Wireless 11n Cable/DSL Firewall Router
User Guide

WL-602

3CRWER300-73

http://www.3Com.com/

Part No. 10015880 Rev. AA
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ENVIRONMENTAL STATEMENT

It is the policy of 3Com Corporation to be environmentally-friendly in all operations. To uphold our policy, we are committed to:

Establishing environmental performance standards that comply with national legislation and regulations.

Conserving energy, materials and natural resources in all operations.

Reducing the waste generated by all operations. Ensuring that all waste conforms to recognized environmental standards. Maximizing the recyclable and reusable content of all products.

Ensuring that all products can be recycled, reused and disposed of safely.

Ensuring that all products are labelled according to recognized environmental standards.

Improving our environmental record on a continual basis.

End of Life Statement

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Regulated Materials Statement

3Com products do not contain any hazardous or ozone-depleting material.

Environmental Statement about the Documentation

The documentation for this product is printed on paper that comes from sustainable, managed forests; it is fully biodegradable and recyclable, and is completely chlorine-free. The varnish is environmentally-friendly, and the inks are vegetable-based with a low heavy-metal content.

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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 and Category 5 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
	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*.

Feedback About This User Guide

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 10015880 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 C.

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

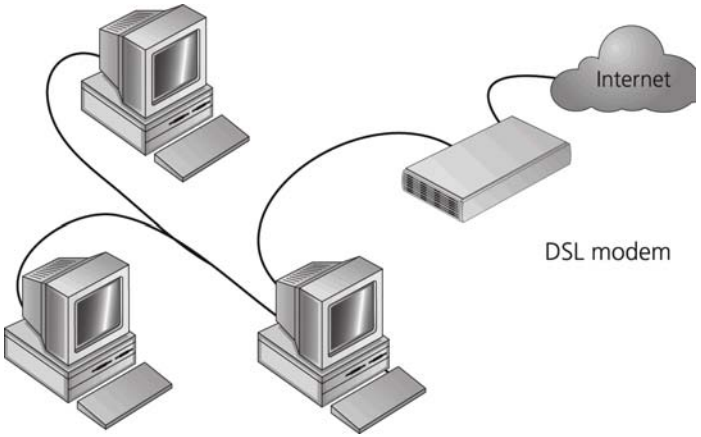
Welcome to the world of networking with 3Com®. In the modern business environment, communication and sharing information is crucial. Computer networks have proved to be one of the fastest modes of communication but, until recently, only large businesses could afford the networking advantage.

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.

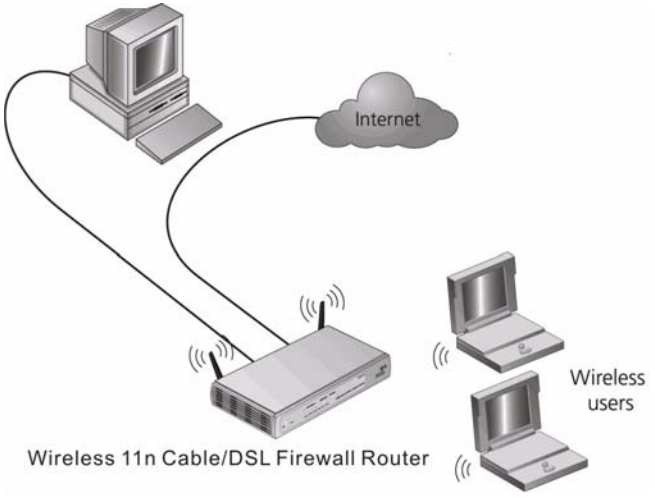
Figure 1 shows an example network without a Router. In this network, only one computer is connected to the Internet. This computer must always be powered on for the other computers on the network to access the Internet.

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 an OfficeConnect Switch or Hub, 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
- Installation guide
- Support and Safety sheet
- Warranty sheet
- Product range sheet

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

Minimum System and Component Requirements

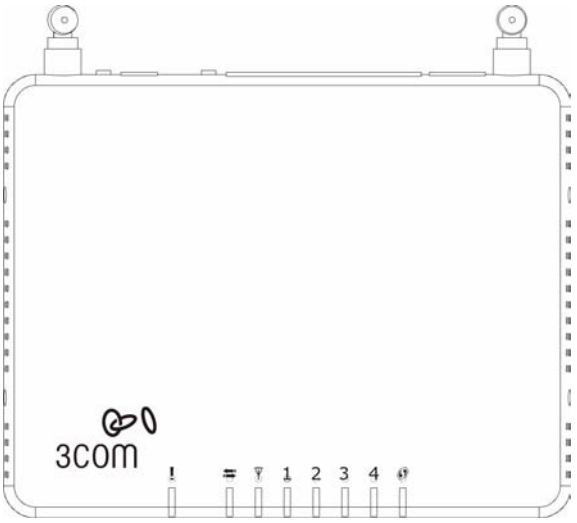
Your Router requires that the computer(s) and components in your network be configured with at least the following:

- 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 or 10/100 Mbps NIC for each computer to be connected to the four-port switch on your Router.
- An 802.11b or 802.11g or 802.11n wireless NIC.
- An active ADSL or Cable subscription and connection.
- A Web browser that supports JavaScript, such as Netscape 4.7 or higher, Internet Explorer 6.0 or higher, or Mozilla 1.2.1 or higher.

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 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.

2 Cable/DSL

Blue

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

3 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.

4 LAN Status LEDs (4 indicators)

Blue

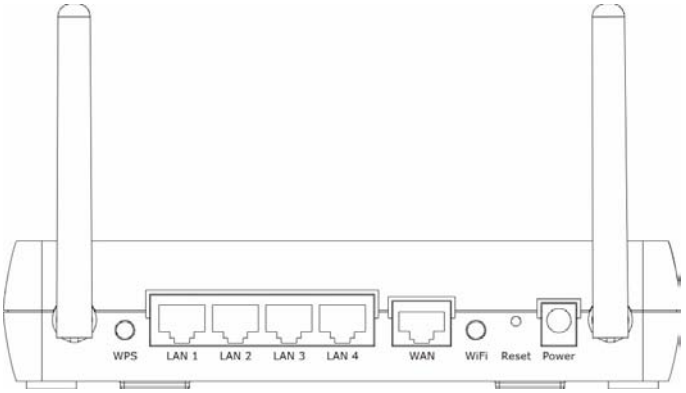
If the LED is on, the link between the port and the next piece of network equipment is OK. If the LED is flashing, the link is OK and data is being transmitted or received. If the LED is off, nothing is connected, or the connected device is switched off, or there is a problem with the connection (refer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

5 WPS LED

LED on indicates the WPS function is active.

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

Figure 4 Router - Rear Panel



1 Wireless Antennae

The antennaes 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 when making WPS setup.

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.

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 106 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 the telephone socket.
- 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 front panel 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.

Wall Mounting

There are two slots on the underside of the Router that can be used for wall mounting.

When wall mounting the unit, ensure that it is within reach of the power outlet.

There are 2 slots on the underside of the Router that can be used for wall mounting. The distance between the 2 slots is 100 mm.

You will need 2 suitable screws, the diameter would be 5.0 to 7.0 mm, to wall mount the Router.

When wall mounting the unit, ensure that it is within reach of the power outlet.

To wall mount the unit:

1. Ensure that the wall you use is smooth, flat, dry and sturdy and make two screw holes which are 100 mm apart.
2. Fix the screws into wall, leaving their heads 5 mm clear of the wall surface.
3. Remove any connections to the unit and locate it over the screw heads. When in line, gently push the unit on to the wall and move it downwards to secure.

When making connections, be careful not to push the unit up and off the wall.

***CAUTION**: Only wall mount single units, do not wall mount stacked units.*

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

The first step for installing your Router is to physically connect it to the DSL/Cable modem, and then connect the Router to a computer in order to be able to access the Internet. See Figure 5:

Figure 5 Connecting the Router

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

3 SETTING UP YOUR COMPUTERS

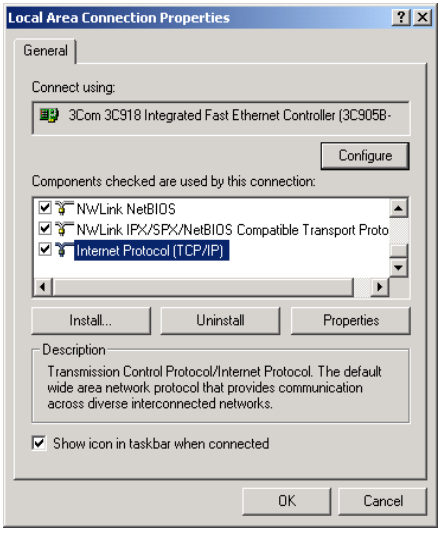
The Router has the ability to dynamically allocate network addresses to the computers on your network, using DHCP. However, your computers need to be configured correctly for this to take place. To change the configuration of your computers to allow this, follow the instructions in this chapter.

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:

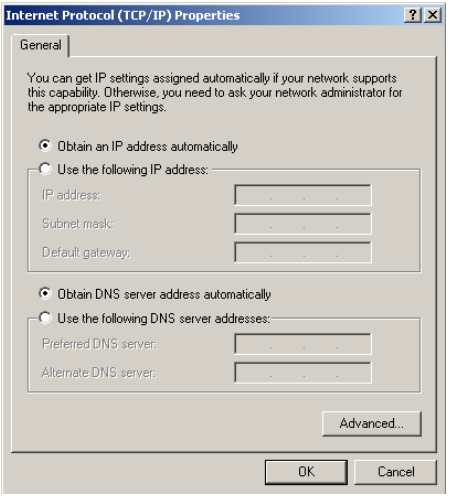
1. From the Windows *Start* Menu, select *Settings* > *Control Panel*.
2. Double click on *Network and Dial-Up Connections*.
3. Double click on *Local Area Connection*.
4. Click on *Properties*.
5. A screen similar to Figure 6 should be displayed. Select *Internet Protocol TCP/IP* and click on *Properties*.

Figure 6 Local Area Properties Screen



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

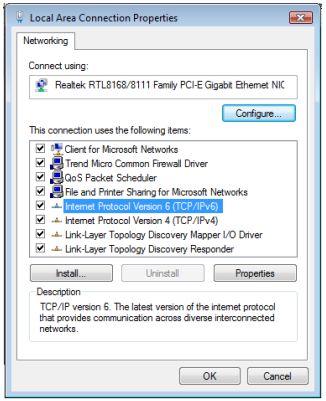


7 Restart your computer.

Windows Vista

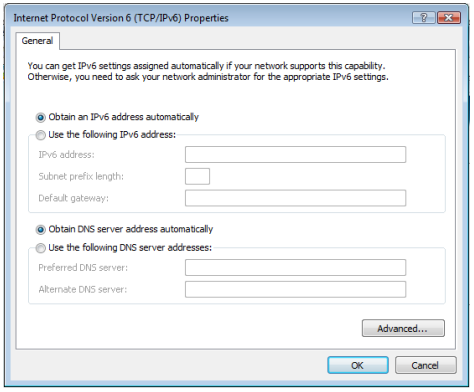
1. From the Windows Start Menu, select *Settings* > *Network*.
2. Click on *Organize*. Select *Properties*.
3. Click on *Manage network* > *Connections*.
4. Double click *Local Area Connection*. Select *Properties* and click *continue*.
5. A screen similar to (Figure 8) should appear. Select Internet Protocol Version 6,Version 4 (TCP/IPv6,v4) and click on *Properties*.

Figure 8 Local Area Connection Properties Screen



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



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:

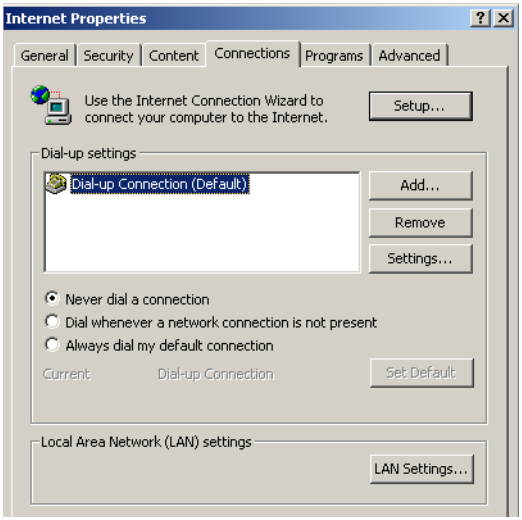
1. From the desktop, select *Apple Menu*, *Control Panels*, and *TCP/IP*.
2. In the *TCP/IP* control panel, set *Connect Via:* to *Ethernet*.
3. In the TCP/IP control panel, set *Configure:* to *Using DHCP Server*.
4. Close the *TCP/IP* dialog box, and save your changes.
5. Restart your computer.

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



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

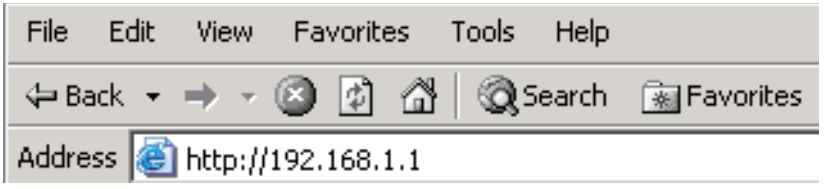
Accessing the Setup Wizard

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, or Mozilla 1.2.1 or higher).

To use the Setup Wizard:

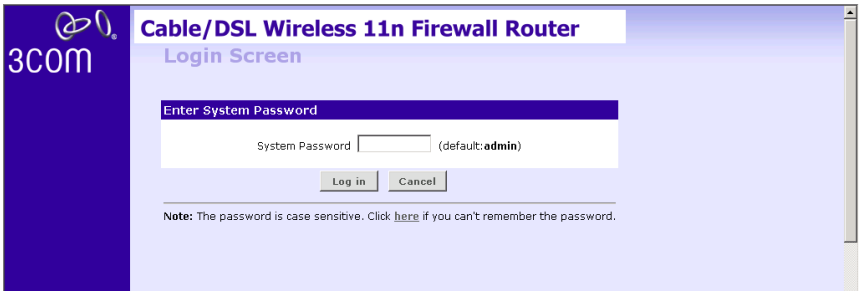
1. Ensure that you have at least one computer connected to the Router. Refer to Chapter 2 for details on how to do this.
2. Launch your Web browser on the computer.
3. Enter the following URL in the location or address field of your browser: **`http://192.168.1.1`** (Figure 11). The Login screen displays.

Figure 11 Web Browser Location Field (Factory Default)



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 12).

Figure 12 Router Login Screen

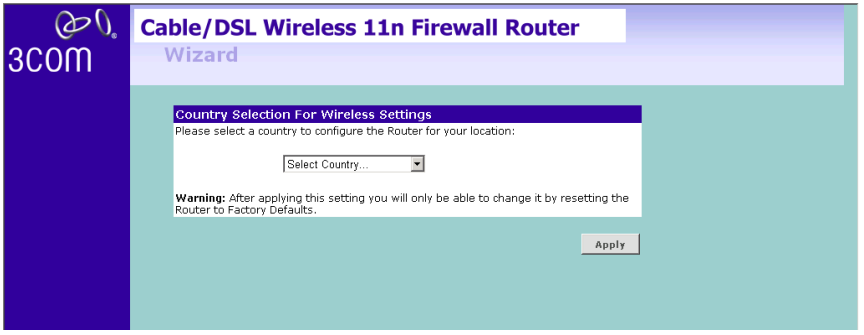


5 When you have logged in,

- if you are logging in for the first time, the Country Selection screen will appear (see Figure 13). Please select the country form the drop-down menu, and click *Apply*.

Note to US model owner: To comply with US FCC regulation, the country selection function has been completely removed from all US models. The above function is for non-US models only.

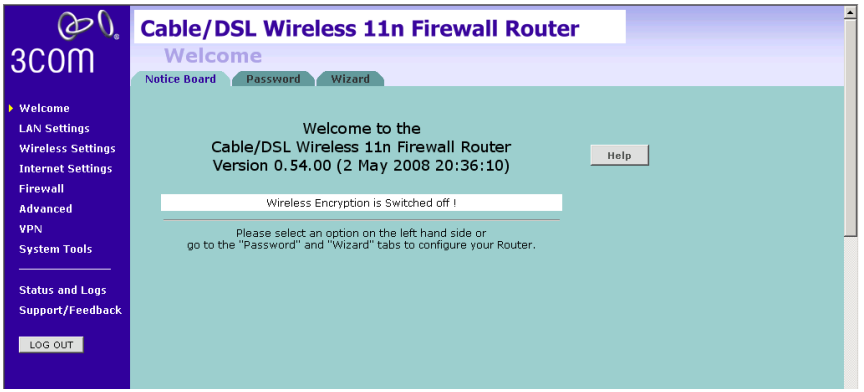
Figure 13 Country Selection Screen



The Wizard will then launch automatically (refer to Figure 16). 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 14). There are three tabs: Notice Board, Password and Wizard.

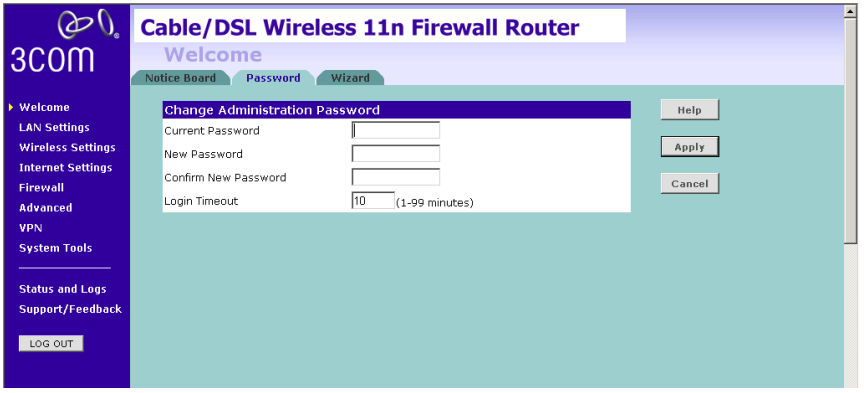
Figure 14 Welcome Screen



- 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 15).
- Go to the *Wizard* tab to do a quick setup of the Router (Figure 16).

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

Figure 15 Password Screen



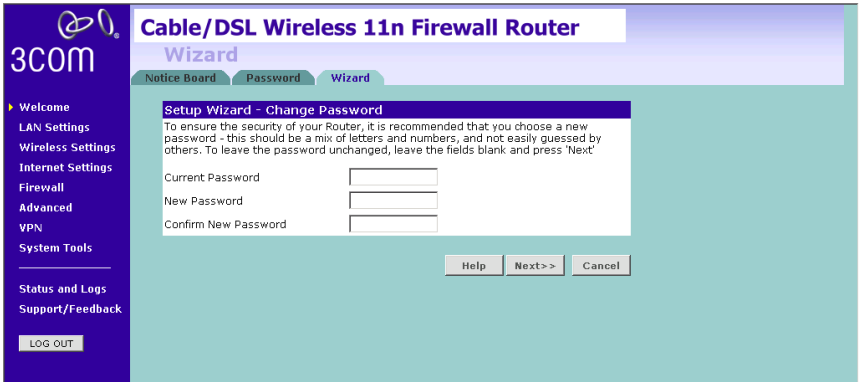
1. To change the current password, enter the password in the *Current Password* field.
2. Enter the new password in the *New Password* field, and enter it again in the *Confirm New Password* field.

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*.

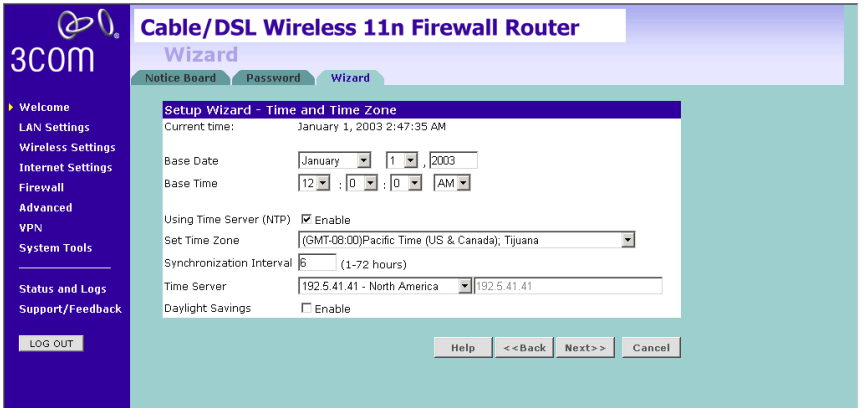
Figure 16 Change Password Screen



Wizard - Time and Time Zone

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

Figure 17 Time and Time Zone Screen

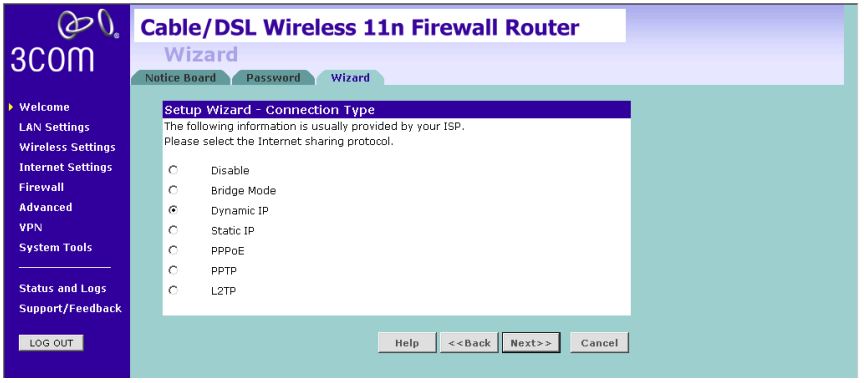


1. Select the correct base date and time.
2. If you want to automatically synchronize the Router with a public time server, check the *Enable* box in the *Using Time Server (NTP)* field.
3. Select the time zone in the *Set Time Zone* drop-down menu.
4. Enter the time in the *Synchronization Interval* 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 18 Connection Type Screen



Select a mode from the following:

- *Disable* — selecting this option means you do not want the Router to connect to Internet.
- *Bridge Mode* — RFC1483 Bridged Mode, see page 34
- *Dynamic IP* — Using DHCP function, see page 35
- *Static IP* — Using fixed IP, see page 36
- *PPPoE* — PPP over Ethernet, providing routing for multiple PCs, see page 37

- *PPTP* — Point-to-Point Tunneling Protocol, see page 38
- *L2TP* — Layer 2 Tunneling Protocol, see page 39

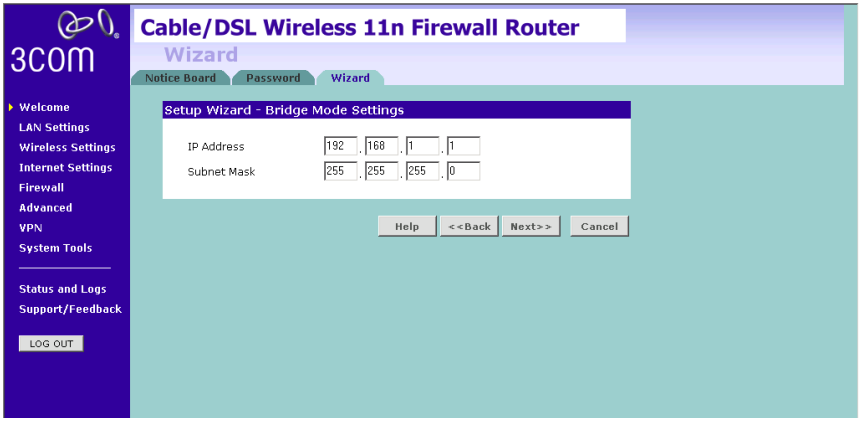
and click *Next*.

For further information on selecting a mode see Internet Settings on page 60.

Bridge Mode

To set up the Router for use with an RFC1483 bridged connection, use the following procedure:

Figure 19 Bridged Mode Screen



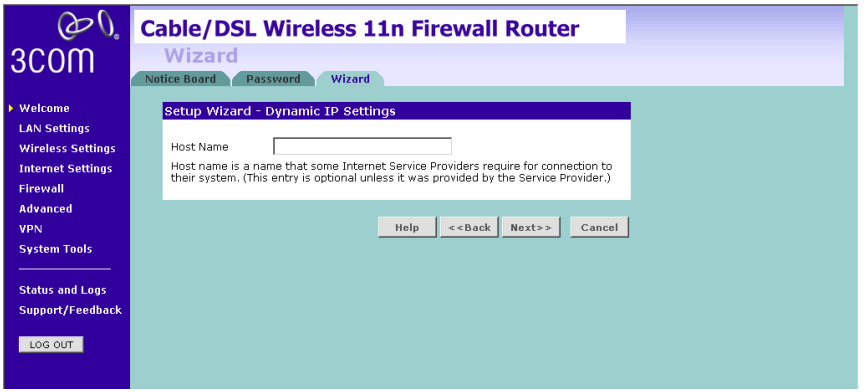
1 Enter the IP address and Subnet mask information.

2 Check all of your settings, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 25).

Dynamic IP

To set up the Router for use with a dynamic IP connection, use the following procedure:

Figure 20 Host Name Screen



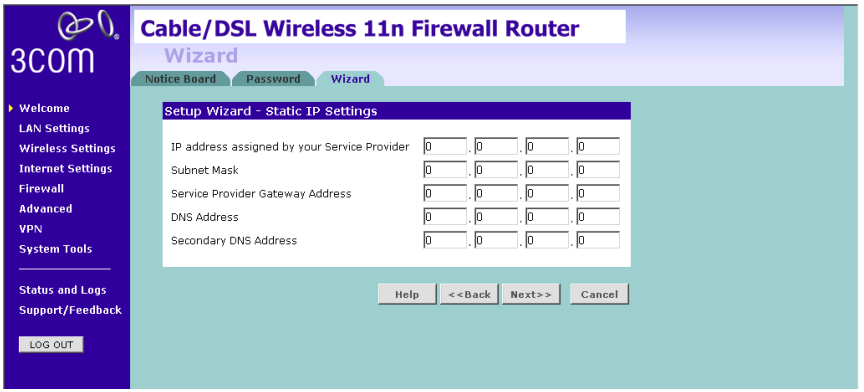
1 Host name is a name that some Internet Service Providers require for connection to their system. This entry is optional, your Internet Service Provider should provide this information.

2 Check all of your settings, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 25).

Static IP

To set up the Router for use with a static IP connection, use the following procedure:

Figure 21 Static IP Screen



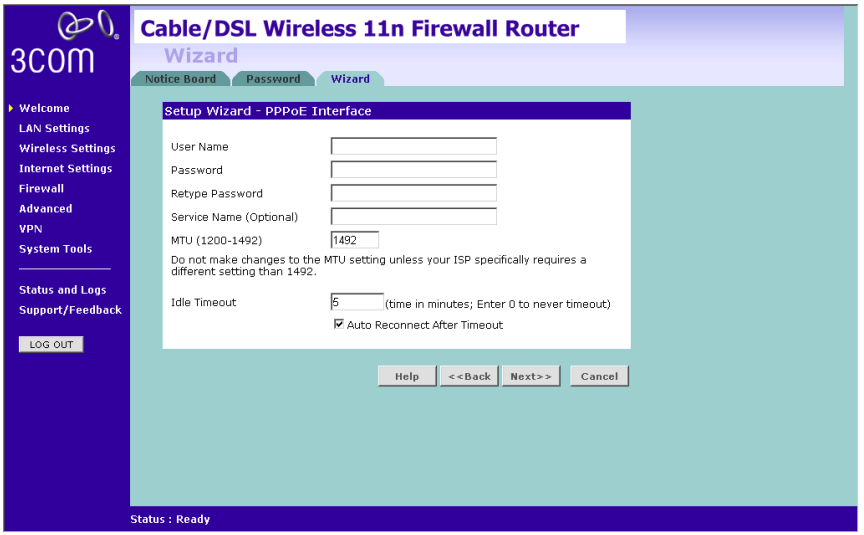
To assign a fixed IP address:

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 25).

PPPoE Mode

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

Figure 22 PPPoE Screen

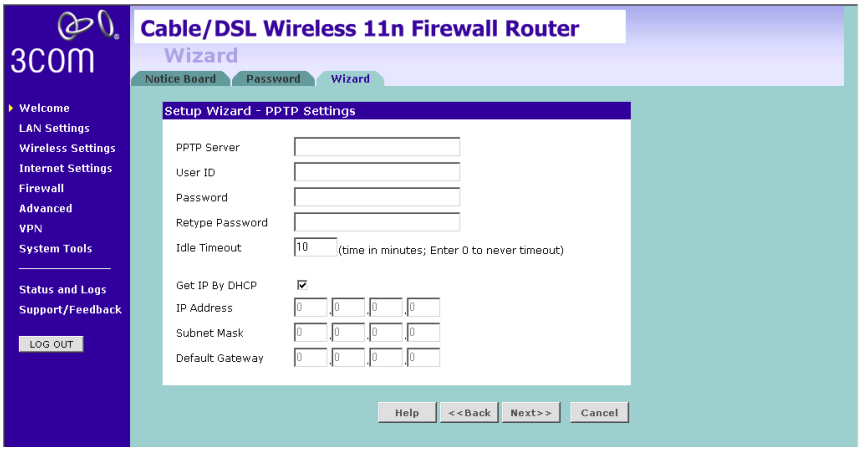


1. Enter your user name in the *Username* field.
2. Enter your password in the *Password* field.
3. Re-type your password in the *Retype Password* field.
4. The *Service Name* field is optional, enter this information if your ISP requires it.
5. Enter the MTU information, the default is 1492.
6. Enter 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 25).

PPTP Mode

To set up the Router for use with a PPTP (Point to Point Tunneling Protocol) connection, use the following procedure:

Figure 23 PPTP Screen



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.

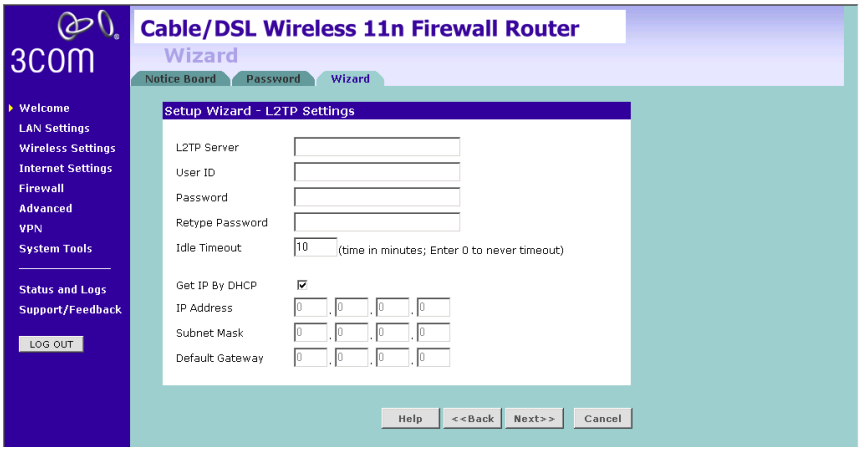
5 Check the *Get IP By DHCP* box to receive IP address from your ISPs' DHCP function. If this box is not checked, enter the IP address, Subnet mask, and Default Gateway information.

6 Check all of your settings, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 25).

L2TP mode

To set up the Router for use with a L2TP (Layer 2 Tunneling Protocol) connection, use the following procedure:

Figure 24 L2TP Screen

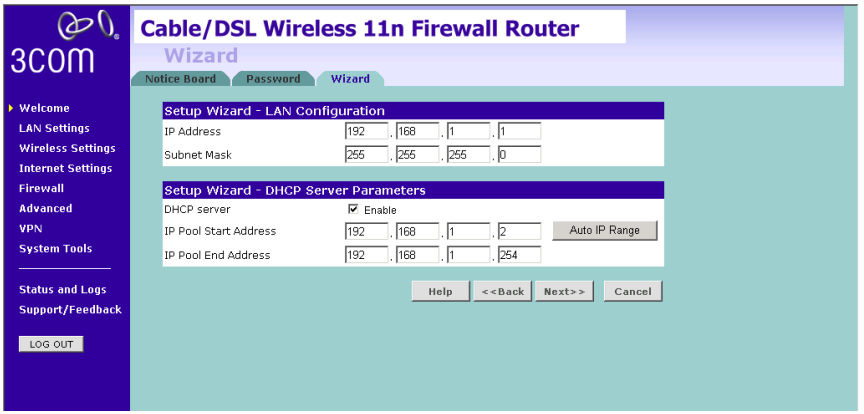


1. Enter the *L2TP Server* information.
2. Enter the User ID and Password required by your ISP.
3. Retype the password.
4. Enter the maximum Idle Timeout for the Internet connection. After this time has been exceeded the connection will be terminated.
5. Check the *Get IP By DHCP* box to receive IP address from your ISP's DHCP function. If this box is not checked, enter the IP address, Subnet mask, and Default Gateway information.
6. Check all of your settings, and then click *Next*.
   The LAN Settings screen will then be displayed (refer to Figure 25).

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 25 The LAN Settings Screen

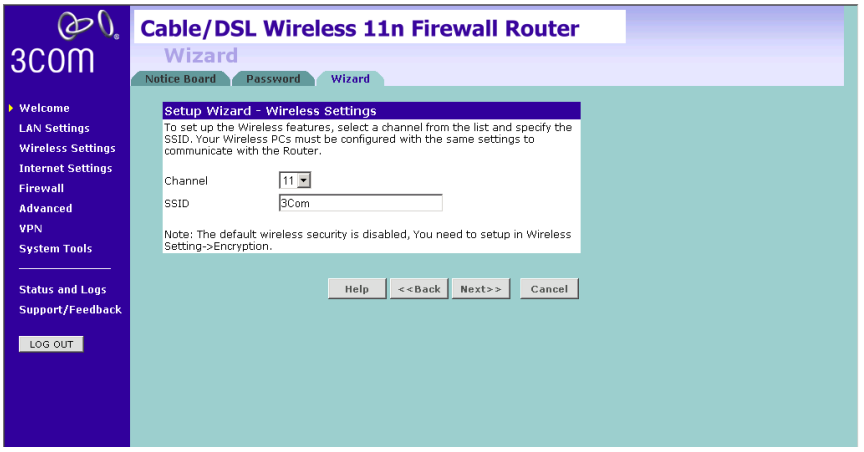


1. To change the Router's default IP address, enter the new IP address in the *IP Address* field, and then enter the subnet mask in the *Subnet Mask* field.
2. Check the *DHCP Server* box to enable the DHCP function.
3. Enter the client IP address range in the *IP Pool Start Address* and *IP Pool End 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 be displayed (refer to Figure 26).

Wizard - Wireless Setting

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

Figure 26 Wireless Setting Screen

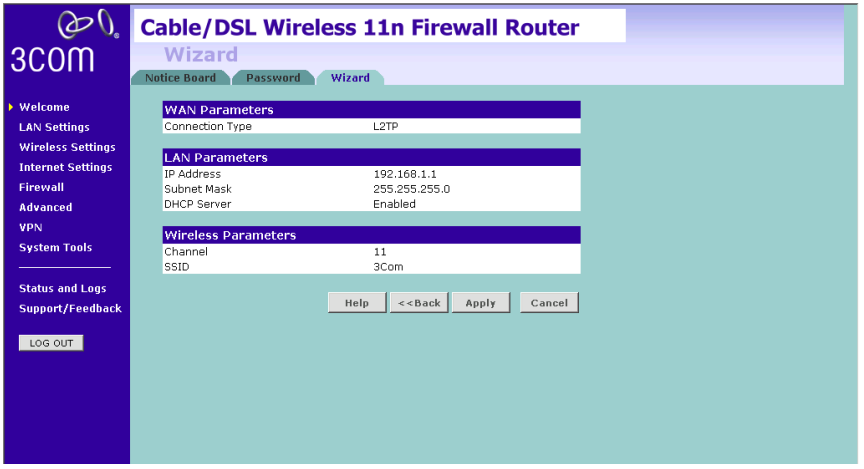


1. Select the channel you want to use from the *Channel* drop-down menu.
2. Specify the SSID to be used by your wireless network in the *SSID* field. If there are other wireless networks in your area, you should give your wireless network a unique name.

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 27 Configuration Summary Screen



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

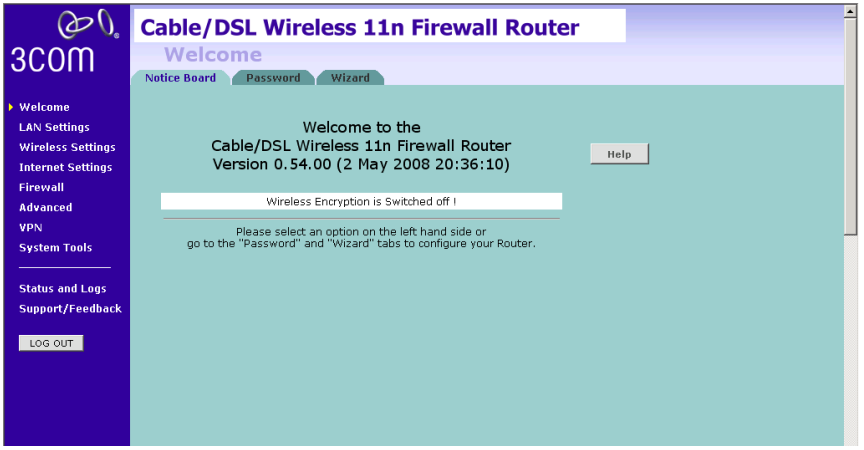
The main menu is located on the left side, as shown in Figure 28. When you click on an item from the main menu, the corresponding screen will then appear in the center.

Welcome Screen

The *Welcome* screen shows the current software information.

Status

Figure 28 Welcome Screen



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:

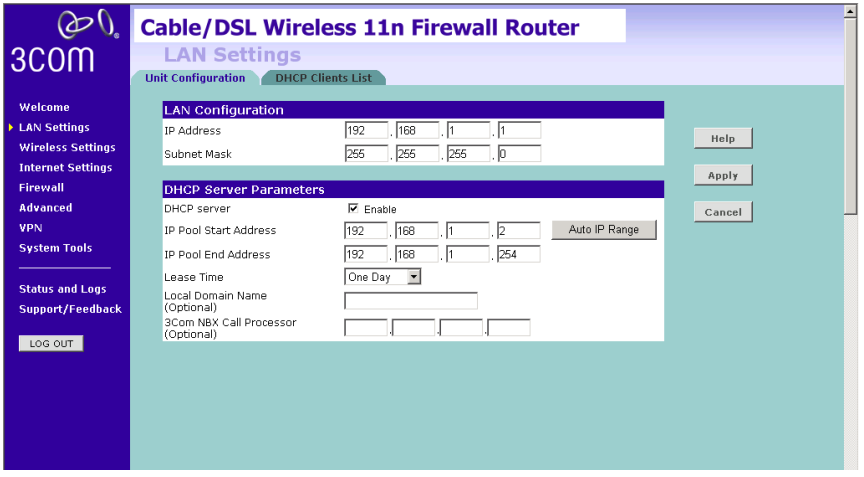
- Change the default IP address of the Router. The default IP is 192.168.1.1
- Change the Subnet Mask. The default setting is 255.255.255.0
- Enable/Disable the DHCP Server Function. The default is "*Enable*".
- Specify the Starting and Ending IP Pool address. The default is Starting: 2 / Ending: 254.
- 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 29 LAN Settings Screen

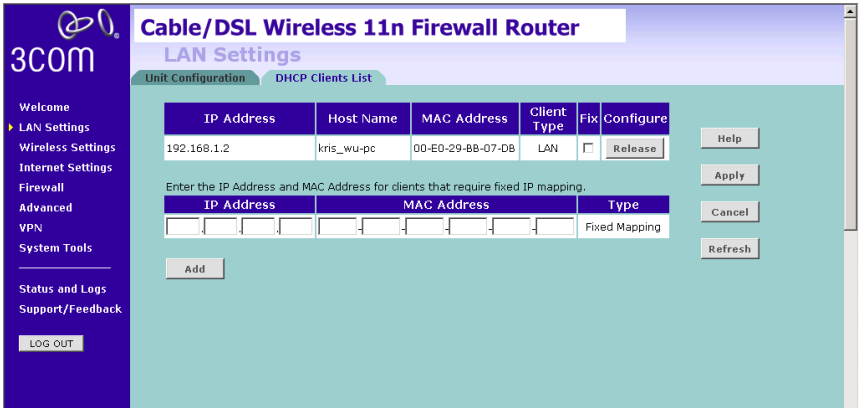


1. Enter the Router's *IP Address* and *Subnet Mask* in the appropriate fields. The default IP address is 192.168.1.1.
2. If you want to use the Router as a DHCP Server, check *Enable* in the *DHCP Server* field.
3. Enter the IP address range in the *IP Pool Start Address* and *IP Pool End Address* fields.
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 30 DHCP Clients List Screen



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.

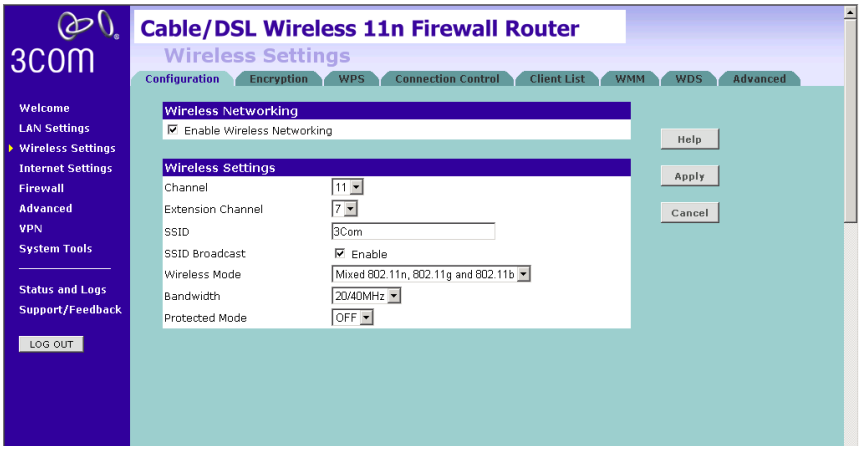
The DHCP server will give out addresses to both wired and wireless clients.

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 31 Wireless Settings Screen



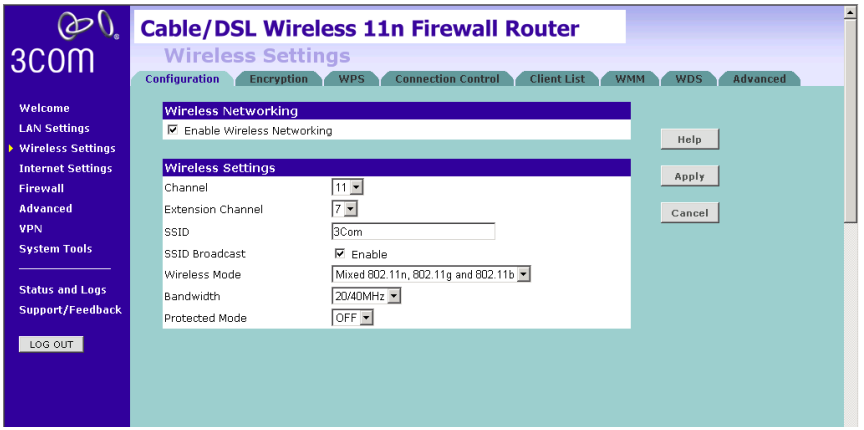
There are 8 tabs available:

- 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.

Figure 32 Wireless Configuration Screen



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.
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*.

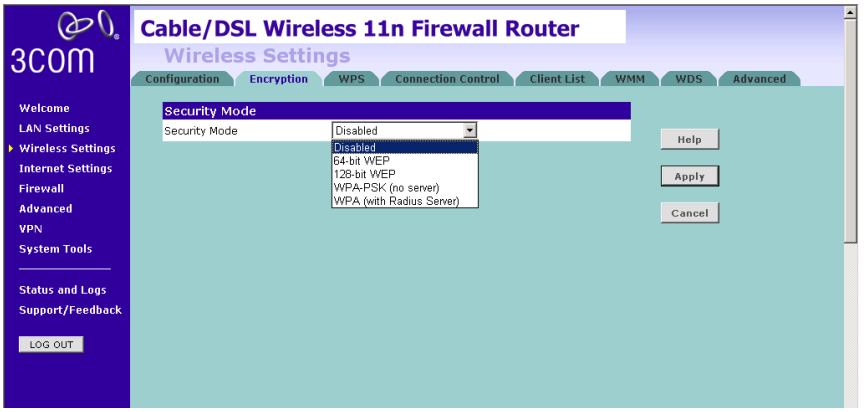
   A feature of many wireless network adapters is that a computer's SSID can be set to ANY, which means it looks randomly for any existing wireless network. The available networks are then displayed in a site survey, and your computer can select a network. If you disable this SSID broadcast function, you 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 enable *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.
7. Bandwidth: select the bandwidth to use.

8 Select to turn on/off the *Protected Mode* function.

9 Click *Apply*.

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

Figure 33 Encryption Screen



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 50)
- 128-bit WEP (see page 51)
- WPA-PSK (no server) (see page 52)
- WPA (with RADIUS Server) (see page 53)

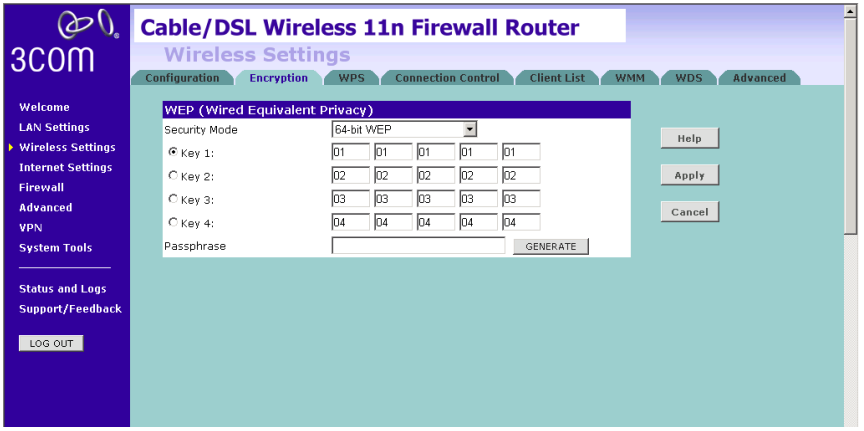
Disabled

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.

Figure 34 64-bit WEP Screen



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.

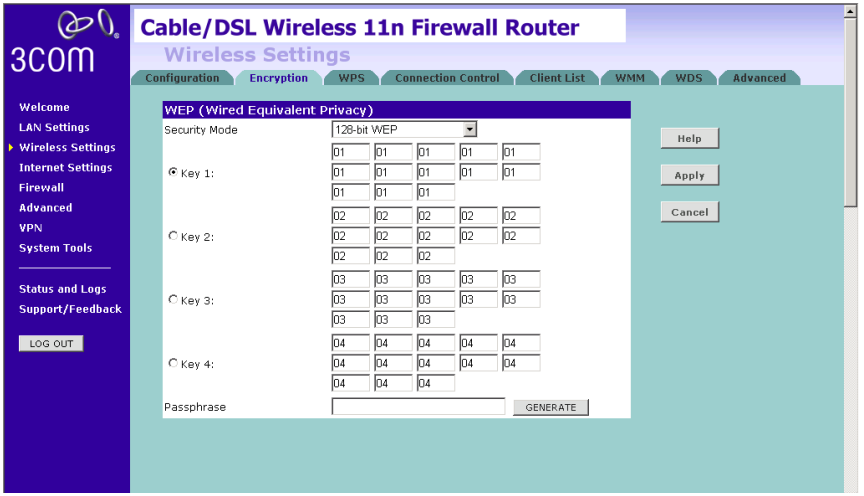
Note that all four WEP keys on each device in the wireless network must be identical.

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.

Figure 35 128-bit WEP Screen



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.

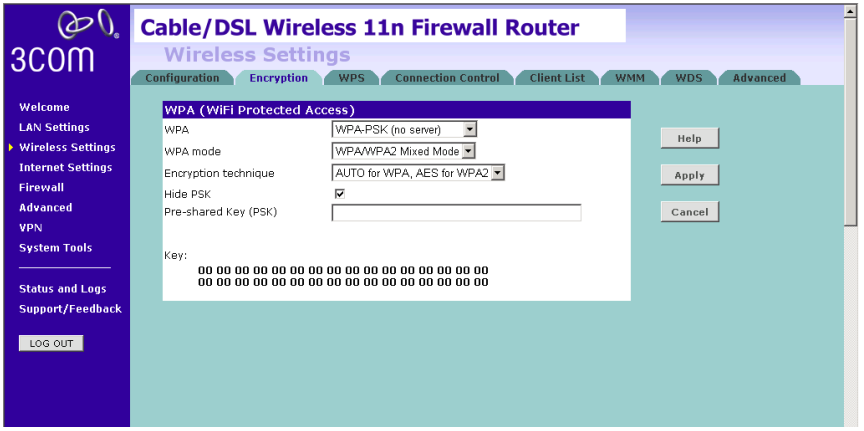
The WEP keys on each device on the wireless network must be identical. In 128-bit WEP mode, only one WEP key can be specified.

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.

Figure 36 WPA-PSK (no server) Screen

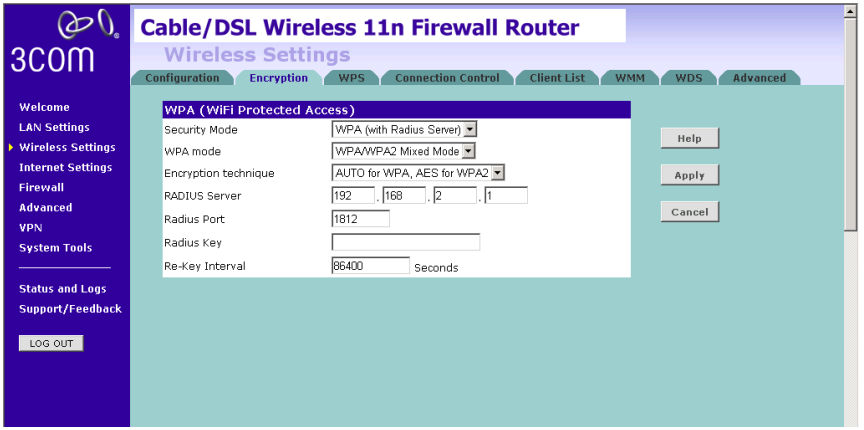


1. Select WPA-PSK (no server) from the *WPA* drop-down menu.
2. Select WPA mode from the drop-down menu, three modes are supported: WPA, WPA2, and Mixed mode.
3. Select Encryption technique from the drop-down menu, four options are available: TKIP, AES, Auto for WPA AES for WPA2, and AES for both WPA and WPA2.
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 37 WPA (with RADIUS Server) Screen



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.

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.

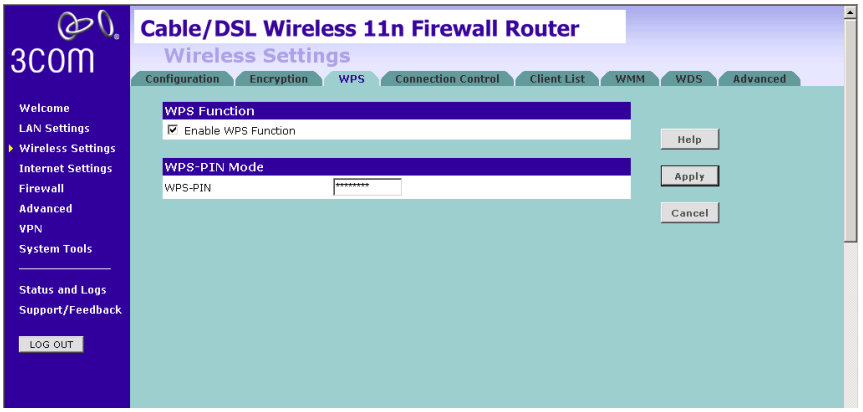
8 Click *Apply*.

WPS Wireless Provisioning Services (WPS) is a standard for easy and secure establishment of a wireless home network, created by the Wi-Fi Alliance.

3Com Wireless 11n Cable/DSL firewall Router supports the PIN method.

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

Figure 38 WPS Screen



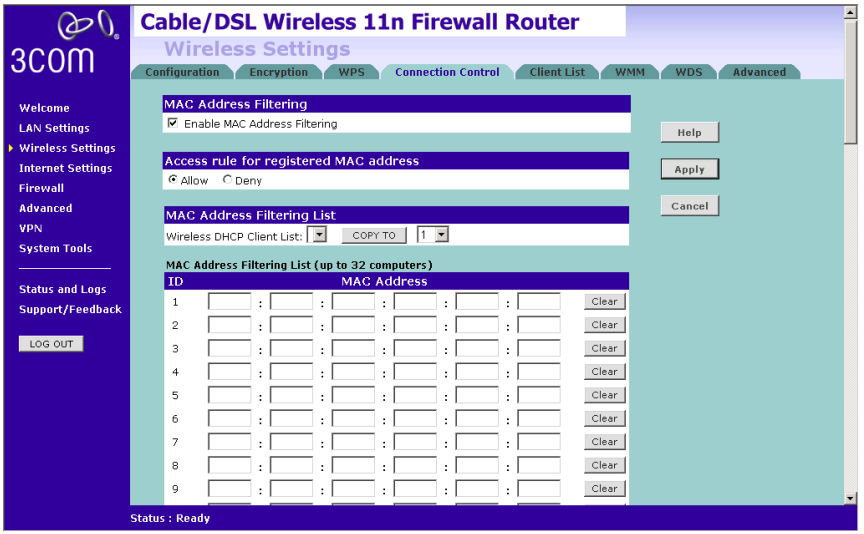
Enter the PIN code in the *WPS-PIN* field. And then click *Apply.*

Connection Control

This feature is used to filter the clients based on their MAC addresses.

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

Figure 39 Connection Control Screen



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.

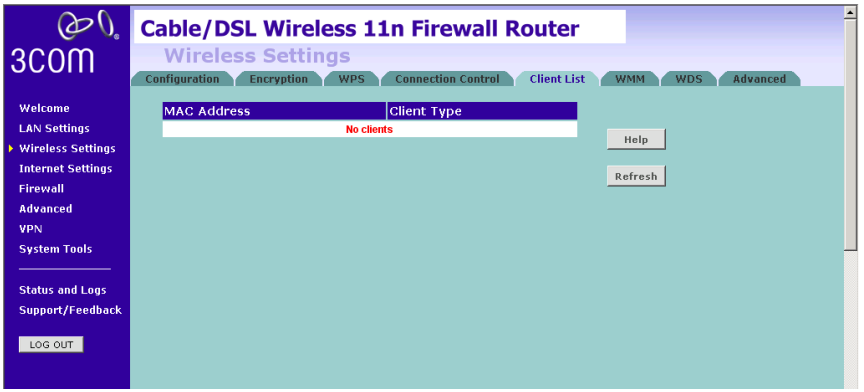
Use the *MAC Address Filtering List* to quickly copy the MAC addresses of the current wireless clients into the list table. You can define up to 32 MAC addresses to the list.

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 40 Client List Screen

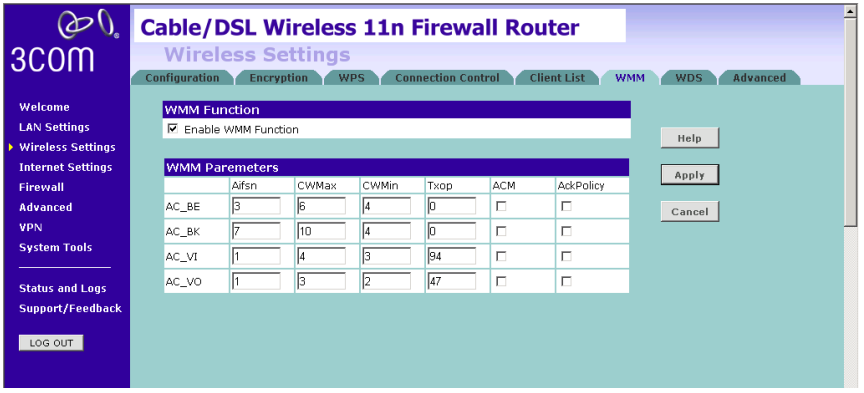


Click *Refresh* to update the list.

WMM Wireless Multimedia (WMM) mode, which supports devices that meet the 802.11E 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 41 WMM Screen

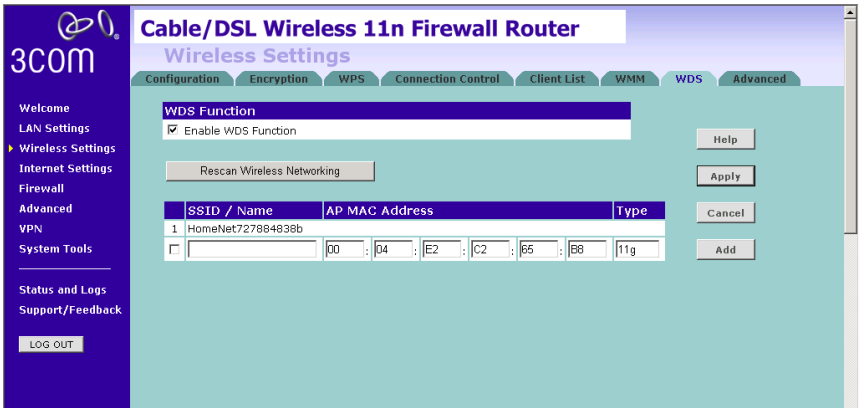


The following table explains the four access categories:

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

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.

Figure 42 Wireless WDS Settings Screen

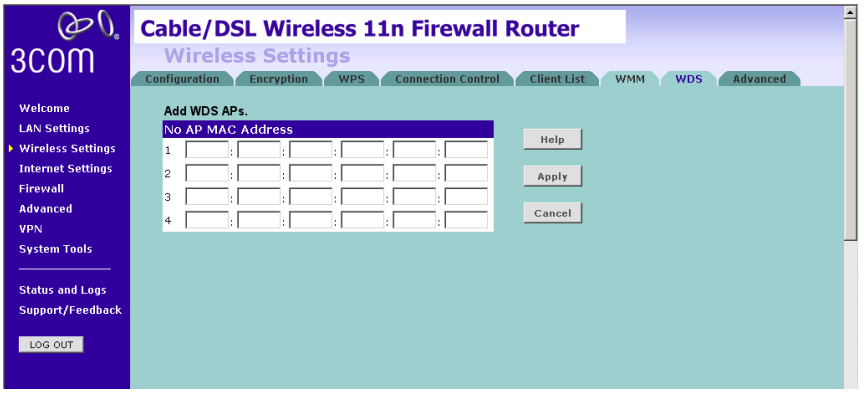


1 Check the *Enable WDS Function* checkbox.

2 To refresh the list of available access points, click *Rescan Wireless Networking.*

3 Click *Add* to add the MAC address of the AP to the list, the add WDS screen will appear (refer to Figure 43).

Figure 43 Add WDS screen

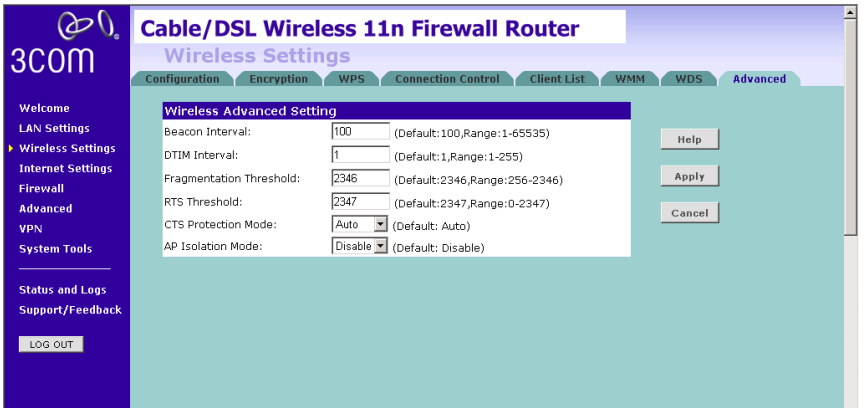


Enter the MAC address(es) of one or more access points in the *AP MAC Address* table, and click *Apply.*

Advanced

The Advanced screen allows you to configure detailed settings for your wireless connection.

Figure 44 Wireless Advanced Setting Screen



There are six parameters that you can configure:

- 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.

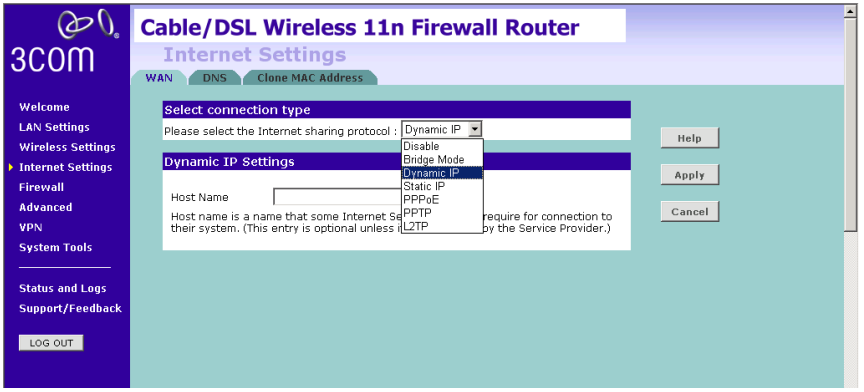
Internet Settings

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 45 WAN Screen



You should see the first entry already contains information that's been configured using the Wizard in the initial setup. If you want to change that information or set up other connection, click *Edit*.

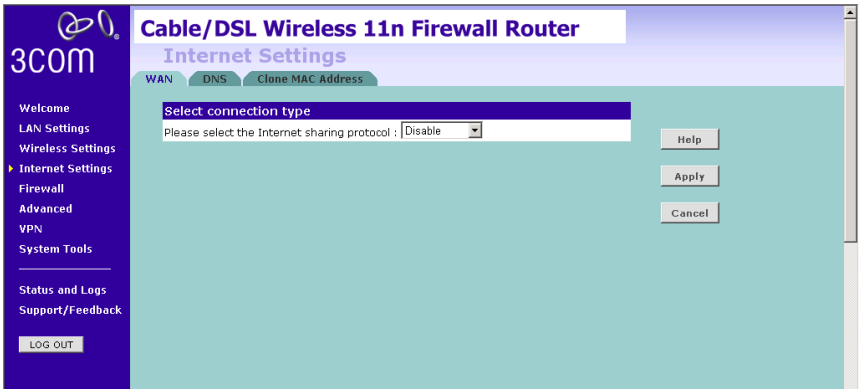
There are seven options available for the connection mode:

- Disable — To disable the Internet connection function (see page 61)
- Bridge Mode — RFC1483 Bridged Mode, (see page 61)
- Dynamic IP — Using DHCP for WAN connection (see page 62)
- Static IP — Using fixed IP for WAN connection (see page 63)
- PPPoE — PPP over Ethernet, providing routing for multiple PCs (see page 64)
- PPTP — Point-to-Point Tunneling Protocol (see page 65)
- L2TP — Layer 2 Tunneling Protocol (see page 66)

Disable

Selecting this option means that you do not want your Router to connect to the Internet.

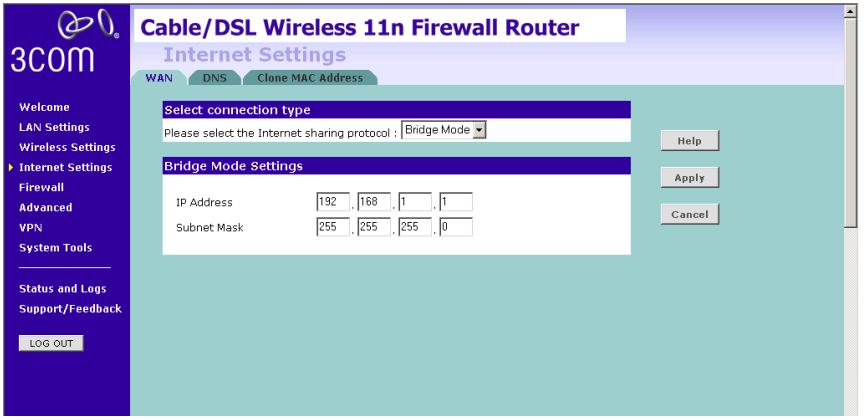
Figure 46 Disable Internet Connection Screen



Bridge Mode

If your ISP limits access to the Internet to specific computers, this means that traffic to/from these computers only will be forwarded. In this case, Bridge Mode is used to connect to the ISP. The ISP will generally give one Internet account and limit only one computer to access the Internet. Check with your ISP to determine if this mode is used for your Internet connection.

Figure 47 Bridge Mode Screen

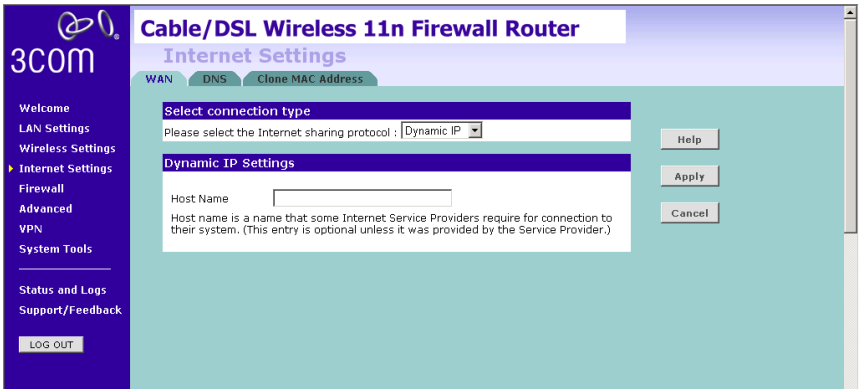


Enter the IP address and Subnet mask information.

Dynamic IP

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

Figure 48 Dynamic IP Screen



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

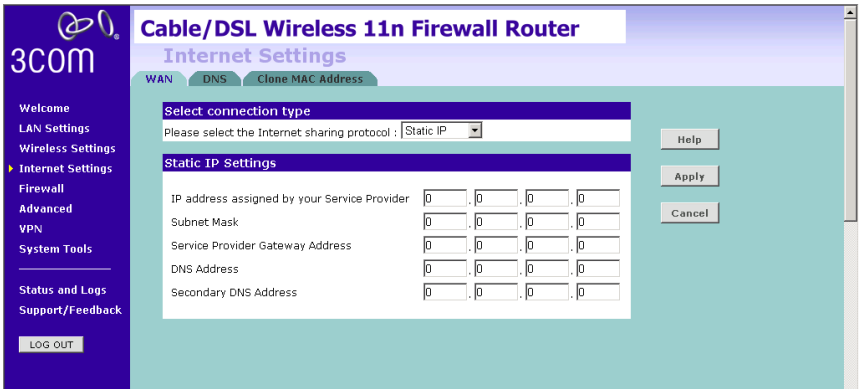
2 If the ISP requires you to input a Host Name, type it in the Host Name field.

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 49 Static IP Screen

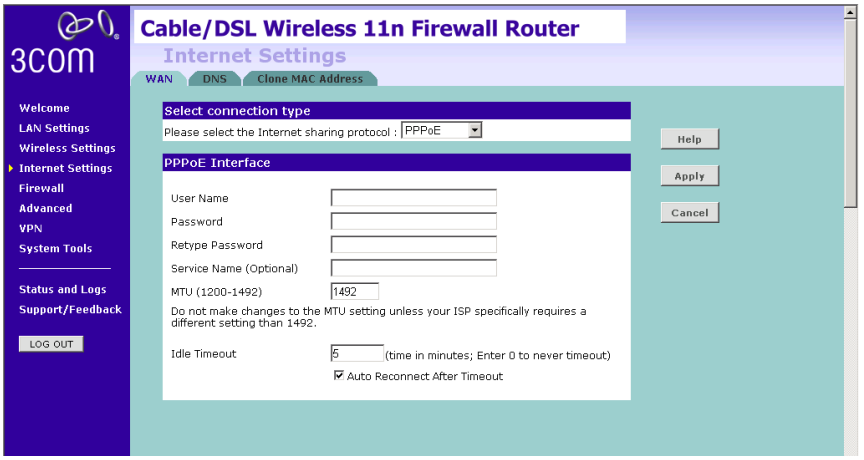


1. Select *Static IP* from the *Internet sharing protocol* drop-down menu.
2. Enter your IP address in the *IP address assigned by your service provider* field.
3. Enter the subnet mask in the *Subnet Mask* field.
4. Enter the default gateway IP address in the *Service Provider Gateway Address* field.
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. To configure this function correctly, you should obtain the information from your ISP.

Figure 50 PPPoE Settings Screen

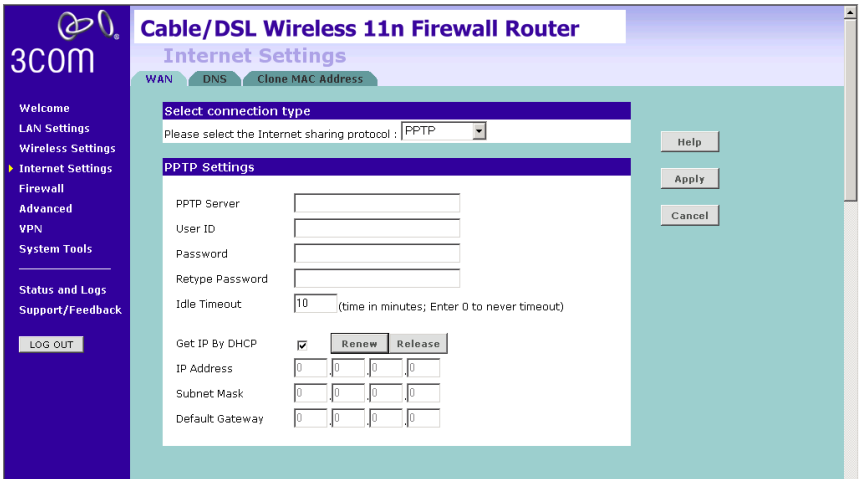


1. Select *PPPoE* from the *Internet sharing protocol* drop-down menu.
2. Enter the user name assigned to you by your ISP in the *Username* field. And enter the password assigned to you by your ISP in the *Password* field. Re-enter your password in the *Retype Password* field.
3. The Service Name field 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 51 PPTP Screen

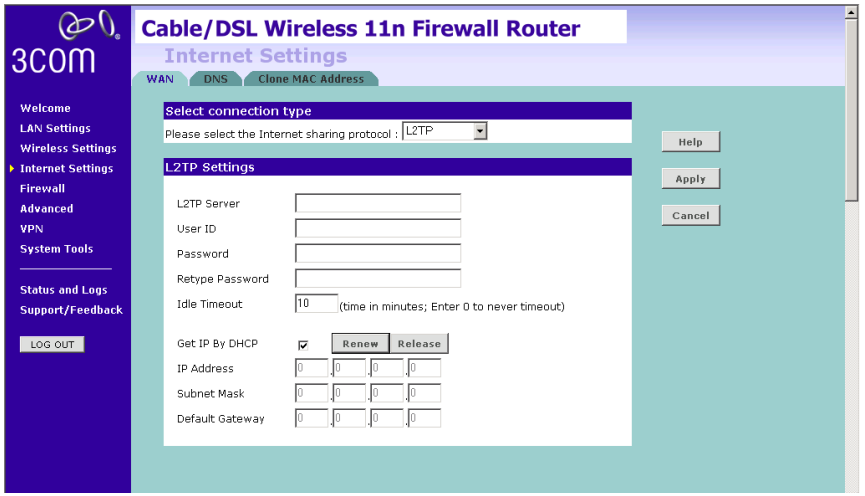


1. Select *PPTP* from the *Internet sharing protocol* drop-down menu.
2. Enter the PPTP Server information.
3. Enter the user ID in the *User ID* field. And enter the password assigned to you by your ISP in the *Password* field. Re-enter your password in the *Retype Password* field.
4. If you want your 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.

Figure 52 L2TP Connection Screen

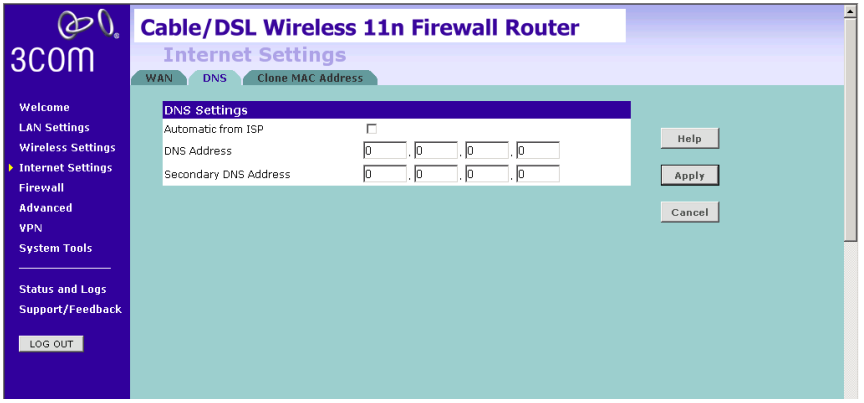


1. Select L2TP from the *Internet sharing protocol* drop-down menu.
2. Enter the *L2TP Server* information.
3. Enter the User ID and Password required by your ISP.
4. Retype the password.
5. Enter the maximum Idle Timeout for the Internet connection. After this time has been exceeded the connection will 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.

Check with your ISP for information on this screen.

Figure 53 DNS Screen



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

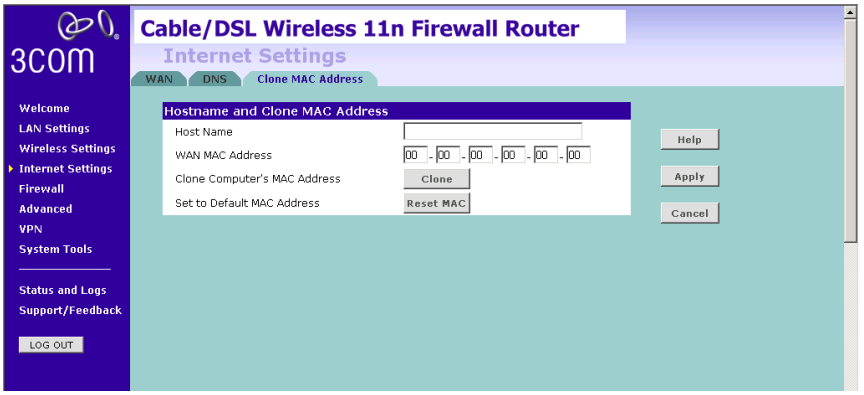
If your ISP provided you with specific DNS addresses to use, enter them into the appropriate fields on this screen and click *Apply*.

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. The Hostname and MAC Address screen displays.

Figure 54 Hostname and Clone MAC Address Screen



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.