

# Wireless 11n Cable/DSL Firewall Router User Guide

WL-602

3CRWER300-73

http://www.3Com.com/

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# **CONTENTS**

# **ABOUT THIS GUIDE**

Naming Convention 7 Conventions 8 Feedback About This User Guide 9 Related Documentation 9

### **INTRODUCING THE ROUTER**

Wireless 11n Cable/DSL Firewall Router 11
Router Advantages 13
Package Contents 13
Minimum System and Component Requirements 14
Physical Features 14

# INSTALLING THE ROUTER

Introduction 19 Safety Information 19 Positioning the Router 19 Using the Rubber Feet 20 Wall Mounting 20 Powering Up the Router 21 Connecting the Router 21

# SETTING UP YOUR COMPUTERS

Obtaining an IP Address Automatically 23 Windows 2000 23 Windows Vista 25 Windows XP 26 Macintosh 26 Disabling PPPoE and PPTP Client Software 27 Disabling Web Proxy 27

# **RUNNING THE SETUP WIZARD**

Accessing the Setup Wizard 29 Wizard -Change Password 32 Wizard -Time and Time Zone 32 Wizard -Connection Type 33 Setup Wizard - LAN Settings 40 Wizard - Wireless Setting 41 Wizard - Configuration Summary 42

# **CONFIGURING THE ROUTER**

Navigating Through the Router Configuration screens 43 Main Menu 43 Welcome Screen 43 Status 43 LAN Settings 44 LAN Settings 44 DHCP Clients List 45 Wireless Settings 47 Configuration 48 Encryption 49 WPS 54 Connection Control 55 Client List 56 WMM 57 WDS 58 Advanced 59 Internet Settings 60 WAN 60 DNS 67 Clone MAC address 68

Firewall 69 SPI 69 Special Applications 73 Virtual Servers 74 DMZ 75 PC Privileges 76 Schedule Rule 78 URL Filter 79 Advanced 80 Security 80 VLAN 83 Static Routes 84 RIP 85 DDNS 87 SNMP 88 Syslog 89 Proxy ARP 90 QoS Settings 91 VPN 92 System Tools 96 Restart Router 96 Configuration 96 Upgrade 97 Time Zone 98 Ping 99 Traceroute 100 DNS Lookup 101 Status and Logs 102 Status 102 Routing Table 102 Logs 103 Traffic Statistics 103 Support/Feedback 104 Support 104 Feedback 104

# TROUBLESHOOTING

Basic Connection Checks105Browsing to the Router Configuration Screens105Connecting to the Internet106Forgotten Password and Reset to Factory Defaults106Wireless Networking107Recovering from Corrupted Software109Frequently Asked Questions110

# **IP ADDRESSING**

The Internet Protocol Suite 111 Managing the Router over the Network 111 IP Addresses and Subnet Masks 111 How does a Device Obtain an IP Address and Subnet Mask? 113 DHCP Addressing 113 Static Addressing 113 Auto-IP Addressing 113

# **TECHNICAL SPECIFICATIONS**

3Com Wireless 11n Cable/DSL Firewall Router 115 Standards 116

# **SAFETY INFORMATION**

# **END USER SOFTWARE LICENSE AGREEMENT**

# **OBTAINING SUPPORT FOR YOUR PRODUCT**

GLOSSARY

# **REGULATORY NOTICES**

INDEX

# **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.
i>	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

<u>Table 1</u> and <u>Table 2</u> list conventions that are used throughout this guide.

# Table 1 Notice Icons

lcon	Notice Type	Description
i	Information note	Information that describes important features or instructions.
Ĩ	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device.
<u>Å</u>	Warning	Information that alerts you to potential personal injury.

#### Table 2Text 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 <i>italics</i>	Italics are used to:
	<ul> <li>Emphasize a point.</li> </ul>
	<ul> <li>Denote a new term at the place where it is defined in the text.</li> </ul>
	<ul> <li>Identify menu names, menu commands, and software button names. Examples:</li> </ul>
	From the Help menu, select Contents.
	Click OK.

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- 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 <u>Appendix C</u>.

### Related Documentation

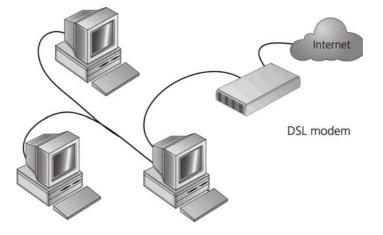
In addition to this guide, each Router document set includes one Installation Guide. This guide contains the instructions you need to install and configure your Router.

#### ABOUT THIS GUIDE

# INTRODUCING THE ROUTER

1

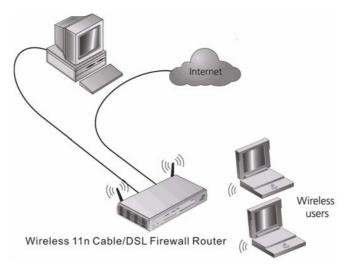
	Welcome to the world of networking with 3Com <sup>®</sup> . In the modern business environment, communication and sharing information is crucial. Computer networks have proved to be one of the fastest modes of communication but, until recently, only large businesses could afford the networking advantage.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





Router Advantages	The advantages of the Router include:
	<ul> <li>Shared Internet connection for both wired and wireless computers</li> </ul>
	<ul> <li>High speed 802.11n wireless networking</li> </ul>
	<ul> <li>No need for a dedicated, "always on" computer serving as your Internet connection</li> </ul>
	<ul> <li>Cross-platform operation for compatibility with Windows, Unix and Macintosh computers</li> </ul>
	<ul> <li>Easy-to-use, Web-based setup and configuration</li> </ul>
	<ul> <li>Provides centralization of all network address settings (DHCP)</li> </ul>
	<ul> <li>Acts as a Virtual server to enable remote access to Web, FTP, and othe services on your network</li> </ul>
	<ul> <li>Security — Firewall protection against Internet hacker attacks and encryption to protect wireless network traffic</li> </ul>
Package Contents	The Router kit includes the following items:
	<ul> <li>One 3Com Wireless 11n Cable/DSL Firewall Router</li> </ul>
	<ul> <li>One power adapter for use with the Router</li> </ul>
	<ul> <li>Four rubber feet</li> </ul>
	<ul> <li>One Ethernet cable</li> </ul>
	<ul> <li>One CD-ROM containing this User guide</li> </ul>
	<ul> <li>Installation guide</li> </ul>
	<ul> <li>Support and Safety sheet</li> </ul>
	<ul> <li>Warranty sheet</li> </ul>
	<ul> <li>Product range sheet</li> </ul>
	If any of these items are missing or damaged, please contact your retaile

Minimum System and Component	Your Router requires that the computer(s) and components in your network be configured with at least the following:		
Requirements	<ul> <li>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).</li> <li>An Ethernet 10 Mbps or 10/100 Mbps NIC for each computer to be connected to the four-port switch on your Router.</li> </ul>		
	<ul> <li>An active ADSL or Cable subscription and connection.</li> </ul>		
	<ul> <li>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.</li> </ul>		
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 <u>Chapter 6 Troubleshooting</u>.

# 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 <u>Chapter 6 Troubleshooting</u>). 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.

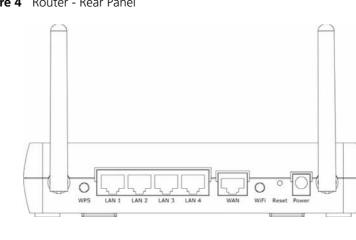


Figure 4 Router - Rear Panel

#### 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 <u>Forgotten Password</u> and <u>Reset to Factory Defaults</u> on <u>page 106</u> for further details.

#### 7 Power Adapter Socket

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

# INSTALLING THE ROUTER

Introduction	This chapter will guide you through a basic installation of the Router, including:
	<ul> <li>Connecting the Router to the Internet.</li> </ul>
	<ul> <li>Connecting the Router to your network.</li> </ul>
	<ul> <li>Setting up your computers for networking with the Router.</li> </ul>
Safety Information	Please note the following:
Ŕ	<b>WARNING:</b> Please read the <u>Safety Information</u> section in <u>Appendix C</u> before you start.
<u>À</u>	<b>VORSICHT:</b> Bitte lesen Sie den Abschnitt <u>Wichtige Sicherheitshinweise</u> sorgf <b>ä</b> ltig durch, bevor Sie das Ger <b>ä</b> t einschalten.
Ŕ	<b>AVERTISSEMENT:</b> Veuillez lire attentivement la section <u>Consignes</u> <u>importantes de sécurité</u> avant de mettre en route.
Positioning the	You should place the Router in a location that:
Router	<ul> <li>is conveniently located for connection to the telephone socket.</li> </ul>
	<ul> <li>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.</li> </ul>
	<ul> <li>allows convenient connection to the computers that will be connected to the four LAN ports on the rear panel, if desired.</li> </ul>
	<ul> <li>allows easy viewing of the front panel LED indicator lights, and access to the rear panel connectors, if necessary.</li> </ul>

When positioning your Router, ensure:

	<ul> <li>It is out of direct sunlight and away from sources of heat.</li> </ul>
	<ul> <li>Cabling is away from power lines, fluorescent lighting fixtures, and sources of electrical noise such as radios, transmitters and broadband amplifiers.</li> </ul>
	<ul> <li>Water or moisture cannot enter the case of the unit.</li> </ul>
	<ul> <li>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.</li> </ul>
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.
i	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.

To power up the Router:	
1 Plug the power adapter into the power adapter socket located on the back panel of the Router.	
<b>2</b> Plug the power adapter into a standard electrical wall socket.	
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

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

ocal Area Connection Properties	?>
General	
Connect using:	
3Com 3C918 Integrated Fast Ethernet 0	Controller (3C905B-
,	Configure
Components checked are used by this conner	ction:
🗹 🍹 NWLink NetBIOS	
✓ 〒 <u>NWLink IPX/SPX/NetBIOS</u> Compatib	le Transport Proto
🗹 🏹 Internet Protocol (TCP/IP)	
	<b>_</b>
Install Uninstall	Properties
Install Uninstall	Properties
	ocol. The default
Description Transmission Control Protocol/Internet Prot wide area network protocol that provides c	ocol. The default

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

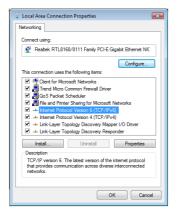
ernet Protocol (TCP/IP) Pro	perties
ieneral	
	d automatically if your network supports eed to ask your network administrator for
Obtain an IP address auto	matically
C Use the following IP addre	:22
IP address:	
Subnet mask:	· · · ·
Default gateway:	
Obtain DNS server addres	s automatically
C Use the following DNS ser	ver addresses:
Preferred DNS server:	
Alternate DNS server:	
	Advanced

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

	/IPv6) Properties ned automatically if your network supports this capability. Ir network administrator for the appropriate IPv6 settings.	2
Obtain an IPv6 address au	itomatically	
Use the following IPv6 add	ress:	
IPv6 address:		
Subnet prefix length:		
Default gateway:		
Obtain DNS server addres	s automatically	
Use the following DNS service		
Preferred DNS server:		
Alternate DNS server:		7
	Adv	anced

#### 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.
iiony	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.

# **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: <b>http://192.168.1.1</b> (Figure 11). The Login screen displays.
	Figure 11 Web Browser Location Field (Factory Default)
	File Edit View Favorites Tools Help
	🖙 Back 👻 🤿 🖉 🙆 🖓 🥘 Search 🛛 🙀 Favorites
	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 12).

Figure 12 Router Login Screen

<u>ک</u> ک	Cable/DSL Wireless 11n Firewall Router	<u>_</u>
3C0M	Login Screen	
	Enter System Password	
	System Password (default:admin)	
	Log in Cancel	
	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 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

<u>ک</u>	Cable/DSL Wireless 11n Firewall Router
3C0M	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.
	Apply

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.

یں 300m	Cable/DSL Wireless 11n Firewall Router Welcome Notice Board Password Wizard	×
Welcome LAN Settings	Welcome to the	
Wireless Settings	Cable/DSL Wireless 11n Firewall Router	
Internet Settings	Version 0.54.00 (2 May 2008 20:36:10)	
Firewall Advanced	Wireless Encryption is Switched off !	
VPN	Please select an option on the left hand side or	
System Tools	go to the "Password" and "Wizard" tabs to configure your Router.	
Status and Logs		
Support/Feedback		
LOG OUT		

- 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

<i>@</i> 0 3COM	Cable/DSL Wireless 11n Firewall Router Welcome	
<ul> <li>Welcome</li> <li>LAN Settings</li> <li>Wireless Settings</li> <li>Internet Settings</li> <li>Firewall</li> <li>Advanced</li> <li>VPN</li> <li>System Tools</li> <li>Status and Logs</li> <li>Support/Feedback</li> <li>LOG OUT</li> </ul>	Change Administration Password Current Password New Password Confirm New Password Login Timeout 10 (1-99 minutes)	Help Apply Cancel

- **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

<u>ک</u>	Cable/DSL Wireless 11n Firewall Router
3COM	Wizard Notice Board Password Wizard
Welcome     LAN Settings     Wireless Settings     Internet Settings     Firewall     Advanced     VPN	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
System Tools Status and Logs Support/Feedback	Help Next>> Cancel

#### Wizard -Time and Time Zone

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

#### Figure 17 Time and Time Zone Screen

∂ <i>©0</i> , 3COM	Cable/DSL Wireless 11n Firewall Router Wizard Notice Board Password Wizard
Welcome	Setup Wizard - Time and Time Zone
LAN Settings	Current time: January 1, 2003 2:47:35 AM
Wireless Settings	
Internet Settings	Base Date January I 1 2003
Firewall	Base Time 12 • : 0 • : 0 • AM •
Advanced	
VPN	Using Time Server (NTP) Z Enable
System Tools	Set Time Zone (GMT-08:00)Pacific Time (US & Canada); Tijuana 🔽
- <u> </u>	Synchronization Interval 6 (1-72 hours)
Status and Logs	Time Server 192.5.41.41 - North America 192.5.41.41
Support/Feedback	Daylight Savings 🗖 Enable
LOG OUT	Help < <back next="">&gt; Cancel</back>

- **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

۵D°	Cable/DSL Wireless 11n Firewall Router
3C0M	Wizard Notice Board Password Wizard
• Welcome	Setup Wizard - Connection Type
LAN Settings Wireless Settings	The following information is usually provided by your ISP. Please select the Internet sharing protocol.
Internet Settings	C Disable
Firewall	O Bridge Mode
Advanced	© Dynamic IP
VPN	O Static IP
System Tools	O PPPoE
	О РРТР
Status and Logs	O L2TP
Support/Feedback	
LOG OUT	Help < <back next="">&gt;&gt; Cancel</back>

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

3COM	Cable/DSL Wireless 11n Firewall Router Wizard Notice Board Password Wizard
<ul> <li>Welcome</li> <li>LAN Settings</li> <li>Wireless Settings</li> <li>Internet Settings</li> <li>Firewall</li> </ul>	Setup Wizard - Bridge Mode Settings IP Address 192, 160, 1, 1 Subnet Mask 255, 255, 255, 0
Advanced VPN System Tools Status and Logs Support/Feedback	Help < <back next="">&gt; Cancel</back>

- **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

<u>ک</u>	Cable/DSL Wireless 11n Firewall Router
3COM	Wizard Notice Board Password Wizard
Welcome LAN Settings	Setup Wizard - Dynamic IP Settings
Wireless Settings	Host Name
Internet Settings	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.)
Firewall Advanced	
VPN	Help < <back next="">&gt; Cancel</back>
System Tools	
Status and Logs	
Support/Feedback	
LOG OUT	

- **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:

<i>⊛0</i> 300m	Cable/DSL Wireless 11n Firewall Router Wizard
> Welcome	Notice Board Password Wizard Setup Wizard - Static IP Settings
LAN Settings	
Wireless Settings Internet Settings	IP address assigned by your Service Provider 0 , 0 , 0 , 0 , 0 . 0 . 0 . 0 . 0 . 0 .
Firewall	Service Provider Gateway Address
Advanced VPN	DNS Address 0, 0, 0, 0
System Tools	Secondary DNS Address 0 , 0 , 0 , 0
Status and Logs	Help < <back next="">&gt; Cancel</back>
Support/Feedback	///
LOG OUT	

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

۵O°	Cable/DSL Wireless 11n Firewall Router
3COM	Wizard Notice Board Password Wizard
Welcome     LAN Settings     Wireless Settings     Internet Settings     Advanced     VPN     System Tools     Status and Logs     Support/Feedback	Setup Wizard - PPPOE Interface         User Name         Password         Retype Password         Service Name (Optional)         MTU (1200-1492)         Do no trake changes to the MTU setting unless your ISP specifically requires a different setting than 1492.         Idle Timeout       5         // Auto Reconnect After Timeout
	Help < <back next="">&gt; Cancel</back>

- **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:

<i>©</i> ∂ 300M	Cable/DSL Wireless 11n Firewall Router Wizard
<ul> <li>Welcome</li> <li>LAN Settings</li> <li>Wireless Settings</li> <li>Internet Settings</li> <li>Firewall</li> <li>Advanced</li> <li>VPN</li> <li>System Tools</li> </ul>	Notice Board Password Wizard  Setup Wizard - PPTP Settings  PPTP Server User ID Password Retype Password Idle Timeout 10 (time in minutes; Enter 0 to never timeout)
Status and Logs Support/Feedback LOG OUT	Get IP By DHCP     Image: Comparison of the second se
	Help < <back next="">&gt; Cancel</back>

- **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

$\mathcal{O}\mathcal{O}$	Cable/DSL Wireless 11n Firewall Router
3COM	Wizard Notice Board Password Wizard
Welcome LAN Settings Wireless Settings Internet Settings Firewall Advanced VPN System Tools Status and Logs Support/Feedback	Setup Wizard - L2TP Settings         L2TP Server         User ID         Password         Retype Password         Idle Timeout         10         (time in minutes; Enter 0 to never timeout)         Get IP By DHCP         IP Address         0         Subnet Mask
	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.
- **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

$\bigcirc$	Cable/DSL Wireless 11n Firewall Router
3COM	Notice Board Password Wizard
Welcome	Setup Wizard - LAN Configuration
LAN Settings	IP Address 192 , 168 , 1 , 1
Wireless Settings	Subnet Mask 255 , 255 , 255 , 0
Internet Settings	
Firewall	Setup Wizard - DHCP Server Parameters
Advanced	DHCP server 🔽 Enable
VPN	IP Pool Start Address 192 . 168 . 1 . 2 Auto IP Range
System Tools	IP Pool End Address 192 , 168 , 1 , 254
Status and Logs	Help < <back next="">&gt; Cancel</back>
Support/Feedback	
LOG OUT	

- **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 - WirelessThe Wireless Settings screen allows you to set up the SSID and radio<br/>channel used for the wireless connection.

Figure 26	Wireless Setting Screen	
-	5	

œ0°	Cable/DSL Wireless 11n Firewall Router		
3C0M	Wizard Notice Board Password Wizard		
	Notice Board Password Wizard		
Welcome	Setup Wizard - Wireless Settings		
LAN Settings	To set up the Wireless features, select a channel from the list and specify the		
Wireless Settings	SSID. Your Wireless PCs must be configured with the same settings to communicate with the Router.		
Internet Settings			
Firewall	Channel 11		
Advanced	SSID 3Com		
VPN	Note: The default wireless security is disabled, You need to setup in Wireless		
System Tools	Setting-Senryption.		
Status and Logs	Help < <back next="">&gt; Cancel</back>		
Support/Feedback			
LOG OUT			

- 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.



<i>ک</i> ار	Cable/DSL Wi	reless 11n Firewall Route
3COM	Wizard Notice Board Passwor	rd Wizard
▶ Welcome	WAN Parameters	
LAN Settings Wireless Settings	Connection Type	L2TP
Internet Settings Firewall	LAN Parameters IP Address Subnet Mask	192.168.1.1 255.255.255.0
Advanced	DHCP Server	Enabled
VPN System Tools	Wireless Parameters Channel SSID	5 11 3Com
Status and Logs Support/Feedback		Help < <back apply="" cancel<="" th=""></back>
LOG OUT		

Your Router is now configured and ready for use.

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

# **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 <i>admin</i> ).
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

3COM	Cable/DSL Wireless 11n Firewall Router Welcome Notice Board Password Wizard	-
<ul> <li>Welcome</li> <li>LAN Settings</li> <li>Wireless Settings</li> <li>Internet Settings</li> <li>Firewall</li> </ul>	Welcome to the Cable/DSL Wireless 11n Firewall Router Version 0.54.00 (2 May 2008 20:36:10)	
Advanced VPN System Tools Status and Logs Support/Feedback	Wireless Encryption is Switched off I Please select an option on the left hand side or go to the "Password" and "Wizard" tabs to configure your Router.	
LOG OUT		

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.

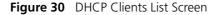
The Router will also provide a list of all client computers connected to the Router.

**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

$\bigcirc 0$	Cable/DSL Wire	eless 11n Firewall Router	
3COM	LAN Settings Unit Configuration DHCP	Clients List	
Welcome	LAN Configuration		
LAN Settings	IP Address	192 . 168 . 1 . 1	Help
Wireless Settings	Subnet Mask	255 . 255 . 255 . 0	Help
Internet Settings			Apply
Firewall	DHCP Server Paramete	rs	
Advanced	DHCP server	🔽 Enable	Cancel
VPN	IP Pool Start Address	192 , 168 , 1 , 2 Auto IP Range	
System Tools	IP Pool End Address	192 168 1 254	
	Lease Time	One Day 💌	
Status and Logs	Local Domain Name		
Support/Feedback	(Optional) 3Com NBX Call Processor (Optional)		
LOG OUT			

- 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.





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

$\mathcal{O}$	Cable/DSL Wi	reless 11n Firewall Router	<u>^</u>
3COM	Wireless Set		
	Configuration Encrypti	on WPS Connection Control Client List WM	1M WDS Advanced
Welcome	Wireless Networking		
LAN Settings	🗹 Enable Wireless Netv	vorking	Help
Wireless Settings			Пор
Internet Settings	Wireless Settings		Apply
Firewall	Channel	11 -	
Advanced	Extension Channel	7 💌	Cancel
VPN	SSID	3Com	
System Tools	SSID Broadcast	Enable	
Charles and Loop	Wireless Mode	Mixed 802.11n, 802.11g and 802.11b 💌	
Status and Logs Support/Feedback	Bandwidth	20/40MHz 💌	
Supportyreeuback	Protected Mode	OFF -	
LOG OUT			

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.

$\mathcal{O}$	Cable/DSL Wire	eless 11n Firewall Router	<u> </u>
3COM	Wireless Sett Configuration Encryption		MM WDS Advanced
Welcome	Wireless Networking		
LAN Settings	🗹 Enable Wireless Netwo	rking	
Wireless Settings			Help
Internet Settings	Wireless Settings		Apply
Firewall	Channel	11 💌	appiy
Advanced	Extension Channel	7 💌	Cancel
VPN	SSID	3Com	
System Tools	SSID Broadcast	✓ Enable	
	Wireless Mode	Mixed 802.11n, 802.11g and 802.11b 🔻	
Status and Logs	Bandwidth	20/40MHz -	
Support/Feedback	Protected Mode	OFF -	
LOG OUT			

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

$\mathcal{P}\mathcal{O}$		reless 11n Firewall R	Router	-
3COM	Wireless Set		Client List WMM WDS Advanced	
Welcome	Security Mode			
LAN Settings	Security Mode	Disabled 💌	Неір	
Wireless Settings		Disabled 64-bit WEP	neip	
Internet Settings		128-bit WEP	Apply	
Firewall		WPA-PSK (no server) WPA (with Radius Server)		
Advanced		WPA (with Radius Server)	Cancel	
VPN				
System Tools				
Status and Logs				
Support/Feedback				
LOG OUT				

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 <u>page 50</u>)
- 128-bit WEP (see <u>page 51</u>)
- WPA-PSK (no server) (see <u>page 52</u>)
- 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.



$\bigcirc 0$	Cable/DSL W	ireless 11	า Firewa	ll Router	
3COM	Wireless Se Configuration Encryp		Connection Cont	rol Client List	WMM WDS Advanced
Welcome	WEP (Wired Equiv	alent Privacy)			
LAN Settings	Security Mode	64-bit WEP	•		
Wireless Settings	• Key 1:	01 01	01 01	01	Help
Internet Settings	C Key 2:	02 02	02 02	02	Apply
Firewall	O Key 3:	03 03	03 03	03	
Advanced VPN	C Key 4:	04 04	04 04	04	Cancel
System Tools	Passphrase			GENERATE	
Status and Logs					
Support/Feedback					
LOG OUT					
100 001					

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

$\mathcal{O}$	Cable/DSL Wireless 11n Firewall Router
3COM	Wireless Settings Configuration Encryption WPS Connection Control Client List WMM WDS Advanced
Welcome LAN Settings • Wireless Settings	WEP (Wired Equivalent Privacy) Security Mode 128-bit WEP D1 D1 D1 D1 D1 Help
Internet Settings Firewall Advanced	
VPN System Tools	C Key 2:     D2     D2     D2     D2     D2     D2     D2     D2     D3     D
Status and Logs Support/Feedback	C Key 3: 03 03 03 03 03 03 03
LOG OUT	D4         D4         D4         D4         D4           C Key 4:         D4         D4         D4         D4         D4           D4         D4         D4         D4         D4         D4
	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.

Figure 36 WPA-PSK (no server) Screen

$\mathcal{O}\mathcal{O}$		eless 11n Firewall Router	<u></u>
3COM	Wireless Sett Configuration Encryption		VMM WDS Advanced
Welcome	WPA (WiFi Protected /	Access)	
LAN Settings	WPA	WPA-PSK (no server)	Help
Wireless Settings	WPA mode	WPA/WPA2 Mixed Mode 💌	пер
Internet Settings	Encryption technique	AUTO for WPA, AES for WPA2 -	Apply
Firewall	Hide PSK		
Advanced	Pre-shared Key (PSK)		Cancel
VPN			
System Tools	Key:		
Status and Logs		00 00 00 00 00 00 00 00 00 00 00 00 00 0	
Support/Feedback			
LOG OUT			

- 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

<u>ک</u> ک		less 11n Firewall Router	<u> </u>
3COM	Wireless Setti Configuration Encryption	NGS WPS Connection Control Client List WM	M WDS Advanced
Welcome	WPA (WiFi Protected A	access)	
LAN Settings	Security Mode	WPA (with Radius Server)	Help
Wireless Settings	WPA mode	WPA/WPA2 Mixed Mode 💌	
Internet Settings	Encryption technique	AUTO for WPA, AES for WPA2 -	Apply
Firewall	RADIUS Server	192 . 168 . 2 . 1	
Advanced VPN	Radius Port	1812	Cancel
System Tools	Radius Key		
	Re-Key Interval	86400 Seconds	
Status and Logs			
Support/Feedback			
LOG OUT			
200,001			

- 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

$\mathcal{O}$	Cable/	DSL Wi	reless	: 11n F	irewa	all Route	er		1
3C0M	Wire Configuration	less Sei Encrypt		PS Coni	nection Cor	itrol Client	List WM	M WDS Advanced	
Welcome LAN Settings > Wireless Settings Internet Settings Firewall Advanced	✓ Enable Access r • Allow	,	Filtering	.C address	3			Help Apply Cancel	
VPN System Tools	Wireless I	dress Filteri DHCP Client Lis ress Filtering I	:t: 🔽 📃		1 💌				
Status and Logs	ID	ess Filtering		AC Addres					
Support/Feedback	1	:	:	:	- : -	:	Clear		
	2	:	:	:	:	:	Clear		
LOG OUT	з	:	:	:	:	:	Clear		
	4	:	: [	:	:	:	Clear		
	5 [	:	:	:	:	:	Clear		
	6	:	:	:	:	:	Clear		
	7	:	:	:	:	:	Clear		
	8	:	:	:	- : -	:	Clear		
	9	:	:	:	:	:	Clear		-
S	itatus : 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.

$\bigcirc 0$	Cable/DSL Wireless 11n Firewall Router
3COM	Wireless Settings
	Configuration Encryption WPS Connection Control Client List WMM WDS Advanced
Welcome	MAC Address Client Type
LAN Settings	No clients Help
Wireless Settings	neih
Internet Settings	Refresh
Firewall	
Advanced	
VPN	
System Tools	
Status and Logs	
Support/Feedback	
LOG OUT	

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.

BCOM	Wire Configuratio	_	ettings		nnection Co	ntrol C	lient List W	MM WDS Advanced
Welcome	WMM F	unction						
LAN Settings	🗹 Enabl	e WMM Fund	tion					Help
Wireless Settings								
Internet Settings	WMM P	aremeters	6					Apply
Firewall		Aifsn	CWMax	CWMin	Тхор	ACM	AckPolicy	
Advanced	AC_BE	З	6	4	0			Cancel
VPN	AC_BK	7	10	4	0			
System Tools	AC_VI	1	4	3	94			
Status and Logs	AC_VO	1	3	2	47			
Support/Feedback								

Figure 41 WMM Screen

The following table explains the four access categories:

Access Category	WMM Designation	Description	802.1D Tags
AC_BE (ACO)	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.

<u>ک</u>	Cable/DSL Wireless 11n Firewall Router
3COM	Wireless Settings Configuration Encryption WPS Connection Control Client List WMM WDS Advanced
Welcome	WDS Function
LAN Settings	Enable WDS Function
Wireless Settings	Help
Internet Settings	Rescan Wireless Networking Apply
Firewall	
Advanced	SSID / Name AP MAC Address Type Cancel
VPN	1 HomeNet727884838b
System Tools	□ 00 : 04 : E2 : C2 : 65 : B8 11g Add
Status and Logs	
Support/Feedback	
Support/reeuback	
LOG OUT	

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

3COM ⊕ <i>0</i> °	Cable/DSL Wireless 11n Firewall Router Wireless Settings Configuration Encryption WPS Connection Control Client List WMM WDS Advanced
Welcome	Add WDS APs.
LAN Settings	No AP MAC Address
Wireless Settings	
Internet Settings	2 : : : : Apply
Firewall	
Advanced	Cancel
VPN	
System Tools	
Status and Logs	
Support/Feedback	
LOG OUT	

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.

$\mathcal{O}$	Cable/DSL Wireless 11n Firewall Router	<u>*</u>
3COM	Wireless Settings Configuration Encryption WPS Connection Control Client List WM	MM WDS Advanced
Welcome LAN Settings	Wireless Advanced Setting Beacon Interval: 100 (Default: 100,Range: 1-65535)	
<ul> <li>Wireless Settings</li> <li>Internet Settings</li> </ul>	DTIM Interval:         1         (Default:1,Range:1-255)           Fragmentation Threshold:         2346         (Default:2346,Range:256-2346)	Apply
Firewall Advanced VPN	RTS Threshold:         2347         (Default:2347,Range:0-2347)           CTS Protection Mode:         Auto           (Default: Auto)	Cancel
System Tools	AP Isolation Mode: Disable 🔽 (Default: Disable)	
Status and Logs Support/Feedback		
LOG OUT		

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

<u>ک</u> ر	Cable/DSL Wireless 11n Firewall Router	-
3C0M	Internet Settings	
Welcome LAN Settings Wireless Settings Firewall Advanced VPN System Tools Status and Logs Support/Feedback	Dynamic IP Settings     Bridge Mode       Wramic IP     Static IP       Static IP     PPPeE       Host Name     PPPeE       Host name is a name that some Internet Se     PPPe       Host name. (This entry is optional unless LZTP     by the Service Provider.)	
Firewall Advanced VPN System Tools Status and Logs	Uvrame IP     Apply       Host Name     PPPoE       Host name is a name that some Internet SePTP     require for connection to their system. (This entry is optional unless ill TP by the Service Provider.)	

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

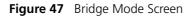
Selecting this option means that you do not want your Router to connect to the Internet.

Figure 46 Disable Internet Connection Screen

$\mathcal{O}$	Cable/DSL Wireless 11n Firewall Router		1
3C0M	Internet Settings WAN DNS Clone MAC Address		
Welcome LAN Settings Wireless Settings Internet Settings Firewall Advanced	WAN DRS Clone MAC Address  Select connection type Please select the Internet sharing protocol : Disable	Help Apply	
VPN System Tools Status and Logs Support/Feedback		Cancel	

# 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.

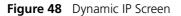


3COM ∂Ø	Cable/DSL Wireless 11n Firewall Router Internet Settings WAN DNS Clone MAC Address	
Welcome LAN Settings Wireless Settings Internet Settings	Select connection type Please select the Internet sharing protocol : Bridge Mode 💌 Bridge Mode Settings	Help
Firewall Advanced VPN System Tools	IP Address         192         168         1         1           Subnet Mask         255         255         255         0	Cancel
Status and Logs Support/Feedback		
LOG OUT		

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.



<i>©€</i> 3000	Cable/DSL Wireless 11n Firewall Router Internet Settings WAN DNS Clone MAC Address	
Welcome LAN Settings Wireless Settings Firewall Advanced VPN System Tools Status and Logs Support/Feedback	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.)	Help Apply Cancel

- **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

یں 2000 3COM	Cable/DSL Wireless 11n Firewall Router Internet Settings WAN DNS Clone MAC Address	<u>^</u>
Welcome LAN Settings Wireless Settings Internet Settings	Select connection type Please select the Internet sharing protocol : Static IP Static IP Settings	Help
Firewall Advanced VPN System Tools 	IP address assigned by your Service Provider         0 <th>Apply Cancel</th>	Apply Cancel
Support/Feedback		

- **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

$\mathcal{O}\mathcal{O}$	Cable/DSL Wireless 11n Firewall Router		<b>^</b>
3COM	Internet Settings		
Welcome LAN Settings Wireless Settings	WAN         DNS         Clone MAC Address           Select connection type         Please select the Internet sharing protocol : PPPoE         Image: Clone Mac Address	Нер	
<ul> <li>Internet Settings</li> <li>Firewall</li> <li>Advanced</li> </ul>	PPPOE Interface User Name Password	Apply Cancel	
VPN System Tools  Status and Logs	Retype Password           Service Name (Optional)           MTU (1200-1492)		
Support/Feedback	Do not make changes to the MTU setting unless your ISP specifically requires a different setting than 1492.		
LOG OUT	Idle Timeout 5 (time in minutes; Enter 0 to never 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 51 PPTP Screen

Cable/DSL Wireless 11n Firewall Router	
3COM Internet Settings WAN DNS Clone MAC Address	
WAN     DNS     Clone MAC Address       Welcome     Select connection type       LAN Settings     Please select the Internet sharing protocol : PPTP       Vineless Settings     PTP Settings       Firewall     PPTP Server	Help Apply Cancel

- **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.



$\mathcal{O}\mathcal{O}$	Cable/DSL Wireless 11n Firewall Router	<b>▲</b>
3COM	Internet Settings	
	WAN DNS Clone MAC Address	
Welcome	Select connection type	
LAN Settings Wireless Settings	Please select the Internet sharing protocol : L2TP	Help
<ul> <li>Internet Settings</li> </ul>	L2TP Settings	
Firewall		Apply
Advanced	L2TP Server	Cancel
VPN System Tools	User ID	
	Password	
Status and Logs	Retype Password	
Support/Feedback	Idle Timeout 10 (time in minutes; Enter 0 to never timeout)	
LOG OUT	Get IP By DHCP 🔽 Renew Release	
	IP Address 0 0 0	
	Subnet Mask 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.

Check with your ISP for information on this screen.

۩0, 3COM	Cable/DSL Wireless 11n Firewall Router Internet Settings WAN DNS Clone MAC Address	
Welcome	DNS Settings	
LAN Settings	Automatic from ISP 🛛	Help
Wireless Settings	DNS Address 0 , 0 , 0 , 0	нер
Internet Settings	Secondary DNS Address 0 0 0 0	Apply
Firewall		
Advanced		Cancel
VPN		
System Tools		
Status and Logs		
Support/Feedback		
LOG OUT		
200.001		

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

<u>ک</u>	Cable/DSL Wireless 11n Firewall Ro	outer
3COM	Internet Settings	
Welcome LAN Settings	WAN DNS Clone MAC Address Hostname and Clone MAC Address	
Wireless Settings Internet Settings	Host Name WAN MAC Address 00 - 00 - 00 - 00 - 00 - 00 - 00 - 00	00 - 00 Apply
Firewall Advanced VPN	Set to Default MAC Address Reset MAC	Cancel
System Tools		L
Status and Logs Support/Feedback		
LOG OUT		

- 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.