM)
Transmission rate: 802.11n 40MHz: 300 Mbps, automatic fallback to 243, 216, 162, 135, 121,5, 108, 81, 54, 40.5, 27, 13.5Mbps
802.11n 20MHz: 130Mbps, automatic fallback to 117, 104, 78, 65, 58.5, 52, 39, 26, 19.5, 13, 6.5Mbps
Maximum channels: 13
Range up to 304.8m (1000ft)
Sensitivity: 11 Mbps: -82 dBm; 54 Mbps: -68 dBm;
MCS15 (20MHz): -65 dBm ; MCS15 (40MHz): -62 dBm
Modulation: CCK, BPSK, QPSK, OFDM
Encryption: 40/64 bit WEP, 128 bit WEP, WPA/WPA2
Maximum clients: 128
O/P Power: 14dBm

Standard IEEE 802.11g, Direct Sequence Spread Spectrum (DSSS)
Transmission rate: 54 Mbps, automatic fallback to 48, 36, 24, 18, 12, or 6 Mbps
Maximum channels: 13
Range up to 304.8m (1000ft)
Sensitivity: 6, 12, 18, 24, 36, 48 Mbps: -85 dBm;
54 Mbps -66 dBm typical
Modulation: CCK, BPSK, QPSK, OFDM
Encryption: 40/64 bit WEP, 128 bit WEP, WPA/WPA2
Maximum clients: 128
O/P Power: 14dBm

Standard IEEE 802.11b, Direct Sequence Spread Spectrum (DSSS)
Transmission rate: 11Mbps, automatic fallback to 5.5, 2, or 1 Mbps
Maximum channels: 13
Range up to 304.8m (1000ft)
Sensitivity: 1, 2, 5.5 Mbps: -85 dBm; 11 Mbps -82 dBm typical
Modulation: CCK, BPSK, QPSK
Encryption: 40/64 bit WEP, 128 bit WEP, WPA/WPA2
Maximum clients: 128
O/P Power 18dBm

Operating Temperature

0 °C to 40 °C (32 °F to 105 °F)

Power

15V0.8A/15V1A

Humidity

0% to 90% (non-condensing) humidity

Dimensions

- Width = 178 mm (7.0 in.)
- Depth = 160 mm (6.1 in.)
- Height = 39 mm (1.5 in.)

Weight

Approximately 285 g

Standards

Functional:	ISO 8802/3 IEEE 802.3 IEEE 802.11b, 802.11g
Safety:	EN 60950-1: 2001 UL 60950-1 IEC 60950-1: 2001 CSA 22.2 No. 60950-1
EMC:	FCC Part15 B EN 55022 EN 55024 EN 61000 EN 301 489-1 ICES-003
Radio	FCC Part 15 C RSS-210 EN 300 328
Environmental:	EN 60068 (IEC 68)

*See "Regulatory Notices" for conditions of operation.

System Requirements

Operating Systems

The Router will support the following Operating Systems:

- Windows 98Se
- Windows NT 4.0
- Windows ME
- Windows 2000
- Windows XP
- Windows Vista
- Mac OS 8.5 or higher
- Unix

Ethernet Performance

The Router complies to the IEEE 802.3i, u and x specifications.

Cable Specifications

The Router supports the following cable types and maximum lengths:

- Category 3 (Ethernet) or Category 5 (Fast Ethernet or Dual Speed Ethernet) Twisted Pair — shielded and unshielded cable types.
- Maximum cable length of 100m (327.86 ft).

C SAFETY INFORMATION

Important Safety Information

***WARNING**: Warnings contain 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:

***WARNING**: 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.*

***WARNING**: Exceptional care must be taken during installation and removal of the unit.*

***WARNING**: To ensure compliance with international safety standards, only use the power adapter that is supplied with the unit.*

***WARNING**: The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.*

***WARNING**: This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 60950. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.*

***WARNING**: There are no user-replaceable fuses or user-serviceable parts inside the Router. If you have a physical problem with the unit that cannot be solved with problem solving actions in this guide, contact your supplier.*

***WARNING**: Disconnect the power adapter before moving the unit.*

WARNING: RJ-45 ports. *These are shielded RJ-45 data sockets. They cannot be used as telephone sockets. Only connect RJ-45 data connectors to these sockets.*

Wichtige Sicherheitshinweise

VORSICHT: *Warnhinweise enthalten Anweisungen, die Sie zu Ihrer eigenen Sicherheit befolgen müssen. Alle Anweisungen sind sorgfältig zu befolgen.*
Sie müssen die folgenden Sicherheitsinformationen sorgfältig durchlesen, bevor Sie das Geräts installieren oder ausbauen:

VORSICHT: *Der Router erzeugt und verwendet Funkfrequenz (RF). In manchen Umgebungen ist die Verwendung von Funkfrequenz nicht gestattet. Erkundigen Sie sich bei den zuständigen Stellen, ob die Verwendung von Funkfrequenz in dem Bereich, in dem der Bluetooth Access Point eingesetzt werden soll, erlaubt ist.*

VORSICHT: *Bei der Installation und beim Ausbau des Geräts ist mit höchster Vorsicht vorzugehen.*

VORSICHT: *Aufgrund von internationalen Sicherheitsnormen darf das Gerät nur mit dem mitgelieferten Netzadapter verwendet werden.*

VORSICHT: *Die Netzsteckdose muß in der Nähe des Geräts und leicht zugänglich sein. Die Stromversorgung des Geräts kann nur durch Herausziehen des Gerätenetzkabels aus der Netzsteckdose unterbrochen werden.*

VORSICHT: *Der Betrieb dieses Geräts erfolgt unter den SELV-Bedingungen (Sicherheitskleinstspannung) gemäß IEC 60950. Diese Bedingungen sind nur gegeben, wenn auch die an das Gerät angeschlossenen Geräte unter SELV-Bedingungen betrieben werden.*

VORSICHT: *Es sind keine von dem Benutzer zu ersetzende oder zu wartende Teile in dem Gerät vorhanden. Wenn Sie ein Problem mit dem Router haben, das nicht mittels der Fehleranalyse in dieser Anleitung behoben werden kann, setzen Sie sich mit Ihrem Lieferanten in Verbindung.*

VORSICHT: *Vor dem Ausbau des Geräts das Netzadapterkabel herausziehen.*

VORSICHT: RJ-45-Anschlüsse. *Dies sind abgeschirmte RJ-45-Datenbuchsen. Sie können nicht als Telefonanschlußbuchsen verwendet werden. An diesen Buchsen dürfen nur RJ-45-Datenstecker angeschlossen werden.*

Consignes importantes de sécurité

AVERTISSEMENT: *Les avertissements présentent des consignes que vous devez respecter pour garantir votre sécurité personnelle. Vous devez respecter attentivement toutes les consignes.*
Nous vous demandons de lire attentivement les consignes suivantes de sécurité avant d'installer ou de retirer l'appareil:

AVERTISSEMENT: *La Router fournit et utilise de l'énergie radioélectrique (radio fréquence -rf). L'utilisation de l'énergie radioélectrique est interdite dans certains environnements. L'utilisateur devra se renseigner sur l'autorisation de cette énergie dans la zone prévue.*

AVERTISSEMENT: *Faites très attention lors de l'installation et de la dépose du groupe.*

AVERTISSEMENT: *Pour garantir le respect des normes internationales de sécurité, utilisez uniquement l'adaptateur électrique remis avec cet appareil.*

AVERTISSEMENT: *La prise secteur doit se trouver à proximité de l'appareil et son accès doit être facile. Vous ne pouvez mettre l'appareil hors circuit qu'en débranchant son cordon électrique au niveau de cette prise.*

AVERTISSEMENT: *L'appareil fonctionne à une tension extrêmement basse de sécurité qui est conforme à la norme CEI 60950. Ces* *conditions ne sont maintenues que si l'équipement auquel il est raccordé fonctionne dans les mêmes conditions.*

AVERTISSEMENT: *Il n'y a pas de parties remplaceables par les utilisateurs ou entretenues par les utilisateurs à l'intérieur du moyeu. Si vous avez un problème physique avec le moyeu qui ne peut pas être résolu avec les actions de la résolution des problèmes dans ce guide, contacter votre fournisseur.*

AVERTISSEMENT: *Débranchez l'adaptateur électrique avant de retirer cet appareil.*

AVERTISSEMENT: Ports RJ-45. *Il s'agit de prises femelles blindées de données RJ-45. Vous ne pouvez pas les utiliser comme prise de téléphone. Branchez uniquement des connecteurs de données RJ-45 sur ces prises femelles.*

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3Com Corporation, 350 Campus Drive, Marlborough, MA. USA 01752-3064

E OBTAINING SUPPORT FOR YOUR 3COM PRODUCTS

3Com offers product registration, case management, and repair services through eSupport.3com.com. You must have a user name and password to access these services, which are described in this appendix.

Register Your Product to Gain Service Benefits

To take advantage of warranty and other service benefits, you must first register your product at: http://eSupport.3com.com/

3Com eSupport services are based on accounts that are created or that you are authorized to access.

Solve Problems Online

3Com offers the following support tool:

- **3Com Knowledgebase —** Helps you to troubleshoot 3Com products. This query-based interactive tool is located at:

  http://knowledgebase.3com.com

  It contains thousands of technical solutions written by 3Com support engineers.

Purchase Extended Warranty and Professional Services

To enhance response times or extend your warranty benefits, you can purchase value-added services such as 24x7 telephone technical support, software upgrades, onsite assistance, or advanced hardware replacement.

Experienced engineers are available to manage your installation with minimal disruption to your network. Expert assessment and implementation services are offered to fill resource gaps and ensure the success of your networking projects. For more information on 3Com Extended Warranty and Professional Services, see:

http://www.3com.com/

Contact your authorized 3Com reseller or 3Com for additional product and support information. See the table of access numbers later in this appendix.

Access Software Downloads

You are entitled to *bug fix / maintenance releases* for the version of software that you initially purchased with your 3Com product. To obtain access to this software, you need to register your product and then use the Serial Number as your login. Restricted Software is available at:

http://eSupport.3com.com/

To obtain software releases that *follow* the software version that you originally purchased, 3Com recommends that you buy an Express or Guardian contract, a Software Upgrades contract, or an equivalent support contract from 3Com or your reseller. Support contracts that include software upgrades cover feature enhancements, incremental functionality, and bug fixes, but they do not include software that is released by 3Com as a separately ordered product. Separately orderable software releases and licenses are listed in the 3Com Price List and are available for purchase from your 3Com reseller.

Contact Us

3Com offers telephone, internet, and e-mail access to technical support and repair services. To access these services for your region, use the appropriate telephone number, URL, or e-mail address from the table in the next section.

Telephone Technical Support and Repair

To obtain telephone support as part of your warranty and other service benefits, you must first register your product at:

http://eSupport.3com.com/

When you contact 3Com for assistance, please have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision level
- Diagnostic error messages
- Details about recent configuration changes, if applicable

To send a product directly to 3Com for repair, you must first obtain a return materials authorization number (RMA). Products sent to 3Com without authorization numbers clearly marked on the outside of the package will be returned to the sender unopened, at the sender's expense. If your product is registered and under warranty, you can obtain an RMA number online at http://eSupport.3com.com/. First-time users must apply for a user name and password.

Telephone numbers are correct at the time of publication. Find a current directory of 3Com resources by region at:
http://csoweb4.3com.com/contactus/

Country	Telephone Number	Country	Telephone Number
Asia, Pacific Rim — Telephone Technical Support and Repair			
Australia	1800 075 316	Philippines	1800 144 10220 or 029003078
Hong Kong	2907 0456		
India	000 800 440 1193	PR of China	800 810 0504
Indonesia	001 803 852 9825	Singapore	800 616 1463
Japan	03 3507 5984	South. Korea	080 698 0880
Malaysia	1800 812 612	Taiwan	00801 444 318
New Zealand	0800 450 454	Thailand	001 800 441 2152
Pakistan Call the U.S. direct by dialing 00 800 01001, then dialing 800 763 6780 Sri Lanka Call the U.S. direct by dialing 02 430 430, then dialing 800 763 6780 Vietnam Call the U.S. direct by dialing 1 201 0288, then dialing 800 763 6780			
You can also obtain non-urgent support in this region at this email address: apr_technical_support@3com.com Or request a return material authorization number (RMA) by FAX using this number: +61 2 9937 5048, or send an email at this email address: ap_rma_request@3com.com			
Europe, Middle East, and Africa — Telephone Technical Support and Repair			
From anywhere in these regions not listed below, call: +44 1442 435529			
From the following countries, call the appropriate number:			
Austria	0800 297 468	Luxembourg	800 23625
Belgium	0800 71429	Netherlands	0800 0227788
Denmark	800 17309	Norway	800 11376
Finland	0800 113153	Poland	00800 4411 357
France	0800 917959	Portugal	800 831416
Germany	0800 182 1502	Russia	88005558588
Hungary	06800 12813	Saudi Arabia	800 8 445 312
Ireland	1 800 553 117	South Africa	0800 995 014
Israel	180 945 3794	Spain	900 938 919
Italy	800 879489	Sweden	020 795 482
		Switzerland	0800 553 072
		U.A.E	04-3908997
		U.K.	0800 096 3266

You can also obtain support in this region using this URL:
http://emea.3com.com/support/email.html

You can also obtain non-urgent support in this region at these email addresses:
Technical support and general requests: customer_support@3com.com
Return material authorization: warranty_repair@3com.com
Contract requests: emea_contract@3com.com

Latin America — Telephone Technical Support and Repair

Country	Telephone Number	Country	Telephone Number
Antigua	AT&T +800 988 2112	Grenada	AT&T +800 988 2112
Antigua Barbuda	AT&T +800 988 2112	Guadalupe	AT&T +800 998 2112
Argentina	AT&T +800 988 2112	Guatemala	AT&T +800 988 2112
Aruba	AT&T +800 988 2112	Guyana	AT&T +800 998 2112
Bahamas	AT&T +800 988 2112	Haiti	AT&T +800 988 2112
Barbados	AT&T +800 988 2112	Honduras	AT&T +800 988 2112
Belize	AT&T +800 988 2112	Jamaica	AT&T +800 988 2112
Bermuda	AT&T +800 988 2112	Mexico	1800 849 2273
Bolivia	AT&T +800 988 2112	Mexico Local	+52-55-52-01-0004
Brasil	0800-133266 (0800-13-3COM)	Monserrat	AT&T +800 998 2112
Brasil Local	+5511 5643 2700	Nicaragua	AT&T +800 998 2112
British Virgin islands	AT&T +800 988 2112	Panama	AT&T +800 998 2112
Cayman islands	AT&T +800 988 2112	Paraguay	AT&T +800 998 2112
Chile	AT&T +800 988 2112	Peru	AT&T +800 998 2112
Colombia	AT&T +800 998 2112	Puerto Rico	AT&T +800 998 2112
Columbia Local	+571 592 5000	Rest of Latin America	508 323 6234
Costa Rica	AT&T +800 998 2112	St. Kitts Nevis	AT&T +800 998 2112
Curacao	AT&T +800 998 2112	St. Lucia	AT&T +800 998 2112
Dominican Republic	AT&T +800 998 2112	St. Vincent	AT&T +800 998 2112
El Salvador	AT&T +800 998 2112	Suriname	AT&T +800 998 2112
Ecuador	AT&T +800 998 2112	Trinidad and Tobago	AT&T +800 998 2112
French Guyana	AT&T +800 998 2112	Turks and Caicos	AT&T +800 998 2112
		Uruguay - Montevideo	AT&T +800 998 2112
		Venezuela	AT&T +800 998 2112
		Virgin Islands	AT&T +800 998 2112

You can also obtain support in this region in the following ways:

- Spanish speakers, enter the URL:
  http://lat.3com.com/lat/support/form.html
- Portuguese speakers, enter the URL:
  http://lat.3com.com/br/support/form.html
- English speakers in Latin America, send e-mail to:
  lat_support_anc@3com.com

US and Canada — Telephone Technical Support and Repair

All locations: All 3Com products: 1 800 876 3266

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.

802.11n The IEEE specification for wireless Ethernet which allows speeds of up to 248 Mbps. 802.11n is a proposed amendment which improves upon the previous 802.11 standards by adding multiple-input multiple-output (MIMO) and many other newer features.

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 3 Cables One of five grades of Twisted Pair (TP) cabling defined by the EIA/TIA-586 standard. Category 3 is voice grade cable and can only be used in Ethernet networks (10BASE-T) to transmit data at speeds of up to 10 Mbps.

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.

DNS Server Address DNS stands for Domain Name System, which allows Internet host computers to have a domain name (such as 3com.com) and one or more IP addresses (such as 192.34.45.8). 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 "3com.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 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.

ESSID Extended Service Set Identifier. The ESSID is a unique identifier for your wireless network. You must have the same ESSID entered into the Router and each of it's wireless clients.

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.

Half Duplex A system that allows packets to transmitted and received, but not at the same time. Contrast with full duplex.

Hub A device that regenerates LAN traffic so that the transmission distance of that signal can be extended. Hubs are similar to repeaters, in that they connect LANs of the same type; however they connect more LANs than a repeater and are generally more sophisticated.

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.

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.

IPsec IP Security. Provides IP network-layer encryption. IPSec can support large encryption networks (such as the Internet) by using digital certificates for device authentication. When setting up an IPSec connection between two devices, make sure that they support the same encryption method.

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.

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 is 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.

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.

PPTP Point-to-Point Tunneling Protocol is a method of secure data transmission between two remote sites over the Internet.

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 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 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 form browsing inappropriate Web sites.

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.

WDS Wireless Distribution System. WDS enables one or more access points to rebroadcast received signals to extend range and reach, though this can affect the overall throughput of data.

WECA Wireless Ethernet Compatibility Alliance. An industry group formed to certify cross vendor interoperability and compatibility of 802.11b and 802.11g wireless networking products and to promote the standard for enterprise, small business and home environments. (see also 802.11b, 802.11g, Wi-Fi)

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 interoperability criteria. (see also 802.11b, WECA)

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.

REGULATORY NOTICES

For 3Com Wireless 11n Cable/DSL Firewall Router

GENERAL STATEMENTS

The 3Com Wireless 11n Cable/DSL Firewall Router (WL-602) must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

This product contains encryption. It is unlawful to export out of the U.S. without obtaining a U.S. Export License.

This product does not contain any user serviceable components. Any unauthorized product changes or modifications will invalidate 3Com's warranty and all applicable regulatory certifications and approvals.

This product can only be used with the supplied antenna(s).

EXPOSURE TO RADIO FREQUENCY RADIATION

This device generates and radiates radio-frequency energy. In order to comply with FCC radio-frequency exposure guidelines for an uncontrolled environment, this equipment must be installed and operated while maintaining a minimum body to antenna distance of 20 cm (approximately 8 in.).

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website www.hc-sc.gc.ca/rpb.

This product must maintain a minimum body to antenna distance of 20 cm. Under these conditions this product will meet the Basic Restriction limits of 1999/519/EC [Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)].

US - RADIO FREQUENCY REQUIREMENTS

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

US FEDERAL COMMUNICATIONS COMMISSION (FCC) EMC COMPLIANCE

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

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2.4GHz operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

The user may find the following booklet prepared by the Federal Communications Commission helpful:
The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402.
Stock No. 004-000-0034504.

3Com is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this 3Com Wireless 11n Cable/DSL Firewall Router (WL-602), or the substitution or attachment of connecting cables and equipment other than specified by 3Com.

The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment.

US Manufacturer's FCC Declaration of Conformity

3Com Corporation
350 Campus Drive
Marlborough, MA 01752-3064, USA
(508) 323-5000
Date: April 24, 2008

Declares that the Product:

Brand Name: 3Com Corporation
Model Number: WL-602
Equipment Type: 3Com Wireless 11n Cable/DSL Firewall Router

Complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FC	3Com Wireless 11n Cable/DSL Firewall Router Model WL-602

Industry Canada - RF Compliance

This device complies with RSS-210 of the Industry Canada Rules.

Operation is subject to the following two conditions:

1) this device may not cause interference and, 2) this device must accept any interference, including interference that may cause undesired operation of the device.

L ' utilisation de ce dispositif est autorisee seulement aux conditions suivantes: (1) il ne doit pas produire de brouillage et (2) l' utilisateur du dispositif doit etre pret a accepter tout brouillage radioelectrique recu, meme si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numerique de la class B est conforme a la norme NMB-003 du Canada.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with Canada radiation exposure limits set forth for uncontrolled environments. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2.4GHz operation of this product in Canada is firmware-limited to channels 1 through 11.

Industry Canada - Emissions Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Avis de Conformité à la Réglementation d'Industrie Canada

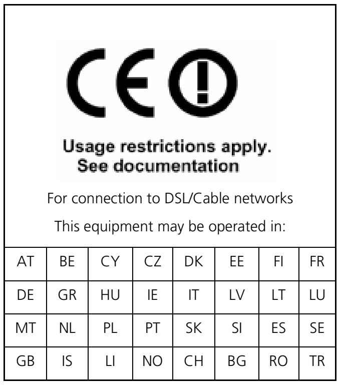
Cet appareil numérique de la classe B est conform à la norme NMB-003 du Canada.

Safety Compliance Notice

This device has been tested and certified according to the following safety standards and is intended for use only in Information Technology Equipment which has been tested to these or other equivalent standards:

- UL Standard 60950-1
- CAN/CSA C22.2 No. 60950-1
- IEC 60950-1
- EN 60950-1

EU COMPLIANCE



Usage restrictions apply.
See documentation

For connection to DSL/Cable networks

This equipment may be operated in:

AT	BE	CY	CZ	DK	EE	FI	FR
DE	GR	HU	IE	IT	LV	LT	LU
MT	NL	PL	PT	SK	SI	ES	SE
GB	IS	LI	NO	CH	BG	RO	TR

Intended use: DSL/Cable 802.11g/b/n Firewall Router

For connection to DSL/Cable networks

NOTE: To ensure product operation is in compliance with local regulations, select the country in which the product is installed. Refer to 3CRWER300-73 User Guide.

Česky [Czech]	*3Com Coporation* tímto prohlašuje, ze tento *RLAN device* je ve shodě se základními pozadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede *3Com Corporation* erklærer herved, at følgende udstyr *RLAN device* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklärt *3Com Corporation*, dass sich das Gerät *RLAN device* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Eesti [Estonian]	Käesolevaga kinnitab *3Com Corporation* seadme *RLAN device* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, *3Com Corporation,* declares that this *RLAN device* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente *3Com Corporation* declara que el *RLAN device* cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ *3Com Corporation* ΔΗΛΩΝΕΙ ΟΤΙ *RLAN device* ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.

Français [French]	Par la présente *3Com Corporation* déclare que l'appareil *RLAN device* est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente *3Com Corporation* dichiara che questo *RLAN device* è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo *3Com Corporation* deklarç, ka *RLAN device* atbilst Direktîvas 1999/5/EK bûtiskajâm prasîbâm un citiem ar to saistîtajiem noteikumiem.
Lietuviø [Lithuanian]	Šiuo *3Com Corporation* deklaruoja, kad šis *RLAN device* atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart *3Com Corporation* dat het toestel *RLAN device* in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, *3Com Corporation*, jiddikjara li dan *RLAN device* jikkonforma mal-htigijiet essenzjali u ma provvedimenti ohrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, *3Com Corporation* nyilatkozom, hogy a *RLAN device* megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Polski [Polish]	Niniejszym *3Com Corporation* oświadcza, że *RLAN device* jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese]	*3Com Corporation* declara que este *RLAN device* está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	*3Com Corporation* izjavlja, da je ta *RLAN device* v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	*3Com Corporation* týmto vyhlasuje, ze *RLAN device* spĺňa základné poziadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	*3Com Corporation* vakuuttaa täten että *RLAN device* tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

A copy of the signed Declaration of Conformity can be downloaded from the Product Support web page for the 3Com Wireless 11n Cable/DSL Firewall Router at http://www.3Com.com.
Also available at http://support.3com.com/doc/WL-602_EU_DOC.pdf.

EU - Restrictions for Use in the 2.4GHz band

This device may be operated indoors or outdoors in all countries of the European Community using the 2.4GHz band: Channels 1 – 13, except where noted below.

In Italy the end-user must apply for a license from the national spectrum authority to operate this device outdoors.

In Belgium outdoor operation is only permitted using the 2.46 – 2.4835 GHz band: Channel 13.

In France outdoor operation is only permitted using the 2.4 – 2.454 GHz band: Channels 1 – 7.

Brazil RF Compliance

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não causar interferência a sistema operando em caráter primário.

Taiwan NCC Statement

1. 經審驗合格之射頻電信終端設備 ，非經許可， 公司 商號或使用者均不得擅自變更頻率， 加大功率或變更原設計之特性及功能。

2. 射頻電信終端設備之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。所謂合法通信，係指依電信法規定作業之無線電信。

3. 輸入、製造射頻電信終端設備之公司、商號或其使用者違反本辦法規定，擅自使用或變更無線電頻率、電功率者，除依電信法規定處罰外，電信總局並得撤銷其審驗合格證明。

4. 本機限在不干擾合法電台與不受被干擾保障條件下於室內使用。

5. 爲減少電磁波干擾， 請妥適使用。

Safety Statement

This product is intended to be supplied by a UL listed power unit marked “Class 2” or ‘LPS” rated 15V dc minimum 1A or 12V dc minimum 1A.

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