LINKSYS®
A Division of Cisco Systems, Inc.

ADSL2+ Gateway with VoIP

User Guide

VoIP
Voice over IP

Model No. **AG310**

Cisco Systems

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How to Use this Guide

Your Guide to the ADSL Gateway has been designed to make understanding networking with the Gateway easier than ever. Look for the following items when reading this User Guide:

This checkmark means there is a Note of interest and is something you should pay special attention to while using the Gateway.

This exclamation point means there is a Caution or Warning and is something that could damage your property or the Gateway.

This question mark provides you with a reminder about something you might need to do while using the Gateway.

In addition to these symbols, there are definitions for technical terms that are presented like this:

word: *definition.*

Also, each figure (diagram, screenshot, or other image) is provided with a figure number and description, like this:

Figure 0-1: Sample Figure Description

Figure numbers and descriptions can also be found in the “List of Figures” section in the “Table of Contents”.

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Chapter 1: Introduction

Welcome

Thank you for choosing the AG310 ADSL2+ Gateway with VoIP. This Gateway will provide your computers with a high-speed Internet connection as well as access to local resources, including files and printers.

How does the Gateway do all of this? By connecting the Internet, as well as your computers and peripherals, to the Gateway, you create a LAN, or Local Area Network. The Gateway lets devices on the network communicate with each other, and it can direct and control communications for your network.

lan *(local area network): The computers and networking products that make up the network in your home or office.*

To protect your data and privacy, the Gateway features an advanced firewall to keep out Internet intruders. Sensitive communications can be protected by powerful data encryption. In addition, you can safeguard your family with parental control features such as Internet access restrictions and keyword blocking. You can configure the Gateway's settings through the easy-to-use, browser-based utility.

But what does all of this mean?

Networks are useful tools for sharing Internet access and computer resources. You can access one printer from different computers and access data located on another computer's hard drive. Networks are even used for playing multiplayer video games. So, networks not only are useful in homes and offices, but also can be fun.

With your PCs and peripherals all connected to each other and to the Internet, you can now share files and Internet access—and even play games. All the while, the ADSL Gateway protects your network from unauthorized and unwelcome users.

network*: a series of computers or devices connected for the purpose of data sharing, storage, and/or transmission between users*

Linksys recommends using the Setup CD-ROM for first-time installation of the Gateway. If you do not wish to run the Setup Wizard on the Setup CD-ROM, then use the instructions in this Guide to help you connect the Gateway, set it up, and configure it to bridge your network and the Internet. These instructions should be all you need to get the most out of the ADSL Gateway.

What's in this User Guide?

This user guide covers the steps for setting up and using the ADSL Gateway.

- Chapter 1: Introduction
  This chapter describes applications of the ADSL Gateway and this User Guide.
- Chapter 2: Planning Your Network
  This chapter describes the basics of networking.
- Chapter 3: Getting to Know the ADSL Gateway
  This chapter describes the physical features of the Gateway.
- Chapter 4: Connecting the ADSL Gateway
  This chapter instructs you on how to connect the Gateway to your network.
- Chapter 5: Using the Interactive Voice Response Menu
  This chapter explains how to use the Interactive Voice Response Menu.
- Chapter 6: Configuring the ADSL2+ Gateway
  This chapter explains how to use the Web-based Utility to configure the settings on the Gateway.
- Appendix A: Troubleshooting
  This appendix describes some problems and solutions, as well as frequently asked questions, regarding installation and use of the ADSL Gateway.
- Appendix B: Finding the MAC Address and IP Address for your Ethernet Adapter.
  This appendix describes how to find the MAC address for your computer's Ethernet adapter so you can use the MAC filtering and/or MAC address cloning feature of the Gateway.
- Appendix C: Upgrading Firmware
  This appendix instructs you on how to upgrade the firmware on the Gateway if you should need to do so.
- Appendix D: Glossary
  This appendix gives a brief glossary of terms frequently used in networking.
- Appendix E: Specifications
  This appendix provides the technical specifications for the Gateway.
- Appendix F: Warranty Information
  This appendix supplies the warranty information for the Gateway.
- Appendix G: Regulatory Information
  This appendix supplies the regulatory information regarding the Gateway.
- Appendix H: Contact Information
  This appendix provides contact information for a variety of Linksys resources, including Technical Support.

Chapter 2: Planning Your Network

The Gateway's Functions

A Gateway is a network device that connects two networks together.

In this instance, the Gateway connects your Local Area Network (LAN), or the group of computers in your home or office, to the Internet. The Gateway processes and regulates the data that travels between these two networks.

The Gateway's NAT feature protects your network of computers so users on the public, Internet side cannot "see" your computers. This is how your network remains private. The Gateway protects your network by inspecting every packet coming in through the Internet port before delivery to the appropriate computer on your network. The Gateway inspects Internet port services like the web server, ftp server, or other Internet applications, and, if allowed, it will forward the packet to the appropriate computer on the LAN side.

Remember that the Gateway's ports connect to two sides. The LAN ports connect to the LAN, and the ADSL port connects to the Internet. The LAN ports transmit data at 10/100Mbps.

Figure 2-1: Network

IP Addresses

What's an IP Address?

IP stands for Internet Protocol. Every device on an IP-based network, including computers, print servers, and Gateways, requires an IP address to identify its "location," or address, on the network. This applies to both the Internet and LAN connections. There are two ways of assigning an IP address to your network devices. You can assign static IP addresses or use the Gateway to assign IP addresses dynamically.

***ip** (internet protocol): a protocol used to send data over a network*

Static IP Addresses

A static IP address is a fixed IP address that you assign manually to a computer or other device on the network. Since a static IP address remains valid until you disable it, static IP addressing ensures that the device assigned it will always have that same IP address until you change it. Static IP addresses must be unique and are commonly used with network devices such as server computers or print servers.

NOTE: Since the Gateway is a device that connects two networks, it needs two IP addresses—one for the LAN, and one for the Internet. In this User Guide, you'll see references to the "Internet IP address" and the "LAN IP address."

Since the Gateway uses NAT technology, the only IP address that can be seen from the Internet for your network is the Gateway's Internet IP address. However, even this Internet IP address can be blocked, so that the Gateway and network seem invisible to the Internet—see the Block WAN Requests description under Security in "Chapter 6: Configuring the ADSL2+ Gateway."

Since you use the Gateway to share your DSL Internet connection, contact your ISP to find out if they have assigned a static IP address to your account. If so, you will need that static IP address when configuring the Gateway. You can get that information from your ISP.

Dynamic IP Addresses

A dynamic IP address is automatically assigned to a device on the network, such as computers and print servers. These IP addresses are called "dynamic" because they are only temporarily assigned to the computer or device. After a certain time period, they expire and may change. If a computer logs onto the network (or the Internet) and its dynamic IP address has expired, the DHCP server will automatically assign it a new dynamic IP address.

DHCP (Dynamic Host Configuration Protocol) Servers

Computers and other network devices using dynamic IP addressing are assigned a new IP address by a DHCP server. The computer or network device obtaining an IP address is called the DHCP client. DHCP frees you from having to assign IP addresses manually every time a new user is added to your network.

A DHCP server can either be a designated computer on the network or another network device, such as the Gateway. By default, the Gateway's DHCP Server function is enabled.

If you already have a DHCP server running on your network, you must disable one of the two DHCP servers. If you run more than one DHCP server on your network, you will experience network errors, such as conflicting IP addresses. To disable DHCP on the Gateway, see the DHCP section in "Chapter 6: Configuring the ADSL2+ Gateway."

Chapter 3: Getting to Know the ADSL Gateway

Back Panel

The Gateway's ports and Reset button are located on the back panel.

Figure 3-1: Back Panel

DSL The **DSL** port connects to the ADSL line from your telephone wall jack.

Line The **Line** port connects your standard telephone and converts the signal to VoIP technology.

Phone The **Phone** port connects to an analog phone (or fax machine) with an RJ-11 telephone cable. The primary purpose of this port is to allow a phone to be connected that will function during power outages, in case of an emergency.

Ethernet (1-4) The **Ethernet** ports connect to your computers and other network devices.

Reset Button There are two ways to reset the Gateway's factory defaults. Either press the **Reset Button**, for approximately ten seconds, or restore the defaults from the *Factory Defaults* screen of the *Administration* tab in the Gateway's web-based utility.

Power The **Power** port is where you will connect the power adapter.

IMPORTANT: Resetting the Gateway to factory defaults will erase all of your settings (including Internet connection and other settings) and replace them with the factory defaults. Do not reset the Gateway if you want to retain these settings.

LEDs on the Front and Side Panel

The Gateway's LEDs, which indicate network activity, are located on the front and side panel.

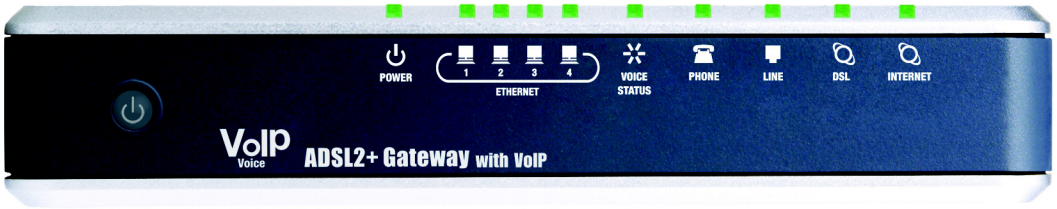


Figure 3-2: Front Panel

POWER Green. The **POWER** LED lights up when the Gateway is powered on.

ETHERNET (1-4) Green. The **ETHERNET** LED serves two purposes. If the LED is continuously lit, the Gateway is successfully connected to a device through the LAN port. If the LED is flashing, it is an indication of any network activity.

PHONE Green. The **PHONE** LED is lit solid when a telephone or fax machine has an active or registered connection to your Internet Telephony Service Provider (ITSP) through the **PHONE** port. It flashes when the phone is being used or is off the hook.

LINE Green. The **LINE** LED lights up when the a telephone or fax machine has an active connection to traditional phone service through the LINE port.

DSL Green. The **DSL** LED lights up whenever there is a successful DSL connection. The LED blinks while the Gateway is establishing the ADSL connection.

INTERNET Green. The **INTERNET** LED lights up green when an Internet connection to the Internet Service Provider (ISP) is established. The **INTERNET** LED lights up red when the connection to the ISP fails.

Chapter 4: Connecting the ADSL2+ Gateway with VoIP

Overview

The installation technician from your ISP should have left the setup information for the modem with you after installing your broadband connection. If not, you can call your ISP to request that data.

After you have the setup information you need for your specific type of Internet connection, you can begin installation and setup of the Gateway. Continue to "Connecting the Gateway to a Computer."

Connecting the Gateway to a Computer

1. Make sure that all of your network's hardware is powered off, including the Gateway and all computers.
2. Connect a phone cable from the DSL port on the Gateway's back panel to the wall jack of the ADSL line. A small device called a microfilter (not included) may be necessary between each phone and wall jack to prevent interference. Contact your ISP if you have any questions.
3. Connect another phone cable from the Line port on the Gateway's back panel to the Voice connection on the DSL microfilter or wall jack.

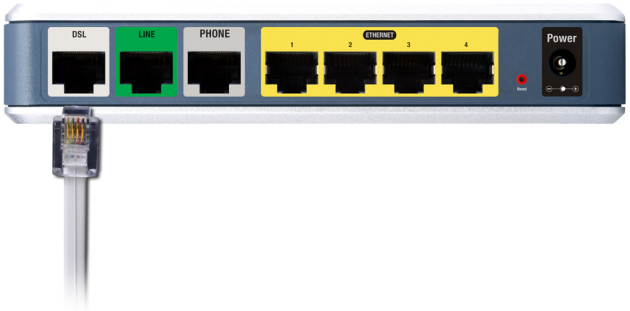


Figure 4-1: Connect the ADSL Line

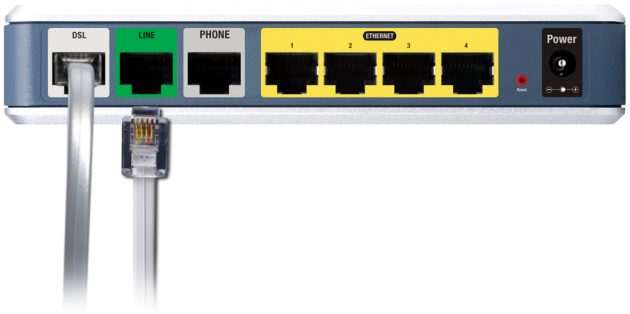


Figure 4-2: Connect the Voice Line

NOTE: A small device called a microfilter (not included) may be necessary between each phone and wall jack to prevent interference. Contact your ISP if you have any questions.

IMPORTANT: For countries that have phone jacks with RJ-11 connectors, make sure to only place the microfilters between the phone and the wall jack and **not** between the Gateway and the wall jack or your ADSL will not connect.

For countries that do **not** have phone jacks with RJ-11 connectors (e.g. France, Sweden, Switzerland, United Kingdom, etc.), except for ISDN users, the microfilter has to be used between the Gateway and the wall jack, because the microfilter will have the RJ-11 connector.

Annex B users (E1 and DE versions of the Gateway) must use the included special cable to connect the Gateway to the wall jack (RJ-45 to RJ-12). If you require splitters or special jacks, please contact your service provider.

4. Connect an analog telephone to the Phone port on the Gateway's back panel.

5. Connect one end of an Ethernet network cable to one of the Ethernet ports (labeled 1-4) on the back of the Gateway, and the other end to an Ethernet port on a computer.

   Repeat this step to connect more computers, a switch, or other network devices to the Gateway.

6. Connect the power adapter to the Gateway's Power port, and then plug the power adapter into a power outlet.

   NOTE: You should always plug the Gateway's power adapter into a power strip with surge protection.

   The Power LED will immediately light up green. The Power LED will flash for a few seconds, and then it will be solidly lit when the self-test is complete. If the LED flashes for one minute or longer, see "Appendix A: Troubleshooting."

7. Power on one of your computers that is connected to the Gateway.

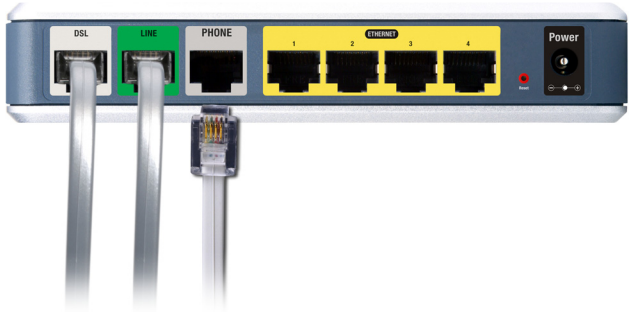


Figure 4-3: Connect a Phone

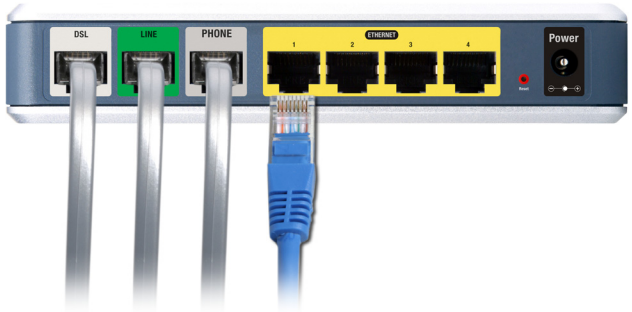


Figure 4-4: Connect a PC

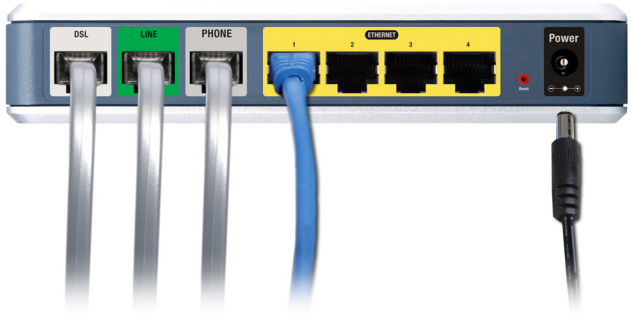


Figure 4-5: Connect the Power

Chapter 5: Using the Interactive Voice Response Menu

Overview

NOTE: If your ITSP sent you the Voice Gateway, then it may be pre-configured for you, and you do not need to change any settings. Refer to the instructions supplied by your service provider for more information.

You may need to manually configure the Voice Gateway by entering the settings provided by your Internet Telephony Service Provider (ITSP). This chapter explains how to use the Interactive Voice Response Menu to configure the Voice Gateway's network settings. You will use the telephone's keypad to enter your commands and select choices, and the Voice Gateway will use voice responses.

For more advanced configuration, refer to "Chapter 6: Configuring the ADSL2+ Gateway"

Accessing the Interactive Voice Response Menu

1. Use a telephone connected to the PHONE port of the Voice Gateway. (You can only access the Interactive Voice Response Menu through an analog telephone, not any of the Internet phones.)

2. Press **** (in other words, press the star key four times).

3. Wait until you hear "Linksys configuration menu. Please enter the option followed by the # (pound) key or hang up to exit."

4. Refer to the following table that lists actions, commands, menu choices, and descriptions. After you select an option, press the # (pound) key. To exit the menu, hang up the telephone.

Using the Interactive Voice Response Menu

While entering a value, such as an IP address, you may exit without entering any changes. Press the * (star) key twice within half a second. Otherwise, the * will be treated as a decimal point or dot.

After entering a value, such as an IP address, press the # (pound) key to indicate you have finished your selection. To save the new setting, press 1. To review the new setting, press 2. To re-enter the new setting, press 3. To cancel your entry and return to the main menu, press * (star).

For example, to enter the IP address 191.168.1.105 by keypad, press these keys: 191*168*1*105. Press the # (pound) key to indicate that you have finished entering the IP address. Then press 1 to save the IP address or press the * (star) key to cancel your entry and return to the main menu.

If the menu is inactive for more than one minute, the Voice Gateway will time out. You will need to re-enter the menu by pressing ****.

The settings you have saved will take effect after you have hung up the telephone. The Voice Gateway may reboot at this time.

Table 1: Interactive Voice Response Menu

Action	Command (press these keys on the telephone)	Choices	Description
Enter Interactive Voice Response Menu	****		Use this command to enter the Interactive Voice Response Menu. Do not press any other keys until you hear, "Linksys configuration menu. Please enter the option followed by the # (pound) key or hang up to exit."
Check Internet Connection Type	**100**		Hear the Internet connection type of the Voice Gateway.
Check Internet IP Address	**110**		Hear the IP address assigned to the Voice Gateway's Internet (external) interface.
Check Network Mask (or Subnet Mask)	**120**		Hear the network or subnet mask assigned to the Voice Gateway.
Check Gateway IP Address	**130**		Hear the IP address of the Voice Gateway (usually the network router).
Check MAC Address	**140**		Hear the MAC address of the Voice Gateway in hexadecimal string format.
Check Firmware Version	**150**		Hear the version number of the firmware currently running on the Voice Gateway.

Table 1: Interactive Voice Response Menu

Action	Command (press these keys on the telephone)	Choices	Description
Check Primary DNS Server IP Address	**160**		Hear the IP address of the primary DNS (Domain Name Service) server.
Check Internet Web Server Port	**170**		Hear the port number of the Internet Web server used for the web-based utility.
Check Local IP Address	**210**		Hear the local IP address of the Voice Gateway.
Set Internet Connection Type	**101**	Press **0** to use DHCP. Press **1** to use a static IP address. Press **2** to use PPPoE.	Select the type of Internet connection you are using. Refer to the documentation supplied by your Internet Service Provider (ISP).
Set Static IP Address	**111**	Enter the IP address using numbers on the telephone keypad. Use the * (star) key when entering a decimal point.	First, set the Internet Connection Type to static IP address; otherwise, you will hear, "Invalid Option," if you try to set the static IP address.
Set Network (or Subnet) Mask	**121**	Enter the network or subnet mask using numbers on the telephone keypad. Use the * (star) key when entering a decimal point.	First, set the Internet Connection Type to static IP address; otherwise, you will hear, "Invalid Option," if you try to set the network or subnet mask.
Set Gateway IP Address	**131**	Enter the IP address using numbers on the telephone keypad. Use the * (star) key when entering a decimal point.	First, set the Internet Connection Type to static IP address; otherwise, you will hear, "Invalid Option," if you try to set the gateway IP address.
Set Primary DNS Server IP Address	**161**	Enter the IP address using numbers on the telephone keypad. Use the * (star) key when entering a decimal point.	First, set the Internet Connection Type to static IP address; otherwise, you will hear, "Invalid Option," if you try to set the IP address of the primary DNS server.

Table 1: Interactive Voice Response Menu

Action	Command (press these keys on the telephone)	Choices	Description
Set the Mode	**201**	Press **0** to select the router/ NAT mode. Press **1** to select the bridge/ switch mode.	If the Voice Gateway acts as the router for your network, use the router/NAT mode. If your network already has a router, use the bridge/switch mode.
Enable/Disable WAN Access to the Web-based Utility	**7932**	Press **1** to enable. Press **0** to disable.	Use this setting to enable or disable WAN access to the web-based utility. (This Utility lets you configure the Voice Gateway.)
Manual Reboot	**732668**		After you hear, "Option successful," hang up the phone. The Voice Gateway will automatically reboot.
Factory Reset	**73738**	Press **1** to confirm. Press * (star) to cancel.	If necessary, enter the password. The Voice Gateway will request confirmation; enter **1** to confirm. You will hear, "Option successful." Hang up the phone. The Voice Gateway will reboot, and all settings will be reset to their factory default settings.
User Factory Reset	**877778**	Press **1** to confirm. Press * (star) to cancel.	The Voice Gateway will request confirmation; enter **1** to confirm. You will hear, "Option successful." Hang up the phone. The Voice Gateway will reboot and all user-configurable settings will be reset to their factory default settings.

NOTE: This feature may be protected by a password available only from your ITSP.

If you need to enter a password, refer to the following section, "Entering a Password."

Entering a Password

NOTE: These bulleted instructions only apply when you are entering a password. At all other times, pressing a number only selects a number, not a letter or punctuation mark.

You may be prompted to enter a password when you want to reset the Voice Gateway to its factory default settings. To enter the password, use the phone's keypad, and follow the appropriate instructions.

- To enter A, B, C, a, b, or c — press 2.
- To enter D, E, F, d, e, or f — press 3.
- To enter G, H, I, g, h, or i — press 4.
- To enter J, K, L, j, k, or l — press 5.
- To enter M, N, O, m, n, or o — press 6.
- To enter P, Q, R, S, o, q, r, or s — press 7.
- To enter T, U, V, t, u, or v — press 8.
- To enter W, X, Y, Z, w, x, y, or z — press 9.
- To enter all other characters, press 0.

For example, to enter the password phone@321 by keypad, press these keys: 746630321. Then press the # (pound) key to indicate that you have finished entering the password. To cancel your entry and return to the main menu, press * (star).

Configuring the Settings for Your Internet Phone Service

If you want to change the settings for your Internet phone service, refer to the instructions provided by your ITSP and "Chapter 6: Configuring the ADSL2+ Gateway"

Chapter 6: Configuring the ADSL2+ Gateway

Overview

Follow the steps in this chapter and use the Gateway's web-based utility to configure the ADSL2+ Gateway with VoIP. This chapter will describe each web page in the Utility and each page's key functions. The utility can be accessed via your web browser through use of a computer connected to the Gateway. For a basic network setup, most users only have to use the following screens of the Utility:

- Basic Setup. On the Basic Setup screen, enter the settings provided by your ISP.
- Management. Click the **Administration** tab and then the **Management** tab. The Gateway's default username and password is **admin**. To secure the Gateway, change the Password from its default.

There are six main tabs: Setup, Security, Access Restrictions, Applications & Gaming, Administration, and Status. Additional tabs will be available after you click one of the main tabs.

HAVE YOU: Enabled TCP/IP on your computers? Computers communicate over the network with this protocol. Refer to Windows Help for more information on TCP/IP.

NOTE: For added security, you should change the password through the Administration tab.

Setup

- Basic Setup. Enter the Internet connection and network settings on this screen.
- DDNS. To enable the Gateway's Dynamic Domain Name System (DDNS) feature, complete the fields on this screen.
- Advanced Routing. On this screen, you can alter NAT and routing configurations.
- Voice. This option has four different screens, the default is Info.
    - Info. This screen displays voice-related status information about the Gateway.
    - System. Use this screen to configure the user password.
    - User 1. Use this screen to configure call forward, speed dial, supplementary service, and ring settings for the Internet phone line.
    - PSTN User. PSTN stands for Public Switched Telephone Network, which is the network that traditional phone service uses. Use this screen to configure call forward, speed dial, and ring settings for the PSTN line.

Security

- Firewall. To disable or enable the firewall, set up filters, and block WAN requests, click this tab.
- VPN. To enable or disable Virtual Private Network (VPN) passthrough, or to set up an IPSec VPN tunnel, use this screen.

vpn *(virtual private network): a security measure to protect data as it leaves one network and goes to another over the Internet.*

Access Restrictions

- Internet Access. This screen allows you to control the Internet usage and traffic on your local network.

Applications & Gaming

- Single Port Forwarding. Use this screen to set up common services or applications that require forwarding on a single port.
- Port Range Forwarding. To set up public services or other specialized Internet applications that require forwarding on a range of ports, use this screen.
- Port Triggering. To set up triggered ranges and forwarded ranges for Internet applications, click this tab.
- DMZ. To allow one local computer to be exposed to the Internet for use of special-purpose services, use this screen.
- QoS. Use Quality of Service (QoS) to assign different priority levels to different types of data transmissions.

Administration

- Management. On this screen, alter Gateway access, Simple Network Management Protocol (SNMP), Universal Plug and Play (UPnP), IGMP-Proxy (IGMP stands for Internet Group Multicast Protocol), and IGMP-Snooping settings.
- Reporting. If you want to view or save activity logs, click this tab.
- Diagnostics. Use this screen to run a Ping test.
- Backup&Restore. On this screen, you can back up or restore the Gateway's configuration.
- Factory Defaults. If you want to restore the Gateway's factory default settings, use this screen.
- Firmware Upgrade. Click this tab if you want to upgrade the Gateway's firmware.

- Reboot. If you need to do a hard or soft reboot of the Gateway, use this screen.

Status

- Gateway. This screen provides status information about the Gateway.
- Local Network. This provides status information about the local network.
- DSL Connection. This screen provides status information about the DSL connection.

How to Access the Web-Based Utility

To access the web-based utility, launch Internet Explorer or Netscape Navigator, and enter the Gateway's default IP address, **192.168.1.1**, in the *Address* field. Then press **Enter**.

A login screen will appear (Windows XP users will see a similar screen). Enter **admin** (the default user name) in the *User Name* field, and enter **admin** (the default password) in the *Password* field. Then click the **OK** button.

Figure 6-1: Login Screen

The Setup - Basic Setup Tab

The first screen that appears is the Basic Setup tab. This tab allows you to change the Gateway's general settings. Change these settings as described here and click the **Save Settings** button to save your changes, or click the **Cancel Changes** button to cancel your changes.

Internet Setup

PVC Connection. If your ADSL account provides multiple permanent virtual circuits (PVCs), use this control to specify the one you will configure. The Gateway can handle up to eight PVCs. They may be used to carry different services or connect to different networks. Each PVC is identified by a unique combination of VCI and VPI numbers (see "Virtual Circuit," below).

Internet Connection Type. The Gateway supports six Encapsulation methods: **RFC 1483 Bridged**, **RFC 1483 Routed**, **IPoA**, **RFC 2516 PPPoE**, **RFC 2364 PPPoA**, and **Bridge Mode Only**. Select the appropriate type of encapsulation from the drop-down menu. Each *Basic Setup* screen and available features will differ depending on what type of encapsulation you select.

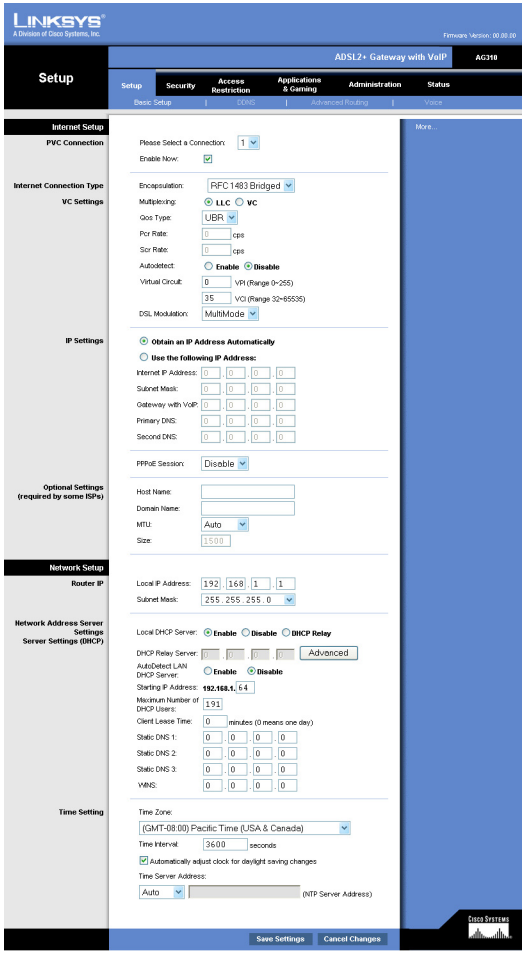


Figure 6-2: Basic Setup

VC Settings

You will configure your Virtual Circuit (VC) settings in this section.

Multiplexing. Select **LLC** or **VC**, depending on your ISP.

QoS Type. Select from the drop-down menu:

- **UBR** (Unspecific Bit Rate) for applications that are none-time sensitive, such as e-mail.
- **CBR** (Continuous Bit Rate) to specify fixed bandwidth for voice or data traffic.
- **VBR** (Variable Bite Rate) for bursty traffic and bandwidth-sharing with other applications.

Pcr Rate. For the Peak Cell Rate, divide the DSL line rate by 424 to get the maximum rate the sender can send cells. Enter the rate in the field (if required by your service provider).

Scr Rate. The Sustain Cell Rate sets the average cell rate that can be transmitted. The SCR value is normally less than the PCR value. Enter the rate in the field (if required by your service provider).

Autodetect. Select **Enable** to have the settings automatically entered, or select **Disable** to enter the values manually.

Virtual Circuit. These fields consist of two items: **VPI** (Virtual Path Identifier) and **VCI** (Virtual Channel Identifier). Your ISP will provide the correct settings for these fields.

DSL Modulation. Select the appropriate DSL Modulation as provided by your ISP. The default is **Multimode**, other available options are **T1.413**, **G.dmt**, **G.lite**, **ADSL2**, and **ADSL2+**.

IP Settings

Follow the instructions in the section for your type of encapsulation.

RFC 1483 Bridged

Dynamic IP

IP Settings. Select **Obtain an IP Address Automatically** if your ISP says you are connecting through a dynamic IP address.

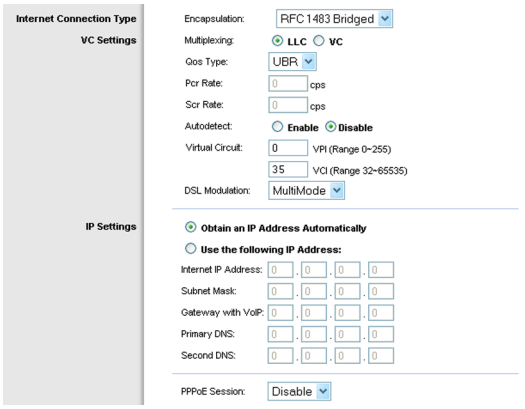


Figure 6-3: RFC 1483 Bridged - Dynamic IP

Static IP

If you are required to use a permanent (static) IP address to connect to the Internet, then select **Use the following IP Address**.

- **Internet IP Address**. This is the Gateway's IP address, when seen from the WAN, or the Internet. Your ISP will provide you with the IP Address you need to specify here.
- **Subnet Mask**. This is the Gateway's Subnet Mask. Your ISP will provide you with the Subnet Mask.
- **Gateway**. Your ISP will provide you with the default Gateway Address, which is the ISP server's IP address.
- **Primary DNS** (Required) and **Secondary DNS** (Optional). Your ISP will provide you with at least one DNS (Domain Name System) Server IP Address.

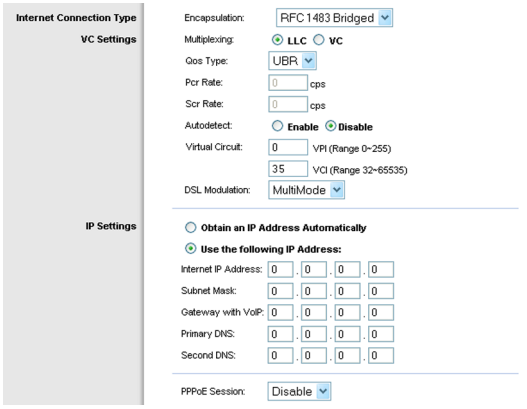


Figure 6-4: RFC 1483 Bridged - Static IP

RFC 1483 Routed

If you are required to use RFC 1483 Routed, then select **RFC 1483 Routed**.

- **Internet IP Address**. This is the Gateway's IP address, when seen from the WAN, or the Internet. Your ISP will provide you with the IP Address you need to specify here.
- **Subnet Mask**. This is the Gateway's Subnet Mask. Your ISP will provide you with the Subnet Mask.
- **Gateway**. Your ISP will provide you with the default Gateway Address, which is the ISP server's IP address.
- **Primary DNS** (Required) and **Secondary DNS** (Optional). Your ISP will provide you with at least one DNS (Domain Name System) Server IP Address.

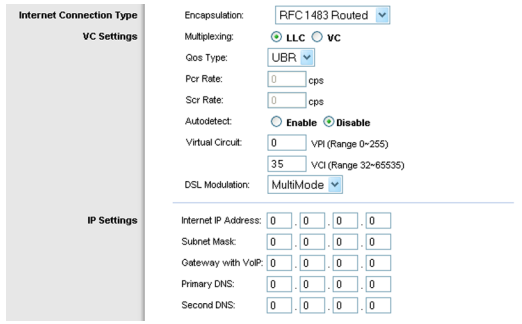


Figure 6-5: RFC 1483 Routed

IPoA

If you are required to use Internet Protocol over ATM (Asynchronous Transfer Mode), then select IPoA.

- **Internet IP Address**. This is the Gateway's IP address, when seen from the WAN, or the Internet. Your ISP will provide you with the IP Address you need to specify here.
- **Subnet Mask**. This is the Gateway's Subnet Mask. Your ISP will provide you with the Subnet Mask.
- **Gateway**. Your ISP will provide you with the default Gateway Address, which is the ISP server's IP address.

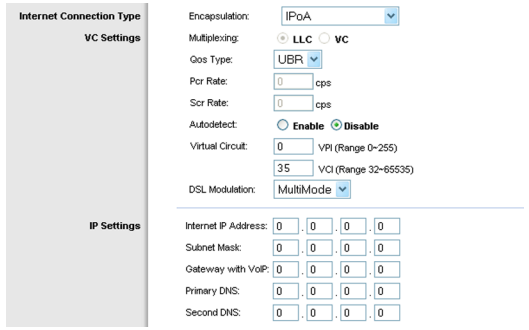


Figure 6-6: IPoA

- **Primary DNS** (Required) and **Secondary DNS** (Optional). Your ISP will provide you with at least one DNS (Domain Name System) Server IP Address.

RFC 2516 PPPoE

Some DSL-based ISPs use PPPoE (Point-to-Point Protocol over Ethernet) to establish Internet connections. If you are connected to the Internet through a DSL line, check with your ISP to see if they use PPPoE. If they do, you will have to enable PPPoE.

- **Service Name**. Enter the name of your PPPoE service in this field.
- **User Name and Password**. Enter the User Name and Password provided by your ISP.
- **Connect on Demand: Max Idle Time**. You can configure the Gateway to disconnect the Internet connection after it has been inactive for a specified period of time (Max Idle Time). If your Internet connection has been terminated due to inactivity, Connect on Demand enables the Gateway to automatically re-establish your connection as soon as you attempt to access the Internet again. To use this option, click the **Connect on Demand** radio button. In the *Max Idle Time* field, enter the number of minutes you want to have elapsed before your Internet connection terminates.
- **Keep Alive: Redial Period**. If you select this option, the Gateway will periodically check your Internet connection. If you are disconnected, then the Gateway will automatically re-establish your connection. To use this option, click the **Keep Alive** radio button. In the *Redial Period* field, specify how often you want the Gateway to check the Internet connection. The default Redial Period is **20** seconds.
- **Second PPPoE**. This option can be enabled if you have a second PPPoE login provided by your ISP. The options for the Second PPPoE login include the options listed above and the Match Domain Name option described below.
- **Match Domain Name**. This option appears when Second PPPoE is enabled. Enter the domain name provided by your ISP.

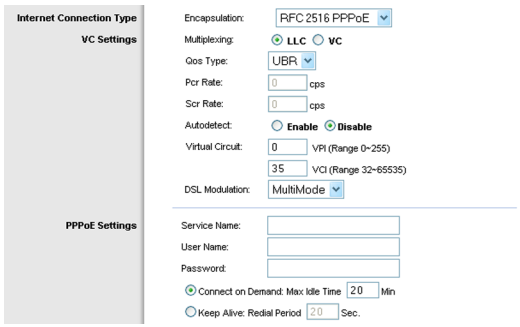


Figure 6-7: RFC 2516 PPPoE

RFC 2364 PPPoA

Some DSL-based ISPs use PPPoA (Point-to-Point Protocol over ATM) to establish Internet connections. If you are connected to the Internet through a DSL line, check with your ISP to see if they use PPPoA. If they do, you will have to enable PPPoA.

- **User Name and Password**. Enter the User Name and Password provided by your ISP.

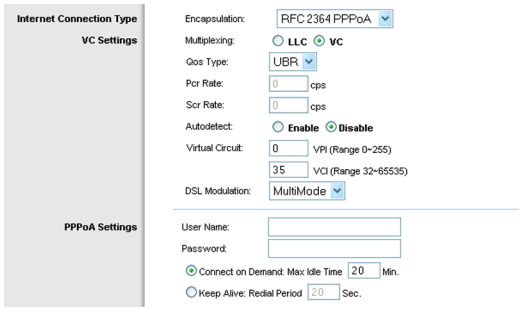


Figure 6-8: RFC 2364 PPPoA

- **Connect on Demand: Max Idle Time**. You can configure the Gateway to disconnect the Internet connection after it has been inactive for a specified period of time (Max Idle Time). If your Internet connection has been terminated due to inactivity, Connect on Demand enables the Gateway to automatically re-establish your connection as soon as you attempt to access the Internet again. To use this option, click the **Connect on Demand** radio button. In the *Max Idle Time* field, enter the number of minutes you want to have elapsed before your Internet connection terminates.

- **Keep Alive: Redial Period**. If you select this option, the Gateway will periodically check your Internet connection. If you are disconnected, then the Gateway will automatically re-establish your connection. To use this option, click the **Keep Alive** radio button. In the *Redial Period* field, specify how often you want the Gateway to check the Internet connection. The default Redial Period is **20** seconds.

Bridged Mode Only

If you are using your Gateway as a bridge, which makes the Gateway act like a stand-alone modem, select **Bridged Mode Only**. All NAT and routing settings are disabled in this mode.

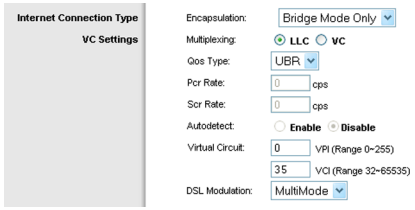


Figure 6-9: Bridged Mode Only

Optional Settings (required by some ISPs)

- **Host Name and Domain Name**. These fields allow you to supply a host and domain name for the Gateway. Some ISPs require these names as identification. You may have to check with your ISP to see if your broadband Internet service has been configured with a host and domain name. In most cases, you can leave these fields blank.

- **MTU and Size**. The MTU (Maximum Transmission Unit) setting specifies the largest packet size permitted for network transmission. Select **Manual** and enter the value desired in the *Size* field. It is recommended that you leave this value in the 1200 to 1500 range. By default, MTU is configured automatically.

Network Setup

- **Router IP**. The values for the Gateway's Local IP Address and Subnet Mask are shown here. In most cases, keep the default values.

  - **Local IP Address**. The default value is **192.168.1.1**.

  - **Subnet Mask**. The default value is **255.255.255.0**.

- **Network Address Server Settings (DHCP)**. Configure the Gateway's Dynamic Host Configuration Protocol (DHCP) settings in this section.

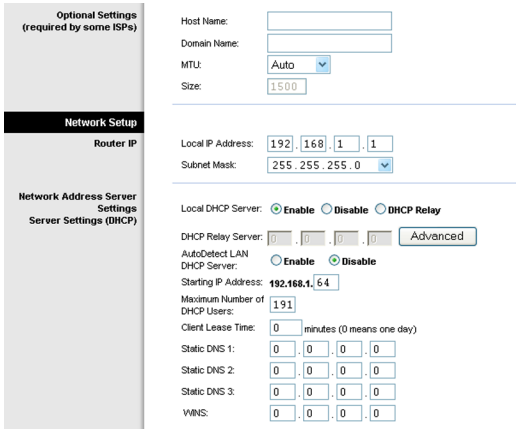


Figure 6-10: Optional Settings

- **Local DHCP Server**. A Dynamic Host Configuration Protocol (DHCP) server automatically assigns an IP address to each computer on your network for you. Unless you already have one, it is highly recommended that you leave the Gateway enabled as a DHCP server. You can also use the Gateway in DHCP Relay mode.
- **DHCP Relay Server**. If you enable the DHCP Relay mode for the *Local DHCP Server* setting, enter the IP address for the DHCP server in the fields provided.
- **Advanced**. This button displays a window that lets you reserve addresses in the DHCP range for particular machines.
- **Autodetect LAN DHCP Server**. Enable this function if you already have a DHCP server on your LAN and you wish to continue using it.
- **Starting IP Address**. Enter a value for the DHCP server to start with when issuing IP addresses. This value must be 192.168.1. 2 or greater, because the default IP address for the Gateway is 192.168.1.1.
- **Maximum Number of DHCP Users**. Enter the maximum number of users/clients that can obtain an IP address. The number will vary depending on the starting IP address entered.
- **Client Lease Time**. The Client Lease Time is the amount of time a computer will be allowed connection to the Gateway with its current dynamic IP address. Enter the amount of time, in minutes, that the computer will be "leased" this dynamic IP address.
- **Static DNS 1-3**. The Domain Name System (DNS) is how the Internet translates domain or website names into Internet addresses or URLs. Your ISP will provide you with at least one DNS Server IP Address. You can enter up to three DNS Server IP Addresses here. The Gateway will use these for quicker access to functioning DNS servers.
- **WINS**. The Windows Internet Naming Service (WINS) converts NetBIOS names to IP addresses. If you use a WINS server, enter that server's IP address here. Otherwise, leave this field blank.

- **Time Setting**.
  - **Time Zone**. Select the appropriate time zone for the Gateway's location.
  - **Time Interval**. Select the time interval for clock synchronization. The default value is 3600 seconds (1 hour).
  - **Automatically adjust clock for daylight saving changes** checkbox. Select this if your location observes daylight saving time.

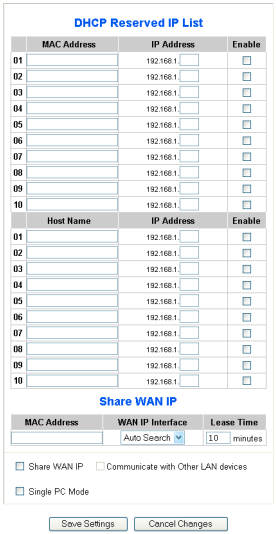


Figure 6-11: Advanced DHCP

- **Time Server Address**. The default value is **Auto**. To designate a specific NTP time server, select **Manual** and enter the NTP server address in the appropriate field.

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

The Setup - DDNS Tab

The Gateway offers a Dynamic Domain Name System (DDNS) feature. DDNS lets you assign a fixed host and domain name to a dynamic Internet IP address. It is useful when you are hosting your own website, FTP server, or other server behind the Gateway.

Before you can use this feature, you need to sign up for DDNS service at DynDNS.org or TZO.com.

DDNS

DDNS Service. If your DDNS service is provided by DynDNS.org, then select **DynDNS.org** from the drop-down menu. If your DDNS service is provided by TZO.com, then select **TZO.com** from the drop-down menu.To disable DDNS Service, select **Disabled**.

DynDNS.org

- **User Name**, **Password**, and **Host Name**. Enter the User Name, Password, and Host Name of the account you set up with DynDNS.org.
- **Internet IP Address**. The Gateway's current Internet IP Address is displayed here. Because it is dynamic, it will change.
- **Status**. The status of the DDNS service connection is displayed here.

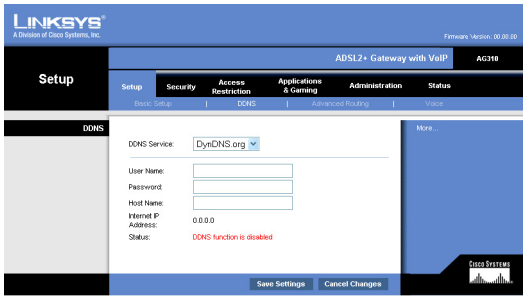


Figure 6-12: DynDNS.org

TZO.com

- **E-mail Address**, **Password**, and **Domain Name**. Enter the E-mail Address, Password, and Domain Name of the account you set up with TZO.
- **Internet IP Address**. The Gateway's current Internet IP Address is displayed here. Because it is dynamic, this will change.
- **Status**. The status of the DDNS service connection is displayed here.

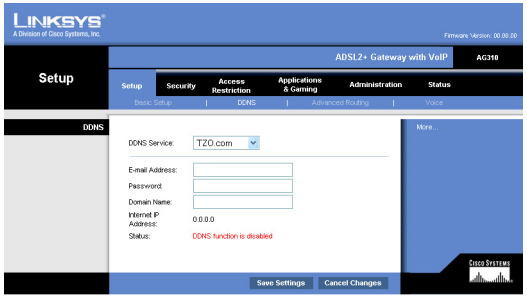


Figure 6-13: TZO.com

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

The Setup - Advanced Routing Tab

The *Advanced Routing* screen allows you to configure the NAT, dynamic routing, and static routing settings.

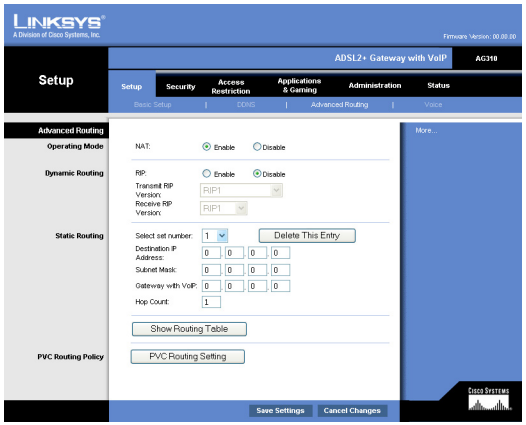


Figure 6-14: Advanced Routing

Advanced Routing

Operating Mode.

In this section, you will configure the Gateway's general routing settings.

NAT. NAT is a security feature that is enabled by default. It enables the Gateway to translate IP addresses of your local area network to a different IP address for the Internet. To disable NAT, click the **Disabled** option.

Dynamic Routing

With Dynamic Routing you can enable the Gateway to automatically adjust to physical changes in the network's layout. Using RIP, the Gateway determines the network packets' route based on the fewest number of hops between the source and the destination. The RIP protocol regularly broadcasts routing information to other Gateways on the network.

RIP. If you have multiple routers, you may want to use the Routing Information Protocol (RIP) so the routers can exchange routing information with each other. To use RIP, select the **Enabled** option. Otherwise, keep the default, **Disabled**.

Transmit RIP Version. To transmit RIP messages, select the protocol you want: **RIP1, RIP1-Compatible (RIP1 broadcasts and RIP2 multicasts), or RIP2**. If you don't want to transmit RIP messages, select **None**.

Receive RIP Version. To receive RIP messages, select the protocol you want: **RIP1** or **RIP2**. If you don't want to receive RIP messages, select **None**.

Static Routing

If the Gateway is connected to more than one network, it may be necessary to set up a static route between them. A static route is a pre-determined pathway that network information must travel to reach a specific host or network. To create a static route, change the following settings:

Select set number. Select the number of the static route from the drop-down menu. The Gateway supports up to 20 static route entries. If you need to delete a route, then select the entry and click the **Delete This Entry** button.

Destination IP Address. The Destination IP Address is the address of the remote network or host to which you want to assign a static route. Enter the IP address of the host for which you wish to create a static route. If you are building a route to an entire network, be sure that the network portion of the IP address is set to 0.

Subnet Mask. Enter the Subnet Mask (also known as the Network Mask), which determines which portion of an IP address is the network portion, and which portion is the host portion.

Gateway. Enter the IP address of the gateway device that allows for contact between the Gateway and the remote network or host.

Hop Count. Hop Count is the number of hops to each node until the destination is reached (16 hops maximum). Enter the Hop Count in the field provided.

Click the **Show Routing Table** button to open a screen displaying how data is routed through your local network. For each route, the Destination LAN IP address, Subnet Mask, Gateway, and Interface are displayed. Click the **Refresh** button to update the information. Click the **Close** button to return to the previous screen.

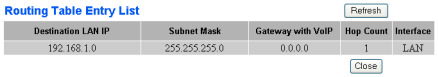


Figure 6-15: Routing Table

PVC Routing Policy

If you have multiple PVCs, click the **PVC Routing Setting** button to configure which outgoing traffic will be routed over which PVC. A window titled PVC Selection Table will appear.

Please select Active Connection. Open this drop-down list and specify the PVC for which you will select traffic.

Traffic can be selected on the basis of any of the following criteria, alone or in combination:

- Destination (IP address, netmask, and FQDN)
- Source (IP address and netmask)
- Source MAC (MAC address)
- Destination MAC (MAC address)
- Transport protocol (TCP, UDP, or All)
- Dst Port/Scr Port (Destination port and/or source port). If protocol is set to TCP or UDP.
- ALG. Triggering of a particular Application Layer Gateway (FTP, TFTP, H.323, IRC, MMS, GRE, PPTP, SIP, or RTSP)
- Presence of a specified IEEE 802.1D user priority marker

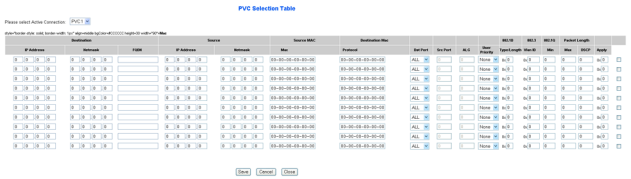


Figure 6-16: PVC Routing

- IEEE 802.3 Type/Length value (the value in the 13th and 14th octets of an Ethernet frame)
- Presence of a specified IEEE 802.1Q virtual LAN (VLAN) ID
- Packet length between specified minimum and maximum numbers of octets.
- Presence of a specified DSCP (Diffserv Code Point) value (one kind of QoS marker)

Apply. To enable the selection criteria on one line of the table, click that line's Apply box so a check appears in it. To disable the line's criteria, click the box to clear.

When you have finished making changes in this window, click the **Save** button to save the changes, or click the **Cancel** button to undo your changes. Then click **Close**. You will be returned to the Advanced Routing panel. Click the **Save Settings** button to save your changes, or click the **Cancel Changes** button to undo your changes.

The Setup - Voice Tab

The Voice - Info Screen

This screen shows voice-related settings for the Gateway.

Product Information

Product Name. Shown here is the model number of the Gateway.

Serial Number. Shown here is the serial number of the Gateway.

Software Version. Shown here is the version number of the Gateway software.

Hardware Version. Shown here is the version number of the Gateway hardware.

MAC Address. Shown here is the MAC address of the Gateway.

Client Certificate. Shown here is the status of the client certificate, which indicates that the Gateway has been authorized by your ITSP.

System Status

Current Time. Displayed here is the current date and time of the Gateway.

Elapsed Time. Displayed here is the amount of time elapsed since the last reboot of the Gateway.

RTP Packets Sent. Displayed here is the number of RTP packets sent by the Gateway.

Figure 6-17: Setup - Voice - Info

RTP Bytes Sent. Displayed here is the number of RTP bytes sent by the Gateway.

RTP Packets Recv. Displayed here is the number of RTP packets received by the Gateway.

RTP Bytes Recv. Displayed here is the number of RTP bytes received by the Gateway.

SIP Messages Sent. Displayed here is the number of SIP messages sent by the Gateway.

SIP Bytes Sent. Displayed here is the number of SIP bytes sent by the Gateway.

SIP Messages Recv. Displayed here is the number of SIP messages received by the Gateway.

SIP Bytes Recv. Displayed here is the number of SIP bytes received by the Gateway.

External IP. Displayed here is the external IP address used for NAT mapping.

Line 1 Status

Hook State. Displayed here is the status of the Internet phone line's readiness. **On** indicates that it is ready for use, while **Off** indicates that it is in use.

Registration State. Shown here is the status of the line's registration with the ITSP.

Last Registration At. Shown here are the last date and time the line was registered.

Next Registration In. Shown here is the number of seconds until the next registration.

Message Waiting. This indicates whether you have new voicemail waiting.

Call Back Active. This indicates whether a call back request is in progress.

Last Called Number. Displayed here is the last number called.

Last Caller Number. Displayed here is the number of the last caller.

Mapped SIP Port. Shown here is the port number of the NAT mapped SIP port.

Calls 1 and 2 have the same status information available.

Call 1/2 State. Displayed here is the status of the call.

Call 1/2 Tone. Displayed here is the type of tone used by the call.

Call 1/2 Encoder. Displayed here is the codec used for encoding.

Call 1/2 Decoder. Displayed here is the codec used for decoding.

Call 1/2 FAX. Displayed here is the status of the fax pass-through mode.

Call 1/2 Type. Displayed here is the direction of the call.

Call 1/2 Remote Hold. This indicates whether the far end has placed the call on hold.

Call 1/2 Callback. This indicates whether the call was triggered by a call back request.

Call 1/2 Peer Name. Displayed here is the name of the internal phone.

Call 1/2 Peer Phone. Displayed here is the phone number of the internal phone.

Call 1/2 Duration. Displayed here is the duration of the call.

Call 1/2 Packets Sent. Displayed here is the number of packets sent.

Call 1/2 Packets Recv. Displayed here is the number of packets received.

Call 1/2 Bytes Sent. Displayed here is the number of bytes sent.

Call 1/2 Bytes Recv. Displayed here is the number of bytes received.

Call 1/2 Decode Latency. Displayed here is the number of milliseconds for decoder latency.

Call 1/2 Jitter. Displayed here is the number of milliseconds for receiver jitter.

Call 1/2 Round Trip Delay. Displayed here is the number of milliseconds for delay.

Call 1/2 Packets Lost. Displayed here is the number of packets lost.

Call 1/2 Packet Error. Displayed here is the number of invalid packets received.

Call 1/2 Mapped RTP Port. Displayed here is the number of the NAT mapped RTP port.

PSTN Line Status

Hook State. Displayed here is the status of the LINE port. **On** indicates that it is ready for use, while **Off** indicates that it is in use.

Line Voltage. Displayed here is the tip-to-ring voltage of the LINE port.

Loop Current. Displayed is the loop current to the LINE port.

Registration State. Shown here is the status of the line's registration.

Last Registration At. Shown here are the last date and time the line was registered.

Next Registration In. Shown here is the number of seconds until the next registration.

Last Called VoIP Number. VoIP stands for Voice over Internet Protocol, which is used by Internet phone calls. Displayed here is the last Internet phone number called from the landline.

Last Called PSTN Number. Displayed here is the last landline number dialed by the Gateway.

Last VoIP Caller. The VoIP caller is the one who calls the Gateway via VoIP to obtain traditional phone service. Displayed here is the number of the last VoIP caller.

Last PSTN Caller. The PSTN caller is the one who calls the Gateway from the traditional phone service to obtain VoIP service. Displayed here are the name and number of the last PSTN caller.

Last PSTN Disconnect Reason. Displayed here is why the Gateway terminated the LINE port connection.

PSTN Activity Timer. Displayed here is the number of milliseconds before the Gateway disconnects the current gateway unless the landline has some audio activity.

Mapped SIP Port. Shown here is the port number of the NAT mapped SIP port.

Call Type. Displayed here is the direction of the call.

VoIP State. Displayed here is the status of Line 1, Call 1.

PSTN State. Displayed here is the status of the PSTN call.

VoIP Tone. Displayed here is the tone playing to the VoIP call leg.

PSTN Tone. Displayed here is the tone playing to the PSTN call leg.

VoIP Peer Name. Displayed here is the name of the party at the VoIP call leg.

PSTN Peer Name. Displayed here is the name of the party at the PSTN call leg.

VoIP Peer Number. Displayed here is the phone number of the party at the VoIP call leg.

PSTN Peer Number. Displayed here is the phone number of the party at the PSTN call leg.

The following are the same as the status information for Line 1, Call 1 in the Line 1 Status section.

VoIP Call Encoder. Displayed here is the codec used for encoding the VoIP call leg.

VoIP Call Decoder. Displayed here is the codec used for decoding the VoIP call leg.

VoIP Call FAX. Displayed here is the status of the fax pass-through mode.

VoIP Call Remote Hold. This indicates whether the far end has placed the call on hold.

VoIP Call Duration. Displayed here is the duration of the call.

VoIP Call Packets Sent. Displayed here is the number of packets sent.

VoIP Call Packets Recv. Displayed here is the number of packets received.

VoIP Call Bytes Sent. Displayed here is the number of bytes sent.

VoIP Call Bytes Recv. Displayed here is the number of bytes received.

VoIP Call Decode Latency. Displayed here is the number of milliseconds for decoder latency.

VoIP Call Jitter. Displayed here is the number of milliseconds for receiver jitter.

VoIP Call Round Trip Delay. Displayed here is the number of milliseconds for delay.

VoIP Call Packets Lost. Displayed here is the number of packets lost.

VoIP Call Packet Error. Displayed here is the number of invalid packets received.

VoIP Call Mapped RTP Port. Displayed here is the number of the NAT mapped RTP port.

When you have finished making changes, click the **Submit All Changes** button to save the changes, or click the **Undo All Changes** button to undo your changes.

The Voice - System Screen

This screen lets you change the password for user access to the web-based utility.

System Configuration

User Password. Enter the password for the user. (By default, there is no password.)

When you have finished making your change, click the **Submit All Changes** button to save the changes, or click the **Undo All Changes** button to undo your change.

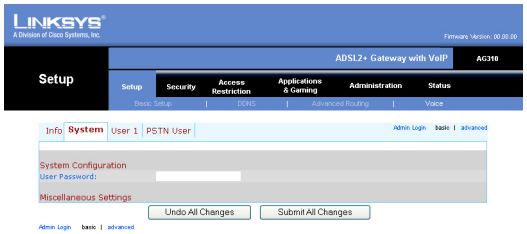


Figure 6-18: Setup - Voice - System

The Voice - User 1 Screen

This screen lets you configure the settings for the Internet phone line.

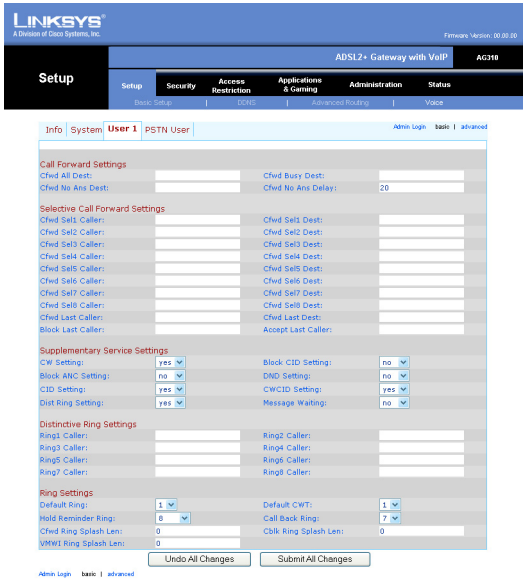


Figure 6-19: Setup - Voice - User 1

Call Forward Settings

Enter the call forwarding numbers you want to use.

Cfwd All Dest. Enter the number for the Call Forward All Service feature (when you want to forward all calls).

Cfwd Busy Dest. Enter the number for the Call Forward Busy feature (when the line is busy).

Cfwd No Ans Dest. Enter the number for the Call Forward No Answer feature (when the line is not answered).

Cfwd No Ans Delay. Enter the number of seconds to wait before the Call Forward No Answer feature is triggered.

Selective Call Forward Settings

Enter the caller numbers that will be forwarded to specific phone numbers.

Cfwd Sel(1-8) Caller. Enter the caller number pattern to trigger the Call Forward Selective (1-8) feature.

Cfwd Sel(1-8) Dest. Enter the forward number for the Call Forward Selective (1-8) feature.

Cfwd Last Caller. Enter the caller number that is actively forwarded to the Cfwd Last Dest number when the Call Forward Last activation code is used.

Cfwd Last Dest. Enter the forward number for the Cfwd Last Caller feature.

Block Last Caller. Enter the ID of the caller blocked via the Block Last Caller service.

Accept Last Caller. Enter the ID of the caller accepted via the Accept Last Caller service.

Supplementary Service Settings

CW Setting. Select whether you want to use the call waiting feature for all calls, **yes** or **no**. The default is **yes**.

Block CID Setting. Select whether you want to block caller ID for all calls, **yes** or **no**. The default is **no**.

Block ANC Setting. Select whether you want to block anonymous calls, **yes** or **no**. The default is **no**.

DND Setting. Select whether you want to use the Do Not Disturb (DND) feature, **yes** or **no**. The default is **no**.

CID Setting. Select whether you want to enable caller ID generation, **yes** or **no**. The default is **yes**.

CWCID Setting. Select whether you want to enable caller ID for call waiting, **yes** or **no**. The default is **yes**.

Dist Ring Setting. Select whether you want to use the distinctive ring feature, **yes** or **no**. The default is **yes**.

Message Waiting. Select whether you want to use the message waiting feature, **yes** or **no**. The default is **no**.

Distinctive Ring Settings

Ring(1-8) Caller. Enter the caller number pattern to play Distinctive Ring/Call Waiting Tone (1-8).

Ring Settings

Default Ring. Select the default ringing pattern for all callers.

Default CWT. Select the default CWT pattern for all callers.

Hold Reminder Ring. Select the ring pattern that will remind you of a call on hold when the phone is on-hook.

Call Back Ring. Select the ring pattern for call back notification.

Cfwd Ring Splash Len. Enter the duration of the ring splash when a call is forwarded. The range is 0 to 10.0 seconds.

Cblk Ring Splash Len. Enter the duration of the ring splash when a call is blocked. The range is 0 to 10.0 seconds.

VMWI Ring Splash Len. Enter the duration of the ring splash when new messages arrive before the VoiceMail Waiting Indication (VMWI) signal is applied. The range is 0 to 10.0 seconds.

When you have finished making your change, click the **Submit All Changes** button to save the changes, or click the **Undo All Changes** button to undo your change.

The Voice - PSTN User Screen

This screen lets you configure the settings for the LINE port service, which can be a PSTN service or a second VoIP service.

PSTN-To-VoIP Selective Call Forward Settings

Enter the landline caller numbers that will be forwarded to specific Internet phone numbers.

Cfwd Sel(1-8) Caller. Enter the caller number pattern that will be forwarded to the Cfwd Sel(1-8) Dest number.

Cfwd Sel(1-8) Dest. Enter the forward number for the Cfwd Sel(1-8) Caller. If this is blank, then the landline caller is blocked for Internet phone service.

PSTN Ring Thru Line 1 Distinctive Ring Settings

Enter the landline caller numbers that will trigger the corresponding ring tones for Line 1.

Ring(1-8) Caller. Enter the caller number pattern to play Distinctive Ring/Call Waiting Tone (1-8).

PSTN Ring Thru Line 1 Ring Settings

This ring tone will be used to ring through Line 1.

Default Ring. Select the default ringing pattern for all callers. If you select Follow Line 1, then the ring selection will be determined by Line 1's distinctive ring settings.

When you have finished making your change, click the **Submit All Changes** button to save the changes, or click the **Undo All Changes** button to undo your change.

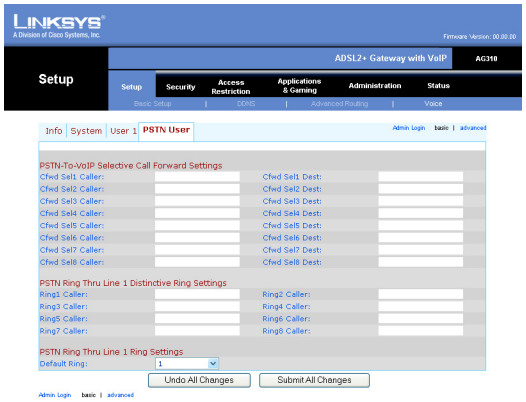


Figure 6-20: Setup - Voice - PSTN User

The Security - Firewall Tab

This panel shows firewall and filter settings. Use these features to enhance the security of your network.

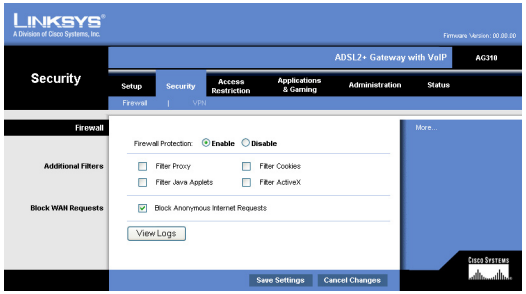


Figure 6-21: Firewall

Firewall

You can enable or disable the firewall, select filters to block specific Internet data types, and block anonymous Internet requests.

To use the firewall, click **Enable**. If you do not want to use the firewall, click **Disable**.

Additional Filters

Filter Proxy. Use of WAN proxy servers may compromise the Gateway's security. Denying Filter Proxy will disable access to any WAN proxy servers. To enable proxy filtering, click the checkbox.

Filter Cookies. A cookie is data stored on your computer and used by Internet sites when you interact with them. To enable cookie filtering, click the checkbox.

Filter Java Applets. Java is a programming language for websites. If you deny Java Applets, you run the risk of not having access to Internet sites created using this programming language. To enable Java Applet filtering, click the checkbox.

Filter ActiveX. ActiveX is a programming language for websites. If you deny ActiveX, you run the risk of not having access to Internet sites created using this programming language. To enable ActiveX filtering, click the checkbox.

Block WAN Requests

Block Anonymous Internet Requests. This keeps your network from being “pinged” or detected and reinforces your network security by hiding your network ports, so it is more difficult for intruders to discover your network. Select **Block Anonymous Internet Requests** to block anonymous Internet requests or de-select it to allow anonymous Internet requests.

Figure 6-22: Firewall Log

If you want to see activity logs for your security measures, then click the **View Logs** button. Click the **Clear** button to clear the log information. Click the **pageRefresh** button to refresh the information. Click the **Previous Page** button to go to the previous page of information. Click the **Next Page** button to move to the next page of information.

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

The Security - VPN Tab

This panel shows VPN (virtual private network) settings. You can disable or enable passthrough for four kinds of VPNs. You can also set up IPSec (Internet Protocol Security) VPN tunnels for secure remote access.

Figure 6-23: The VPN Panel

VPN Passthrough

Virtual Private Networking (VPN) is a security measure that basically creates a secure connection between two remote locations. Configure these settings so the Gateway will permit VPN tunnels to pass through.

- **IPSec Passthrough**. Internet Protocol Security (IPSec) is a suite of protocols used to implement secure exchange of packets at the IP layer. To allow IPSec Passthrough, click the **Enable** button. To disable IPSec Passthrough, click the **Disable** button.
- **PPPoE Passthrough**. PPPoE Passthrough allows your PC(s) to use the PPPoE client software provided by your ISP. Some ISPs may request that you use this feature on the Gateway. To allow PPPoE Passthrough, click the **Enable** button. To disable PPPoE Passthrough, click the **Disable** button.
- **PPTP Passthrough**. Point-to-Point Tunneling Protocol Passthrough is the method used to enable VPN sessions to a Windows NT 4.0 or 2000 server. To allow PPTP Passthrough, click the **Enable** button. To disable PPTP Passthrough, click the **Disable** button.
- **L2TP Passthrough**. Layering 2 Tunneling Protocol Passthrough is an extension of the Point-to-Point Tunneling Protocol (PPTP) used to enable the operation of a VPN over the Internet.To allow L2TP Passthrough, click the **Enable** button. To disable L2TP Passthrough, click the **Disable** button.

IPSec VPN Tunnel

Use this section of the VPN panel to set up, enable, and disable secure IPSec tunnels between the Gateway and remote IPSec gateways and clients. Note that you must have a working ADSL connection to complete the settings in this section.

Select Tunnel Entry: You can enable up to five IPSec tunnels. Each has a number and a name. Use this control to select the one you want to enable, disable, edit, or delete.

Delete: Click this button to delete the selected tunnel.

Summary: Click this button to see a summary of your IPSec settings and the tunnels' status.

IPSec VPN Tunnel: Click Enabled to enable the selected tunnel, or Disabled to disable it.

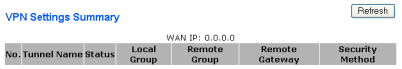


Figure 6-24: VPN Settings Summary

Tunnel Name: Click and type in this box to give the selected tunnel a name. A name is required, but is only for your reference and need not match the name used at the remote gateway or client.

Local Secure Group: To give an entire local network access to the tunnel, select Subnet and enter the network address and mask. To give a particular host access to the tunnel, select IP Address and enter the host's address and mask.

Local Security Gateway: If you have multiple PVCs, open this list and select the PVC you wish to use for the VPN tunnel.

Remote Secure Group: Use this control to specify the remote device or devices that will be granted access to the tunnel. This can be the public IP address of a network or host; the IP address and mask of a remote subnet; Host, that is, identical to the Remote Security Gateway setting; or Any, which allows any device with permission from the remote security gateway to access the tunnel.

Remote Security Gateway: Use the controls in this section to specify the remote endpoint of the IPSec tunnel, whether it will be a gateway or a client. Select **IP Address** or **FQDN** (fully qualified domain name) and input the correct address or name; or select **Any**, which allows any machine with the correct IPSec settings to act as the remote endpoint of the tunnel.

- **Encryption**: To have communication through the tunnel encrypted, select DES (Data Encryption Standard) or 3DES (Triple DES). To leave communication unencryped, select Disable.

- **Authentication**: Authentication verifies the identity of the remote machine and the integrity of the data received. Set this control to MD5 (Message Digest 5) or SHA (Secure Hash Algorithm). SHA is newer, and generally considered more secure, than MD5.

Key Management: A key is a string of letters and/or numbers that is used for authentication or encryption. Key management can be automatic (performed by IKE, the Internet Key Exchange protocol) or manual.

- *To use automatic key management*, select Auto.(IKE), enter the pre-shared key and the key lifetime, and enable or disable PFS (perfect forward secrecy). The key should be a string of 8 to 23 characters representing no dictionary word or numeric pattern. PFS enhances security by enabling automatic re-keying. The settings must exactly match those at the remote end of the tunnel.

- *To use manual key management*, select Manual, enter authentication and encryption keys (these must be identical to those entered at the remote end), and enter inbound and outbound SPIs (security parameter indexes). The SPIs must be exactly complementary to those entered at the remote end.

When you select automatic key management, an Advanced Settings button appears. Click this button if there are special requirements for this IPSec tunnel. The Advanced IPSec VPN Tunnel Setup window will appear. (Help for this window can be displayed by clicking More on the right side of the VPN panel.)

In this window you can set parameters for IKE phases 1 and 2, and other settings. Phase 1 is when the two ends negotiate parameters for key exchange; phase 2 is when they negotiate parameters for data exchange.

- **Operation mode**: Key exchange parameters can be negotiated in Main mode, which is more secure, or Aggressive mode, which is quicker. The Gateway will accept requests in either mode, but some gateways and clients will accept requests only in the mode specified by the user.
- **Proposal 1**: A proposal is a set of parameters that the initiator sends and the responder examines for acceptability. You can specify encryption and authentication algorithms, Diffie-Hellman group, and key lifetime for the first proposal.
- **Phase 2 Proposal**: Select the desired Diffie-Hellman group, 768-bit or 1024-bit.
- Other Settings

  NAT Traversal: Enable this feature if the machine or machines being accessed through the tunnel stand behind a NAT (Network Address Translation) server.

  NetBIOS broadcast: Enable this feature if the local network does not include a WINS server and the remote machine or machines will need to find local machines by their NetBIOS (Windows Networking) names.

  Anti-replay: Packets sent through an IPSec tunnel contain sequencing numbers to let the receiver detect if a substitution has occurred. You can enable this function for greater security.

  Keep-alive: This feature, enabled by default, makes the Gateway check the tunnel connection periodically and attempt to re-establish it if it goes down.

  If IKE failed . . . : IKE failure may signify an unwanted intrusion attempt. You can set a limit on the number of consecutive failed requests that the Gateway will allow from the same IP address, and the amount of time that the Gateway will ignore further requests from that address.

When finished making changes in this panel, click the **Save Settings** button to save your changes, or click **Cancel Changes** to undo the changes. Use the VPN panel's **Connect** and **View Logs** buttons to test the tunnel.

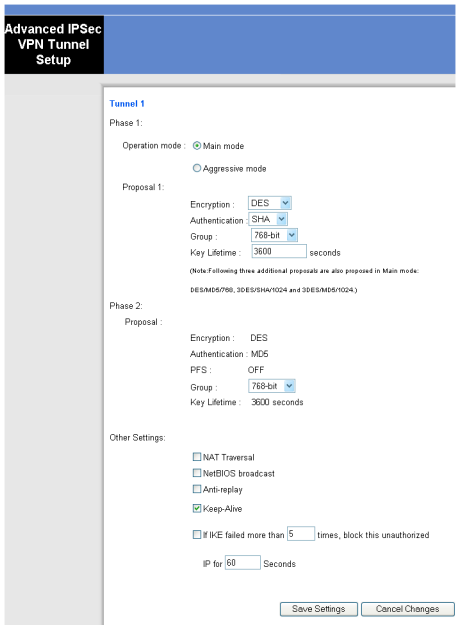


Figure 6-25: Advanced VPN Settings

Figure 6-26: VPN Log

The Access Restriction - Internet Access Tab

The *Internet Access* tab allows you to block or allow specific kinds of Internet usage. You can set up Internet access policies for specific computers and block websites by URL address or keyword.

Internet Access Policy. Access can be managed by a policy. Use the settings on this screen to establish an access policy (after the **Save Settings** button is clicked). Selecting a policy from the drop-down menu will display that policy's settings. To delete a policy, select that policy's number and click the **Delete** button. To view all the policies, click the **Summary** button. (Policies can be deleted from the *Summary* screen by selecting the policy or policies and clicking the **Delete** button. To return to the Internet Access screen, click the **Close** button.)

Status. Policies are disabled by default. To enable a policy, select the policy number from the drop-down menu, and click the radio button beside *Enable*.

To create an Internet Access policy:

1. Select a number from the *Internet Access Policy* drop-down menu.
2. To enable this policy, click the option beside *Enable*.
3. Enter a Policy Name in the field provided.
4. Click the **Edit List of PCs** button to select which PCs will be affected by the policy. The *List of PCs* screen will appear. You can select a PC by MAC Address or IP Address. You can also enter a range of IP Addresses if you want this policy to affect a group of PCs. After making your changes, click the **Save Settings** button to apply your changes or **Cancel Changes** to cancel your changes.
5. Click the appropriate option, **Deny** or **Allow**, depending on whether you want to block or allow Internet access for the PCs you listed on the *List of PCs* screen.
6. Decide which days and what times you want this policy to be enforced. Select the individual days during which the policy will be in effect, or select **Everyday**. Then enter a range of hours and minutes during which the policy will be in effect, or select **24 Hours**.
7. If you want to block websites with specific URL addresses, enter each URL in a separate field next to *Website Blocking by URL Address*.
8. If you want to block websites using specific keywords, enter each keyword in a separate field next to *Website Blocking by Keyword*.
9. You can filter access to various services accessed over the Internet, such as FTP or telnet, by selecting services from the drop-down menus next to *Blocked Services*.

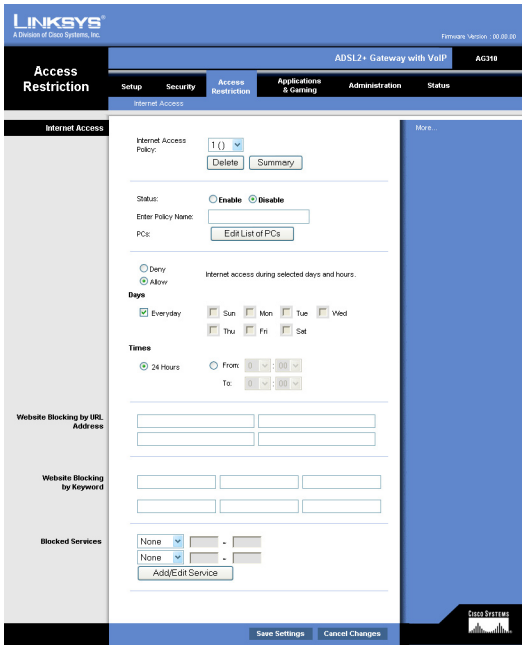


Figure 6-27: Internet Access

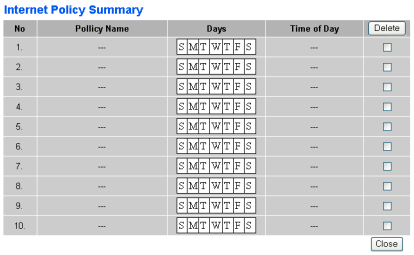


Figure 6-28: Internet Policy Summary

Then enter the range of ports you want to filter.

If the service you want to block is not listed or you want to edit a service's settings, then click the **Add/Edit Service** button. Then the *Port Services* screen will appear.

To add a service, enter the service's name in the *Service Name* field. Select its protocol from the *Protocol* drop-down menu, and enter its range in the *Port Range* fields. Then click the **Add** button.

To modify a service, select it from the list on the right. Change its name, protocol setting, or port range. Then click the **Modify** button.

To delete a service, select it from the list on the right. Then click the **Delete** button.

When you are finished making changes on the *Port Services* screen, click the **Apply** button to save changes. If you want to cancel your changes, click the **Cancel** button. To close the *Port Services* screen and return to the *Access Restrictions* screen, click the **Close** button.

10. Click the **Save Settings** button to save the policy's settings. To undo the policy's settings, click the **Cancel Changes** button.

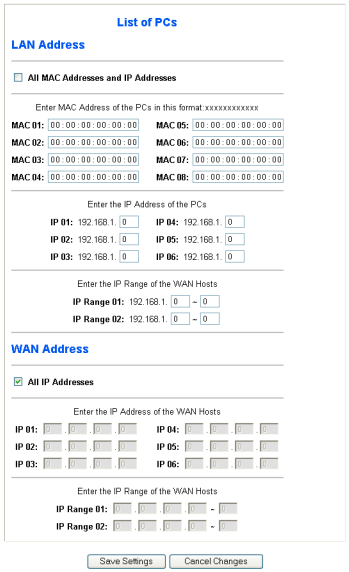


Figure 6-29: List of PCs

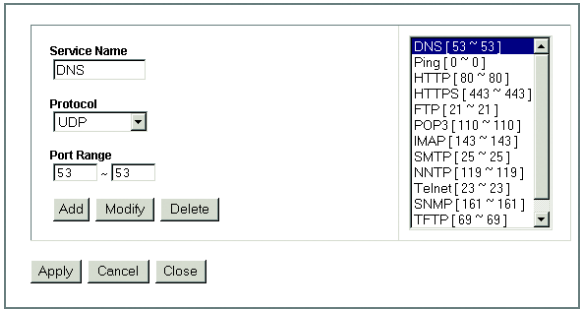


Figure 6-30: Add/Edit Service

The Applications & Gaming - Single Port Forwarding Tab

Single Port Forwarding

Use the *Single Port Forwarding* screen when you want to open a specific port so users on the Internet can see the servers behind the Gateway (such servers may include FTP or e-mail servers). When users send this type of request to your network via the Internet, the Gateway will forward those requests to the appropriate computer. Any computer whose port is being forwarded should have its DHCP client function disabled and should have a new static IP address assigned to it because its IP address may change when using the DHCP function.

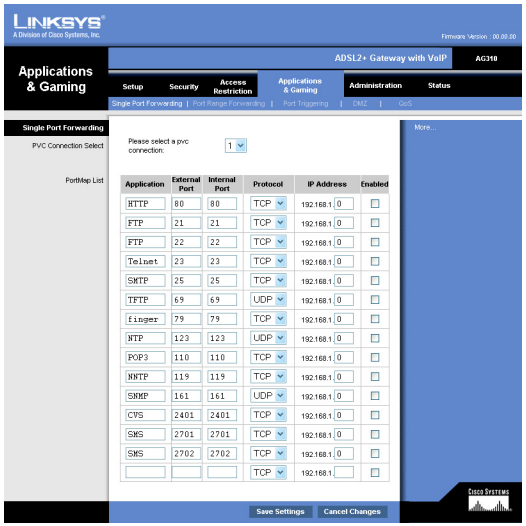


Figure 6-31: Single Port Forwarding

PVC Connection Select. If the service requests you wish to configure will be coming in over a PVC other than PVC 1, select the correct PVC from this list.

PortMap List. In this section you will customize the port service for your applications.

- **Application**. Enter the name of the application in the field provided.
- **External Port and Internal Port**. Enter the External and Internal Port numbers.
- **Protocol**. Select the protocol you wish to use for each application: **TCP** or **UDP**.
- **IP Address**. Enter the IP Address of the appropriate computer.
- **Enabled**. Click **Enabled** to enable forwarding for the chosen application.

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

The Applications & Gaming - Port Range Forwarding Tab

The *Port Range Forwarding* screen sets up public services on your network, such as web servers, ftp servers, e-mail servers, or other specialized Internet applications. (Specialized Internet applications are any applications that use Internet access to perform functions such as videoconferencing or online gaming. Some Internet applications may not require any forwarding.)

When users send this type of request to your network via the Internet, the Gateway will forward those requests to the appropriate computer. Any computer whose port is being forwarded should have its DHCP client function disabled and should have a new static IP address assigned to it because its IP address may change when using the DHCP function.

Application. Enter the name of the application in the field provided.

Start to **End**. Enter the starting and ending numbers of the port range you wish to forward.

Protocol. Select the protocol you wish to use for each application: **TCP**, **UDP**, or **Both**.

IP Address. Enter the IP Address of the appropriate computer.

Enable. Click the **Enable** checkbox to enable forwarding for the chosen application.

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

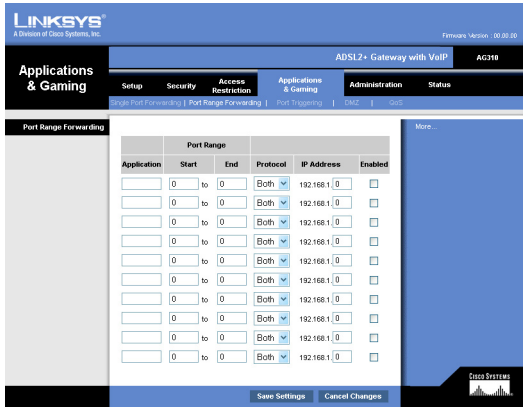


Figure 6-32: Port Range Forwarding

The Applications & Gaming - Port Triggering Tab

Port Triggering is used for special applications that can request a port to be opened on demand. For this feature, the Gateway will watch outgoing data for specific port numbers. The Gateway will remember the IP address of the computer that sends a transmission requesting data, so that when the requested data returns through the Gateway, the data is pulled back to the proper computer by way of IP address and port mapping rules.

Application. Enter the name you wish to give each application.

Triggered Range. Enter the starting and ending port numbers of the Triggered Range.

Forwarded Range. Enter the starting and ending port numbers of the Forwarded Range.

Enable. Click the **Enable** checkbox to enable port triggering for the chosen application.

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

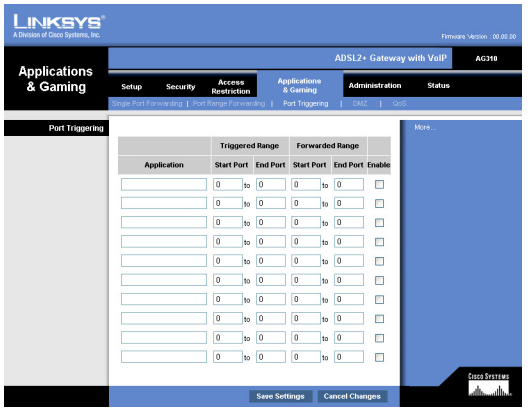


Figure 6-33: Port Triggering

The Applications & Gaming - DMZ Tab

The *DMZ* screen allows one local user to be exposed to the Internet for use of a special-purpose service such as Internet gaming and videoconferencing through DMZ Hosting. DMZ hosting forwards all the ports for one computer at the same time, which differs from Port Range Forwarding, which can only forward a maximum of 10 ranges of ports.

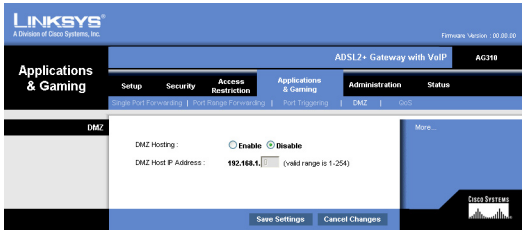


Figure 6-34: DMZ

DMZ Hosting. This feature allows one local user to be exposed to the Internet for use of a special-purpose service such as Internet gaming and videoconferencing. To use this feature, select **Enable**. To disable DMZ, select **Disable**.

DMZ Host IP Address. To expose one computer, enter the computer's IP address. To get the IP address of a computer, refer to "Appendix B: Finding the MAC Address and IP Address for Your Ethernet Adapter."

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

The Applications & Gaming - QoS Tab

QoS

Quality of Service (QoS) ensures better service to high-priority types of network traffic, which may involve demanding, real-time applications, such as Internet phone calls or videoconferencing.

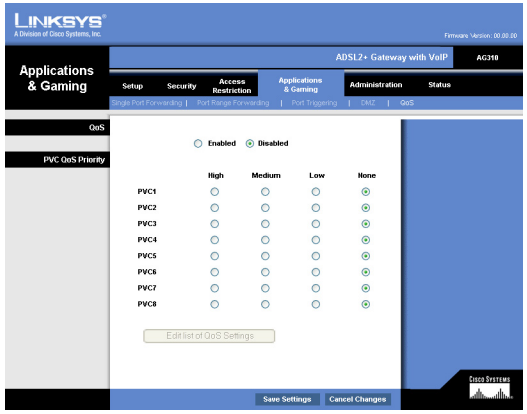


Figure 6-35: QoS

Enabled/Disabled. To use QoS, select **Enabled**. Otherwise, keep the default, **Disabled**.

PVC QoS Priority

PVC-based QoS assigns different levels of priority, or precedence, to different permanent virtual circuits. This is useful when you have, for example, one PVC set up for traditional Internet services (Web browsing, e-mail, and the like) and another PVC set up to carry time-sensitive data such as VoIP or IPTV streams. Giving the second PVC a higher QoS level helps ensure the best possible voice or picture quality.

Edit list of QoS Settings

In addition to PVC-based QoS, you can assign different levels of priority to different packets based on information in the packets. To do this, click the Edit list of QoS Settings button. A window titled QoS Function will appear.

This window lets you set the priority for packets selected by any of the following criteria, alone or in combination:

- Destination. IP address and Netmask (address mask), FQDN (Fully Qualified Domain Name).
- Source. IP address and Netmask (address mask).
- Source MAC. Source MAC address.
- Destination MAC. Destination MAC address.
- Protocol (Transport). TCP, UDP, ICMP, or All.
- Dst Port/Scr Port (Destination port and/or source port). If protocol is set to TCP or UDP.
- Ethernet Type. The value in the 13th and 14th octets of an Ethernet frame.
- ALG. Triggering of a particular Application Layer Gateway (FTP, TFTP, H.323, IRC, MMS, GRE, PPTP, SIP, or RTSP).
- 802.1D User Priority. Presence of a specified IEEE 802.1D user priority marker.
- 802.1Q VID. Presence of a specified IEEE 802.1Q virtual LAN (VLAN) ID.
- Packet length Min/Max. Packet length between specified minimum and maximum numbers of octets.
- Priority. Set the priority of None, Low, Medium, or High.

Fragment packets' size of AF and BE traffic to be equal to the size of EF traffic: Enable this option and input a packet size to have large Assured Forwarding (medium priority) and Best Effort (low priority) packets fragmented so they will not uduly delay Expedited Forwarding (high priority) packets. The value you enter should be from 68 to 1492.

When you have finished making changes in this window, click the **Save** button to save the changes, or click the **Cancel** button to undo your changes. Then click **Close**. You will be returned to the QoS panel. Click the **Save Settings** button to save your changes, or click the **Cancel Changes** button to undo your changes.

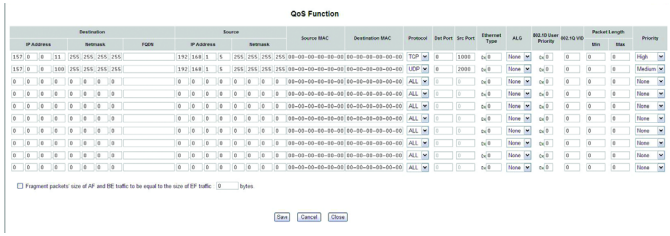


Figure 6-36: Edit List of QoS Settings

The Administration - Management Tab

The *Management* screen allows you to change the Gateway's access settings as well as configure the SNMP (Simple Network Management Protocol), UPnP (Universal Plug and Play), IGMP (Internet Group Multicast Protocol)-Proxy, and WLAN management features.

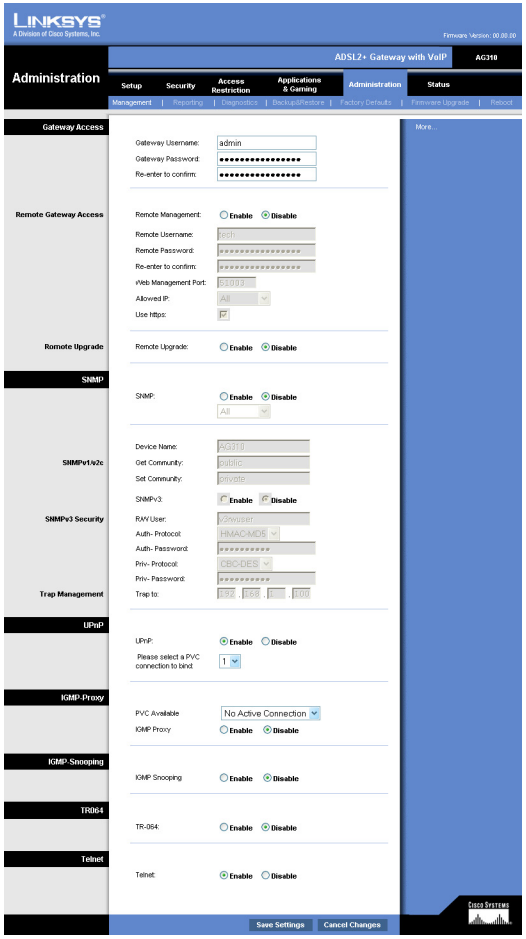


Figure 6-37: Management

Gateway Access

Local Gateway Access. To ensure the Gateway's security, you will be asked for your password when you access the Gateway's web-based utility. The default username and password is **admin**.

Gateway Username. It is recommended that you change the username to one of your own choosing.

Gateway Password. It is recommended that you change the password to one of your own choosing.

Re-enter to confirm. Re-enter the Gateway's new password to confirm it.

Remote Gateway Access

This feature allows you to access the Gateway from a remote location, via the Internet.

Remote Management. This feature allows you to manage the Gateway from a remote location via the Internet. To enable Remote Management, click **Enable**.

IMPORTANT: Enabling remote management allows anyone with your password to configure the Gateway from somewhere else on the Internet.

Remote Username. The default username for remove management is **tech**. It is recommended that you change the remote username to one of your own choosing.

Remote Password. The default remote password is **admin**. It is recommended that you change this to a password of your own choosing.

Re-enter to confirm. Re-enter the new remote password to confirm it.

Management Port. Enter the port number you will use to remotely access the Gateway.

Allowed IP. Specify the IP address(es) allowed to remotely manage the Gateway. To allow all IP addresses with no restrictions, select **All**. To specify a single IP address, select **IP address** and enter the IP address in the fields provided. To specify a range of IP addresses, select **IP range** and enter the range of IP addresses in the fields provided.

Use https. This checkbox enables HTTPS (HyperText Transport Protocol Secure) - An extension to the standard HTTP protocol that provides confidentiality by encrypting the traffic from the website. By default this protocol uses TCP port 443.

Remote Upgrade

Remote Upgrade. This feature allows the Gateway's firmware to be upgraded remotely by a TFTP server. To enable Remote Upgrade, click **Enable**.

SNMP

SNMP is a popular network monitoring and management protocol. To enable SNMP, click **Enabled**. To disable SNMP, click **Disabled**.

If enabled, then specify the IP address(es) allowed to have SNMP access. Select **All** to allow all IP addresses with no restrictions, **IP address** to specify a single IP address, or **IP range** to specify a range of IP addresses.

Figure 6-38: Allowed IP - IP Range

Device Name. Enter the name of the Gateway.

SNMPv1/v2c

Get Community. Enter the password that allows read-only access to the Gateway's SNMP information.

Set Community. Enter the password that allows read/write access to the Gateway's SNMP information.

SNMPv3 Security

SNMPv3. Click **Enable** if you wish to manage the Gateway using SNMP version 3.

R/W User. Enter a name for the user who will have read/write access to the Gateway's settings. The default name is **v3rwuser**.

Auth-Protocol and Auth-Password (Authentication protocol and password). Select an authentication protocol and enter a password. It is recommended that the password be at least eight characters long.

Priv-Protocol and Priv-Password (Privacy protocol and password). To enable encryption of SNMP version 3 communications, select **CBC-DES** and enter a password. If encryption is not desired, select **None**.

Trap Management

Trap to. Enter the IP address of the computer that will receive trap messages.

UPnP

UPnP allows Windows Me and XP to automatically configure the Gateway for various Internet applications, such as gaming and videoconferencing.

UPnP. To enable UPnP, click **Enable**. Otherwise, click **Disable**.

Please select a PVC connection to bind. Select the number of the PVC over which the applications requiring UPnP will run.

IGMP-Proxy

If your multimedia application or device is not working properly behind the Gateway, then you can enable IGMP-Proxy to allow multicast traffic through the Gateway.

PVC Available. Select the number of the PVC over which you wish IGMP-Proxy to work.

IGMP Proxy. To use this feature, select **Enable**. Otherwise, select **Disable**.

IGMP-Snooping

The multicast packets used by some multimedia applications are treated as broadcast packets and sent to all of the Gateway's LAN ports. If this results in too much traffic going to ports over which the application is not being used, you can enable IGMP snooping to ensure correct routing of multicast traffic.

IGMP Snooping. To use this feature, select **Enable**. Otherwise, select **Disable**.

TR064

TR064. To use this feature, select **Enable**. Otherwise, select **Disable**.

Telnet

Telnet. To use this feature, select **Enable**. Otherwise, select **Disable**.

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

The Administration - Reporting Tab

The *Reporting* screen provides you with a log of all incoming and outgoing URLs or IP addresses for your Internet connection. It also provides logs for VPN and firewall events.

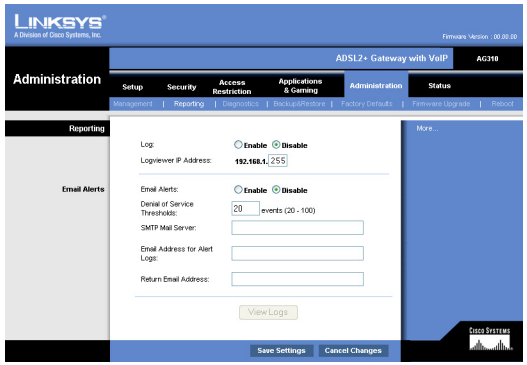


Figure 6-39: Reporting

Reporting

Log. To enable log reporting, click **Enable**.

Logviewer IP Address. Enter the IP Address of the computer that will receive logs. You will need Logviewer software to view these logs. This free software is available for download from www.linksys.com.

Email Alerts

E-Mail Alerts. To enable E-Mail Alerts, click **Enable**.

Denial of Service Thresholds. Enter the number of Denial of Service attacks that will trigger an e-mail alert.

SMTP Mail Server. Enter the IP address of the SMTP server.

E-Mail Address for Alert Logs. Enter the e-mail address that will receive alert logs.

Return E-Mail address. Enter the return address for the e-mail alerts.

To view the logs, click the **View Logs** button. A new screen will appear. From the drop-down menu, you can select which log you want to view. Click the **Clear** button to clear the log information. Click the **pageRefresh** button to refresh the information. Click the **Previous Page** button to go to the previous page of information. Click the **Next Page** button to move to the next page of information.

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

Figure 6-40: System Log

The Administration - Diagnostics Tab

Ping Test

Ping Test Parameters

Ping Target IP. Enter the IP address that you want to ping. This can be either a local (LAN) IP or an Internet (WAN) IP address.

Ping Size. Enter the size of the packet.

Number of Pings. Enter the number of times that you want to ping.

Ping Interval. Enter the ping interval (how often the target IP address will be pinged) in milliseconds.

Ping Timeout. Enter the ping timeout (how long before the ping test times out) in milliseconds.

Click the **Start Test** button to start the Ping Test.

Ping Result. The results of the ping test will be shown here.

When finished making your changes on this tab, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

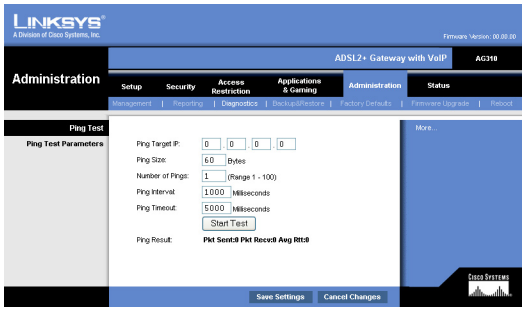


Figure 6-41: Ping Test

The Administration - Backup & Restore Tab

The Backup&Restore tab allows you to back up and restore the Gateway's configuration file.

Backup Configuration

To back up the Gateway's configuration file, click the **Backup** button. Then follow the on-screen instructions.

Restore Configuration

To restore the Gateway's configuration file, click the **Browse** button. Then follow the on-screen instructions to locate the file. After you have selected the file, click the **Restore** button.

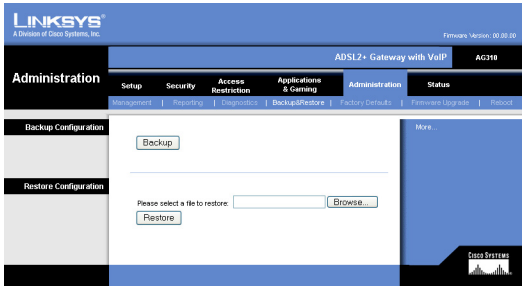


Figure 6-42: Backup&Restore

The Administration - Factory Defaults Tab

Factory Defaults

Restore Factory Defaults. If you wish to restore the Gateway to its factory default settings and lose all your settings, click **Yes**.

To begin the restore process, click the **Save Settings** button to save these changes, or click the **Cancel Changes** button to undo your changes.

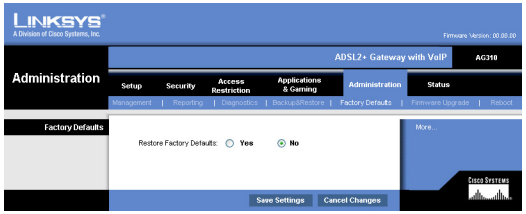


Figure 6-43: Factory Defaults

The Administration - Firmware Upgrade Tab

The Gateway allows you to upgrade firmware from the LAN (Local Area Network) side of the Gateway.

Upgrade from LAN

To upgrade the Gateway's firmware from the LAN:

1. Download the Gateway's firmware upgrade file from www.linksys.com.
2. Extract the file on your computer.
3. Click the **Browse** button to find the firmware upgrade file.
4. Double-click the firmware file that you have downloaded and extracted.
5. Click the **Upgrade** button, and follow the on-screen instructions.

To cancel the firmware upgrade, click the **Cancel Upgrade** button.

IMPORTANT: Do not turn off the power or press the reset button while the upgrade is in process.

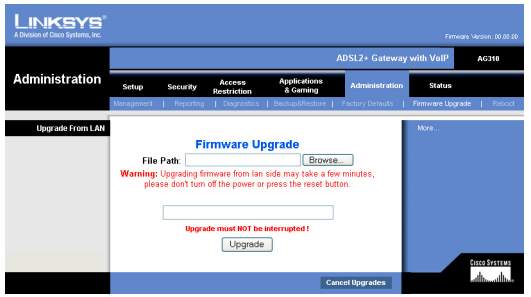


Figure 6-44: Firmware Upgrade

The Administration - Reboot Tab

This screen allows you to do a soft or hard reboot of the Gateway. In most cases you should use the hard reboot. The soft reboot is similar to restarting your computer without physically powering down the computer.

Reboot

Reboot Mode. To reboot your Gateway, select **Hard** or **Soft**. Choose **Hard** to power cycle the Gateway or **Soft**. to restart it without a power cycle.

To begin the reboot process, click the **Save Settings** button. When a screen appears asking you if you really want to reboot the Gateway, click **OK**.. Click the **Cancel Changes** button if you want to cancel the reboot.

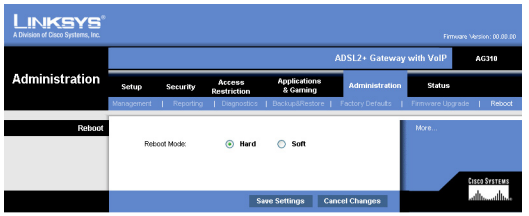


Figure 6-45: Reboot

The Status - Gateway Tab

This screen displays information about the Gateway and its Internet connection.

Gateway Information

This section displays the Gateway's Firmware Version, MAC Address, and Current Time.

Internet Connection

This section shows the following information: the Connection, Login Type, Interface, IP Address, Subnet Mask, Default Gateway, DNS 1, 2, and 3 server IP addresses, and WINS address. Depending on the login type, other information about the connection may also appear.

Connect and **Disconnect** buttons appear when an ADSL connection is available. Use these buttons to bring the connection up or down.

Click the **Refresh** button if you want to update the displayed information.

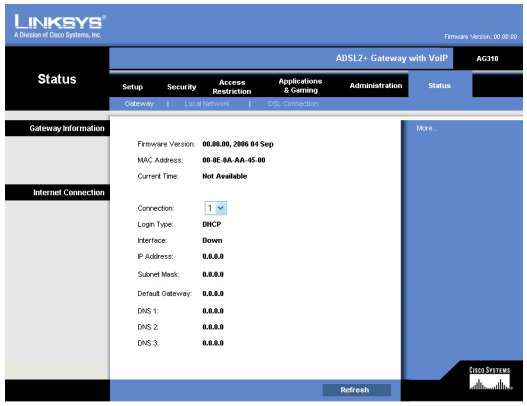


Figure 6-46: Gateway

The Status - Local Network Tab

The Local Network information that is displayed is the local MAC address, IP address, subnet mask, DHCP server status, and DHCP start and end IP addresses. To view the DHCP Clients Table, click the **DHCP Clients Table** button. To view the ARP/RARP Table, click the **ARP/RARP Table** button.

DHCP Client Table. The DHCP Active IP Table shows the current DHCP Client data. You will see the computer name, IP address, MAC address, and expiration time of the dynamic IP address for the clients using the DHCP

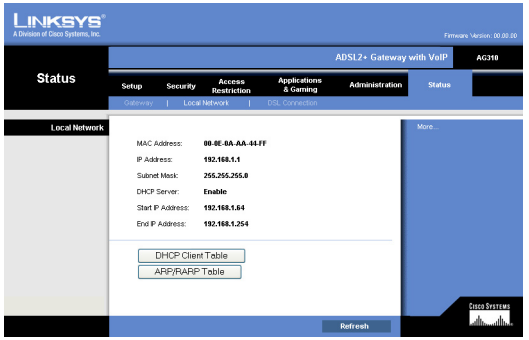


Figure 6-47: Local Network

server. (This data is stored in temporary memory and changes periodically.) Click the **Refresh** button if you want to refresh the displayed information. To delete a client from the DHCP server, select the client, and then click the **Delete** button. Click the **Close** button to return to the *Local Network* screen.

ARP/RARP Table. The ARP/RARP Table shows the current data for the local network clients that have sent an ARP request to the Gateway. You will see their IP addresses and MAC addresses. (This data is stored in temporary memory and changes periodically.) An ARP request is a request sent by the Gateway asking clients with IP addresses for their MAC addresses, so the Gateway can map IP addresses to MAC addresses. RARP is the reverse of ARP. Click the **Refresh** button if you want to refresh the displayed information. Click the **Close** button to return to the *Local Network* screen.

Click the **Refresh** button if you want to refresh the displayed information.

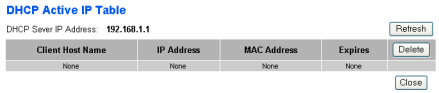


Figure 6-48: DHCP Active IP Table

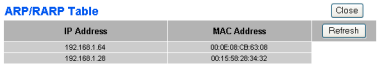


Figure 6-49: ARP/RARP Table

The Status - DSL Connection Tab

This screen shows information about the DSL connection and PVC connections.

DSL Status

This section shows the following: DSL Status, DSL Modulation Mode, DSL Path Mode, Downstream Rate, Upstream Rate, Downstream Margin, Upstream Margin, Downstream Line Attenuation, Upstream Line Attenuation, Downstream Transmit Power, and Upstream Transmit Power.

PVC Connection

Connection: To view information about a particular PVC, select that PVC's number from this list.

This section displays the following information: Encapsulation, Multiplexing, QoS, Pcr Rate, Scr Rate, Autodetect, VPI, VCI, Enable status, and PVC Status.

Click the **Refresh** button if you want to refresh the displayed information.

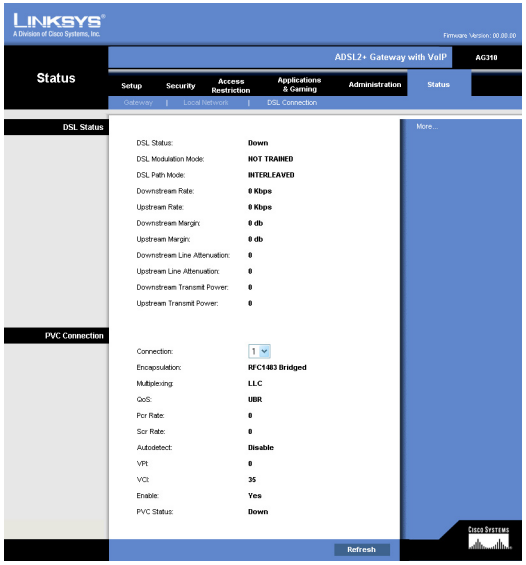


Figure 6-50: Status - DSL Connection

Appendix A: Troubleshooting

This appendix consists of two parts: "Common Problems and Solutions" and "Frequently Asked Questions." Provided are possible solutions to problems that may occur during the installation and operation of the Gateway. Read the descriptions below to help you solve your problems. If you can't find an answer here, check the Linksys international website at www.linksys.com/international.

Common Problems and Solutions

1. ***I don't hear a dial tone, and the PHONE LED is not lit.***
   Go through this checklist until your problem is solved:
   - Make sure the telephone is plugged into the PHONE port.
   - Disconnect and re-connect the RJ-11 telephone cable between the Gateway and telephone.
   - Make sure your telephone is set to its tone setting (not pulse).
   - Make sure your network has an active Internet connection. Try to access the Internet. If you do not have a connection, power off your network devices, including the Gateway and cable/DSL modem. Wait 30 seconds, and power on the cable/DSL modem first. Then power on the Gateway and other network devices.
   - Verify your account information and confirm that the phone line is registered with your ITSP.

1. ***I'm trying to access the Gateway's web-based utility, but I do not see the login screen. Instead, I see a screen saying, "404 Forbidden."***
   If you are using Windows Explorer, perform the following steps until you see the web-based utility's login screen (Netscape Navigator will require similar steps):
   A. Click **File**. Make sure *Work Offline* is NOT checked.
   B. Press **CTRL + F5**. This is a hard refresh, which will force Windows Explorer to load new webpages, not cached ones.
   C. Click **Tools**. Click **Internet Options**. Click the **Security** tab. Click the **Default level** button. Make sure the security level is Medium or lower. Then click the **OK** button.

2. ***I need to set a static IP address on a PC.***
   The Gateway, by default, assigns an IP address range of 192.168.1.100 to 192.168.1.150 using the DHCP server on the Gateway. To set a static IP address, you can only use the ranges 192.168.1.2 to 192.168.1.99 and 192.168.1.151 to 192.168.1.254. Each PC or network device that uses TCP/IP must have a unique address to identify itself in a network. If the IP address is not unique to a network, Windows will generate an IP conflict error message. You can assign a static IP address to a PC by performing the following steps:

For Windows 2000:

A. Click **Start**, **Settings**, and **Control Panel**. Double-click **Network and Dial-Up Connections**.
B. Right-click the **Local Area Connection** that is associated with the Ethernet adapter you are using, and select the **Properties** option.
C. In the *Components checked are used by this connection* box, highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button. Select **Use the following IP address** option.
D. Enter a unique IP address that is not used by any other computer on the network connected to the Gateway. You can only use an IP address in the ranges 192.168.1.2 to 192.168.1.99 and 192.168.1.151 to 192.168.1.254.
E. Enter the Subnet Mask, **255.255.255.0**.
F. Enter the Default Gateway, **192.168.1.1** (Gateway's default IP address).
G. Toward the bottom of the window, select **Use the following DNS server addresses**, and enter the Preferred DNS server and Alternative DNS server (provided by your ISP). Contact your ISP or go on its website to find the information.
H. Click the **OK** button in the *Internet Protocol (TCP/IP) Properties* window, and click the **OK** button in the *Local Area Connection Properties* window.
I. Restart the computer if asked.

For Windows XP:

The following instructions assume you are running Windows XP with the default interface. If you are using the Classic interface (where the icons and menus look like previous Windows versions), please follow the instructions for Windows 2000.

A. Click **Start** and **Control Panel**.
B. Click the **Network and Internet Connections** icon and then the **Network Connections** icon.
C. Right-click the **Local Area Connection** that is associated with the Ethernet adapter you are using, and select the **Properties** option.
D. In the *This connection uses the following items* box, highlight **Internet Protocol (TCP/IP)**. Click the **Properties** button.
E. Enter a unique IP address that is not used by any other computer on the network connected to the Gateway. You can only use an IP address in the ranges 192.168.1.2 to 192.168.1.99 and 192.168.1.151 to 192.168.1.254.
F. Enter the Subnet Mask, **255.255.255.0**.
G. Enter the Default Gateway, **192.168.1.1** (Gateway's default IP address).
H. Toward the bottom of the window, select **Use the following DNS server addresses**, and enter the Preferred DNS server and Alternative DNS server (provided by your ISP). Contact your ISP or go on its website to find the information.
I. Click the **OK** button in the *Internet Protocol (TCP/IP) Properties* window. Click the **OK** button in the *Local Area Connection Properties* window.

3. I want to test my Internet connection.

A. Check your TCP/IP settings.

For Windows 2000:

1. Click **Start**, **Settings**, and **Control Panel**. Double-click **Network and Dial-Up Connections**.
2. Right-click the **Local Area Connection** that is associated with the Ethernet adapter you are using, and select the **Properties** option.
3. In the *Components checked are used by this connection* box, highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button. Make sure that **Obtain an IP address automatically** and **Obtain DNS server address automatically** are selected.
4. Click the **OK** button in the *Internet Protocol (TCP/IP) Properties* window, and click the **OK** button in the *Local Area Connection Properties* window.
5. Restart the computer if asked.
6. Click the **OK** button in the *Internet Protocol (TCP/IP) Properties* window, and click the **OK** button in the *Local Area Connection Properties* window.
7. Restart the computer if asked.

For Windows XP:

The following instructions assume you are running Windows XP with the default interface. If you are using the Classic interface (where the icons and menus look like previous Windows versions), please follow the instructions for Windows 2000.

1. Click **Start** and **Control Panel**.
2. Click the **Network and Internet Connections** icon and then the **Network Connections** icon.
3. Right-click the **Local Area Connection** that is associated with the Ethernet adapter you are using, and select the **Properties** option.
4. In the *This connection uses the following items* box, highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button. Make sure that **Obtain an IP address automatically** and **Obtain DNS server address automatically** are selected.

B. Open a command prompt.

- For Windows 98 and Millennium, click **Start** and **Run**. In the *Open* field, type **command**. Press the **Enter** key or click the **OK** button.
- For Windows 2000 and XP, click **Start** and **Run**. In the *Open* field, type **cmd**. Press the **Enter** key or click the **OK** button.

C. In the command prompt, type **ping 192.168.1.1** and press the **Enter** key.

- If you get a reply, the computer is communicating with the Gateway.

- If you do NOT get a reply, check the cable, and make sure **Obtain an IP address automatically** is selected in the TCP/IP settings for your Ethernet adapter.

D. In the command prompt, type **ping** followed by your Internet IP address and press the **Enter** key. The Internet IP Address can be found in the web interface of the Gateway. For example, if your Internet IP address is 1.2.3.4, you would enter **ping 1.2.3.4** and press the **Enter** key.
   - If you get a reply, the computer is connected to the Gateway.
   - If you do NOT get a reply, try the ping command from a different computer to verify that your original computer is not the cause of the problem.

E. In the command prompt, type **ping www.linksys.com** and press the **Enter** key.
   - If you get a reply, the computer is connected to the Internet. If you cannot open a webpage, try the ping command from a different computer to verify that your original computer is not the cause of the problem.
   - If you do NOT get a reply, there may be a problem with the connection. Try the ping command from a different computer to verify that your original computer is not the cause of the problem.

4. I am not getting an IP address on the Internet with my Internet connection.

A. Refer to "Problem #4, I want to test my Internet connection" to verify that you have connectivity.
B. If you need to register the MAC address of your Ethernet adapter with your ISP, please see "Appendix B: Finding the MAC Address and IP Address for Your Ethernet Adapter." If you need to clone the MAC address of your Ethernet adapter onto the Gateway, see the Router - WAN Setup - MAC Clone Settings section of "Chapter 6: Configuring the ADSL2+ Gateway" for details.
C. Verify you are using the right Internet settings. Contact your ISP to see if your Internet connection type is DHCP, Static IP Address, or PPPoE (commonly used by DSL consumers). Please refer to the Router - WAN Setup - Internet Connection Settings section of "Chapter 6: Configuring the ADSL2+ Gateway" for details on Internet Connection Type settings.
D. Make sure you use the right cable. Check to see if the Ethernet LED is solidly lit.
E. Make sure the cable connecting from your cable or DSL modem is connected to the Gateway's Internet port. Verify that the Router - Status page of the Gateway's web-based utility shows a valid IP address from your ISP.
F. Turn off the computer, Gateway, and cable/DSL modem. Wait 30 seconds, and then turn on the Gateway, cable/DSL modem, and computer. Check the Router - Status page of the Gateway's web-based utility to see if you get an IP address.

5. I am not able to access the Gateway's web-based utility Setup page.

A. Refer to "Problem #4, I want to test my Internet connection" to verify that your computer is properly connected to the Gateway.
B. Refer to "Appendix B: Finding the MAC Address and IP Address for Your Ethernet Adapter" to verify that your computer has an IP Address, Subnet Mask, Gateway, and DNS.

C. Set a static IP address on your system; refer to "Problem #3: I need to set a static IP address on a PC."
D. Refer to "Problem #10: I am a PPPoE user, and I need to remove the proxy settings or the dial-up pop-up window."

6. I need to set up a server behind my Gateway.

To use a server like a web, ftp, or mail server, you need to know the respective port numbers they are using. For example, port 80 (HTTP) is used for web; port 21 (FTP) is used for FTP, and port 25 (SMTP outgoing) and port 110 (POP3 incoming) are used for the mail server. You can get more information by viewing the documentation provided with the server you installed. Follow these steps to set up port forwarding through the Gateway's web-based utility. We will be setting up web, ftp, and mail servers.

A. Access the Gateway's web-based utility by going to **http://192.168.1.1** or the IP address of the Gateway. Go to the **Router** > **Application** tab.
B. Select **yes** from the *Enable* drop-down menu.
C. Enter any name you want to use for the service.
D. Enter the port range of the service you are using. For example, if you have a web server, you would enter the range 80 (in the *Starting Port* field) to 80 (in the *Ending Port* field).
E. Select the protocol you will be using, **TCP** or **UDP**, or select **Both**.
F. Enter the IP address of the PC or network device that you want the port server to go to. For example, if the web server's Ethernet adapter IP address is 192.168.1.100, you would enter 100 in the field provided. Check "Appendix B: Finding the MAC Address and IP Address for Your Ethernet Adapter" for details on getting an IP address.
G. Follow the instructions in steps B-F for the port services you want to use. Consider the examples below:

Enable	Service Name	Starting and Ending Ports	Protocol	IP Address
yes	Web server	80 to 80	Both	192.168.1.100
yes	FTP server	21 to 21	TCP	192.168.1.101
yes	SMTP (outgoing)	25 to 25	Both	192.168.1.102
yes	POP3 (incoming)	110 to 110	Both	192.168.1.102

When you have completed the configuration, click the **Submit All Changes** button.

7. I need to set up online game hosting or use other Internet applications.

If you want to play online games or use Internet applications, most will work without port forwarding or DMZ hosting. There may be cases when you want to host an online game or Internet application. This would require you to set up the Gateway to deliver incoming packets or data to a specific computer. This also applies to the Internet applications you are using. The best way to get the information on what port services to use is to go to the website of the online game or application you want to use. Follow these steps to set up online game hosting or use a certain Internet application:

A. Access the Gateway's web-based utility by going to **http://192.168.1.1** or the IP address of the Gateway. Go to the **Router** > **Application** tab.
B. Select **yes** from the *Enable* drop-down menu.
C. Enter any name you want to use for the service.
D. Enter the port range of the service you are using. For example, if you have a web server, you would enter the range 80 (in the *Starting Port* field) to 80 (in the *Ending Port* field).
E. Select the protocol you will be using, **TCP** or **UDP**, or select **Both**.
F. Enter the IP address of the PC or network device that you want the port server to go to. For example, if the web server's Ethernet adapter IP address is 192.168.1.100, you would enter 100 in the field provided. Check "Appendix B: Finding the MAC Address and IP Address for Your Ethernet Adapter" for details on getting an IP address.
G. Follow the instructions in steps B-F for the port services you want to use. Consider the examples below:

Enable	Service Name	Starting and Ending Ports	Protocol	IP Address
yes	UT	7777 to 27900	Both	192.168.1.100
yes	Halflife	27015 to 27015	Both	192.168.1.105
yes	PC Anywhere	5631 to 5631	UDP	192.168.1.102
yes	VPN IPSec	500 to 500	UDP	192.168.1.100

When you have completed the configuration, click the **Submit All Changes** button.

8. I can't get the Internet game, server, or application to work.

If you are having difficulties getting any Internet game, server, or application to function properly, consider exposing one PC to the Internet using DeMilitarized Zone (DMZ) hosting. This option is available when an application requires too many ports or when you are not sure which port services to use. Make sure you disable all the forwarding entries if you want to successfully use DMZ hosting, since forwarding has priority over DMZ hosting. (In other words, data that enters the Gateway will be checked first by the forwarding settings. If the port number that the data enters from does not have port forwarding, then the Gateway will send the data to whichever PC or network device you set for DMZ hosting.) Follow these steps to set DMZ hosting:

A. Access the Gateway's web-based utility by going to **http://192.168.1.1** or the IP address of the Gateway. Go to the **Router** > **Application** tab.
B. Disable or remove the entries you have entered for forwarding. Keep this information in case you want to use it at a later time.
C. Select **yes** from the **Enable DMZ** drop-down menu.
D. Enter the Ethernet adapter's IP address of the computer you want exposed to the Internet. This will bypass the NAT security for that computer. Please refer to "Appendix B: Finding the MAC Address and IP Address for Your Ethernet Adapter" for details on getting an IP address.

Once completed with the configuration, click the **Submit All Changes** button.

9. I am a PPPoE user, and I need to remove the proxy settings or the dial-up pop-up window.

If you have proxy settings, you need to disable these on your computer. Because the Gateway is the gateway for the Internet connection, the computer does not need any proxy settings to gain access. Please follow these directions to verify that you do not have any proxy settings and that the browser you use is set to connect directly to the LAN.

For Microsoft Internet Explorer 5.0 or higher:

A. Click **Start**, **Settings**, and **Control Panel**. Double-click **Internet Options**.
B. Click the **Connections** tab.
C. Click the **LAN settings** button and remove anything that is checked.
D. Click the **OK** button to go back to the previous screen.
E. Click the option **Never dial a connection**. This will remove any dial-up pop-ups for PPPoE users.

For Netscape 4.7 or higher:

A. Start **Netscape Navigator**, and click **Edit**, **Preferences**, **Advanced**, and **Proxies**.
B. Make sure you have **Direct connection to the Internet** selected on this screen.
C. Close all the windows to finish.

10. When I enter a URL or IP address, I get a time-out error or am prompted to retry.

Go through this checklist until your problem is solved:

- Check if other PCs work. If they do, ensure that your workstation's IP settings are correct (IP Address, Subnet Mask, Default Gateway, and DNS). Restart the computer that is having a problem.
- If the PCs are configured correctly, but still not working, check the Gateway. Ensure that it is connected and powered on. Connect to it and check its settings. (If you cannot connect to it, check the LAN and power connections.)
- If the Gateway is configured correctly, check your Internet connection (DSL/cable modem, etc.) to see if it is working correctly. You can remove the Gateway to verify a direct connection.
- Manually configure the TCP/IP with a DNS address provided by your ISP.
- Make sure that your browser is set to connect directly and that any dial-up is disabled. For Internet Explorer, click **Tools**, **Internet Options**, and then the **Connection** tab. Make sure that Internet Explorer is set to **Never dial a connection**. For Netscape Navigator, click **Edit**, **Preferences**, **Advanced**, and **Proxy**. Make sure that Netscape Navigator is set to **Direct connection to the Internet**.

11. I forgot my password, or the password prompt always appears when I am saving settings to the Gateway.

- Reset the Gateway to the factory default settings by pressing the Reset button for ten seconds and then releasing it. If you are still getting prompted for a password when saving settings, then perform the following steps:

A. Access the Gateway's web-based utility by going to **http://192.168.1.1** (default IP address of the Gateway) and enter the username and password (default is **admin**). Click the **Administration** > **Management** tab.

B. Enter a different password in the *Gateway Password* field and enter the same password in the second field to confirm the password.

C. Click the **Save Settings** button.

12. To start over, I need to set the Gateway to the factory default settings.

Hold the Reset button for ten seconds and then release it. This will return the Internet settings, password, forwarding, and other settings on the Gateway to the factory default settings. In other words, the Gateway will revert to its original factory configuration.

13. I need to upgrade the firmware.

In order to upgrade the firmware with the latest features, you need to go to the Linksys international website and download the latest firmware at **www.linksys.com/international**.

Follow the steps below to access the firmware:

A. Go to the Linksys international website at http://www.linksys.com/international and select your region or country.

B. Click the Products tab and select the Gateway.

C. On the Gateway's webpage, click Firmware, and then download the latest firmware for the Gateway.

D. To upgrade the firmware, follow the steps in the Administration section found in "Chapter 6: Configuring the ADSL2+ Gateway".

14. The firmware upgrade failed, and/or the Power LED is flashing.

The upgrade could have failed for a number of reasons. Follow these steps to upgrade the firmware and/or make the Power LED stop flashing:

- If the firmware upgrade failed, use the TFTP program (it was downloaded along with the firmware). Open the pdf that was downloaded along with the firmware and TFTP program, and follow the pdf's instructions.
- Set a static IP address on the computer; refer to "Problem #1, I need to set a static IP address." Use the following IP address settings for the computer you are using:
  IP Address: 192.168.1.50
  Subnet Mask: 255.255.255.0
  Gateway: 192.168.1.1
- Perform the upgrade using the TFTP program or the Gateway's web-based utility through its Administration tab.

15. My DSL service's PPPoE is always disconnecting.

PPPoE is not actually a dedicated or always-on connection. The DSL ISP can disconnect the service after a period of inactivity, just like a normal phone dial-up connection to the Internet.

- There is a setup option to "keep alive" the connection. This may not always work, so you may need to re-establish connection periodically.
  1. To connect to the Gateway, go to the web browser, and enter http://192.168.1.1 or the IP address of the Gateway.
  2. Enter the username and password, if asked. (The default username and password is admin.)
  3. On the Setup screen, select the option **Keep Alive**, and set the Redial Period option at 20 (seconds).
  4. Click the **Save Settings** button. Click the **Status** tab, and click the **Connect** button.
  5. You may see the login status display as Connecting. Press the F5 key to refresh the screen, until you see the login status display as Connected.
  6. Click the **Save Settings** button to continue.
- If the connection is lost again, follow steps 1- 6 to re-establish connection.

16. I can't access my e-mail, web, or VPN, or I am getting corrupted data from the Internet.

The Maximum Transmission Unit (MTU) setting may need to be adjusted. By default, the MTU is set automatically.

- If you are having some difficulties, perform the following steps:
  1. To connect to the Gateway, go to the web browser, and enter http://192.168.1.1 or the IP address of the Gateway.
  2. Enter the username and password, if asked. (The default username and password is admin.)
  3. Look for the MTU option, and select **Manual**. In the Size field, enter 1492.

4. Click the **Save Settings** button to continue.

- If your difficulties continue, change the Size to different values. Try this list of values, one value at a time, in this order, until your problem is solved:
  1462
  1400
  1362
  1300

Frequently Asked Questions

Can I make calls if my Internet connection is down?
When you make Internet phone calls, your high-speed Internet connection must be active. However, you can make calls using your landline.

Can I make calls while I'm browsing the Internet?
Yes. You can make calls while browsing the Internet. However, your web browsing may affect the quality of your Internet calls, depending on the amount of upstream data traffic passing through your Internet connection.

What is the maximum number of IP addresses that the Gateway will support?
The Gateway will support up to 253 IP addresses.

Where is the Gateway installed on the network?
In a typical environment, the Gateway is installed between the cable/DSL modem and the local area network (LAN). Plug the Gateway into the cable/DSL modem's Ethernet port.

What is Network Address Translation and what is it used for?
Network Address Translation (NAT) translates multiple IP addresses on the private LAN to one public address that is sent out to the Internet. This adds a level of security since the address of a PC connected to the private LAN is never transmitted on the Internet. Furthermore, NAT allows the Gateway to be used with low cost Internet accounts, such as DSL or cable modems, when only one TCP/IP address is provided by the ISP. The user may have many private addresses behind this single address provided by the ISP.

Does the Gateway support any operating system other than Windows 2000 or XP?
Yes, but Linksys does not, at this time, provide technical support for setup, configuration or troubleshooting of any non-Windows operating systems.

Is IPSec Passthrough supported by the Gateway?
Yes, it is a built-in feature that is enabled by default.

Does the LAN connection of the Gateway support 100Mbps Ethernet?
The Gateway supports 100Mbps over the auto-sensing Fast Ethernet 10/100 switch on the LAN side of the Gateway.

Does the Gateway support ICQ send file?
Yes, with the following fix: click **ICQ menu** > **preference** > **connections** tab>, and check **I am behind a firewall or proxy**. Then set the firewall time-out to 80 seconds in the firewall setting. The Internet user can then send a file to a user behind the Gateway.

I set up an Unreal Tournament Server, but others on the LAN cannot join. What do I need to do?
If you have a dedicated Unreal Tournament server running, you need to create a static IP for each of the LAN computers and forward ports 7777, 7778, 7779, 7780, 7781, and 27900 to the IP address of the server. You can also use a port forwarding range of 7777 to 27900. If you want to use the UT Server Admin, forward another port (8080 usually works well but is used for remote admin. You may have to disable this.), and then in the [UWeb.WebServer] section of the server.ini file, set the ListenPort to 8080 (to match the mapped port above) and ServerName to the IP assigned to the Gateway from your ISP.

Can multiple gamers on the LAN get on one game server and play simultaneously with just one public IP address?
It depends on which network game or what kind of game server you are using. For example, Unreal Tournament supports multi-login with one public IP.

How will I be notified of new Gateway firmware upgrades?
All Linksys firmware upgrades are posted on the Linksys international website at www.linksys.com/international, where they can be downloaded for free. To upgrade the Gateway's firmware, use the Administration tab of the Gateway's web-based utility. If the Gateway's Internet connection is working well, there is no need to download a newer firmware version, unless that version contains new features that you would like to use.

Does the Gateway pass PPTP packets or actively route PPTP sessions?
The Gateway allows PPTP packets to pass through.

How many ports can be simultaneously forwarded?
Theoretically, the Gateway can establish 520 sessions at the same time, but you can only forward 10 ranges of ports.

What is the maximum number of VPN sessions allowed by the Gateway?
The maximum number depends on many factors. At least one IPSec session will work through the Gateway; however, simultaneous IPSec sessions may be possible, depending on the specifics of your VPNs.

How can I check whether I have static or DHCP IP Addresses?
Consult your ISP to obtain this information.

Can the Gateway act as my DHCP server?
Yes. The Gateway has DHCP server software built-in.

What is a MAC Address?
The Media Access Control (MAC) address is a unique number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level. For all practical purposes, this number is usually permanent. Unlike IP addresses, which can change every time a computer logs onto the network, the MAC address of a device stays the same, making it a valuable identifier for the network.

How do I get Half-Life: Team Fortress to work with the Gateway?
The default client port for Half-Life is 27005. The computers on your LAN need to have "+clientport 2700x" added to the HL shortcut command line; the x would be 6, 7, 8, and on up. This lets multiple computers connect to the same server. One problem: Version 1.0.1.6 won't let multiple computers with the same CD key connect at the same time, even if on the same LAN (not a problem with 1.0.1.3). As far as hosting games, the HL server does not need to be in the DMZ. Just forward port 27015 to the local IP address of the server computer.

How can I block corrupted FTP downloads?
If you are experiencing corrupted files when you download a file with your FTP client, try using another FTP program.

The web page hangs; downloads are corrupt, or nothing but junk characters are being displayed on the screen. What do I need to do?
Force your Ethernet adapter to 10Mbps or half duplex mode, and turn off the "Auto-negotiate" feature of your Ethernet adapter as a temporary measure. (Please look at the Network Control Panel in your Ethernet adapter's Advanced Properties tab.) Make sure that your proxy setting is disabled in the browser. Check our website at *www.linksys.com* for more information.

Will the Gateway function in a Macintosh environment?
Yes, but the Gateway's setup pages are accessible only through Internet Explorer 5.0 or Netscape Navigator 5.0 or higher for Macintosh.

I am not able to get the web configuration screen for the Gateway. What can I do?
You may have to remove the proxy settings on your Internet browser, e.g., Netscape Navigator or Internet Explorer. Or remove the dial-up settings on your browser. Check with your browser documentation, and make sure that your browser is set to connect directly and that any dial-up is disabled. Make sure that your browser is set to connect directly and that any dial-up is disabled. For Internet Explorer, click **Tools**, **Internet Options**, and then the **Connection** tab. Make sure that Internet Explorer is set to **Never dial a connection**. For Netscape Navigator, click **Edit**, **Preferences**, **Advanced**, and **Proxy**. Make sure that Netscape Navigator is set to **Direct connection to the Internet**.

What is DMZ Hosting?
Demilitarized Zone (DMZ) allows one IP address (computer) to be exposed to the Internet. Some applications require multiple TCP/IP ports to be open. It is recommended that you set your computer with a static IP if you want to use DMZ Hosting. To get the LAN IP address, see "Appendix B: Finding the MAC Address and IP Address for Your Ethernet Adapter."

If DMZ Hosting is used, does the exposed user share the public IP with the Gateway?
No.

Is the Gateway cross-platform compatible?
Any platform that supports Ethernet and TCP/IP is compatible with the Gateway.

Does the Gateway replace a modem? Is there a cable or DSL modem in the Gateway?
No, this version of the Gateway must work in conjunction with a cable or DSL modem.

Which modems are compatible with the Gateway?
The Gateway is compatible with virtually any cable or DSL modem that supports Ethernet.

How do I get mIRC to work with the Gateway?
Use the *Router - Application* screen. Configure an entry and set the Starting and Ending Ports to **113** for the PC on which you are using mIRC.

How do I reset the Gateway?
Refer to "Chapter 5: Using the Interactive Voice Response Menu" for instructions.

Appendix B: Finding the MAC Address and IP Address for Your Ethernet Adapter

This section describes how to find the MAC address for your computer's Ethernet adapter so you can use the MAC filtering feature of the Gateway. You can also find the IP address of your computer's Ethernet adapter. This IP address is used for the Gateway's filtering, forwarding, and/or DMZ features. Follow the steps in this appendix to find the adapter's MAC or IP address in Windows 98, Me, 2000, or XP.

Windows 98 or Me Instructions

1. Click **Start** and **Run**. In the *Open* field, enter **winipcfg**. Then press the **Enter** key or the **OK** button.
2. When the *IP Configuration* screen appears, select the Ethernet adapter you have connected to the Gateway via a CAT 5 Ethernet network cable. See Figure C-1.
3. Write down the Adapter Address as shown on your computer screen (see Figure C-2). This is the MAC address for your Ethernet adapter and is shown in hexadecimal as a series of numbers and letters.

   The MAC address/Adapter Address is what you will use for MAC filtering. The example in Figure D-2 shows the Ethernet adapters's MAC address as 00-00-00-00-00-00. Your computer will show something different.

   The example in Figure C-2 shows the Ethernet adapter's IP address as 192.168.1.100. Your computer may show something different.

Note: The MAC address is also called the Adapter Address.

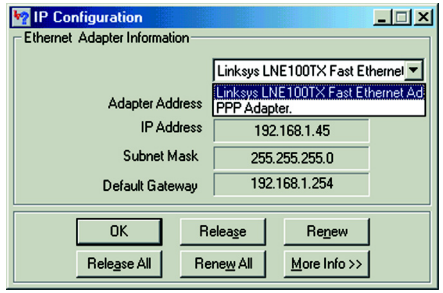


Figure B-1: IP Configuration Screen

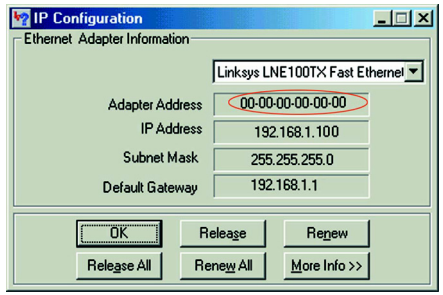


Figure B-2: MAC Address/Adapter Address

Windows 2000 or XP Instructions

1. Click **Start** and **Run**. In the *Open* field, enter **cmd**. Press the **Enter** key or click the **OK** button.

Note: The MAC address is also called the Physical Address.

2. At the command prompt, enter **ipconfig /all**. Then press the **Enter** key.

3. Write down the Physical Address as shown on your computer screen (Figure C-3); it is the MAC address for your Ethernet adapter. This appears as a series of numbers and letters.

   The MAC address/Physical Address is what you will use for MAC filtering. The example in Figure C-3 shows the Ethernet adapters's MAC address as 00-00-00-00-00-00. Your computer will show something different.

   The example in Figure C-3 shows the Ethernet adapter's IP address as 192.168.1.100. Your computer may show something different.

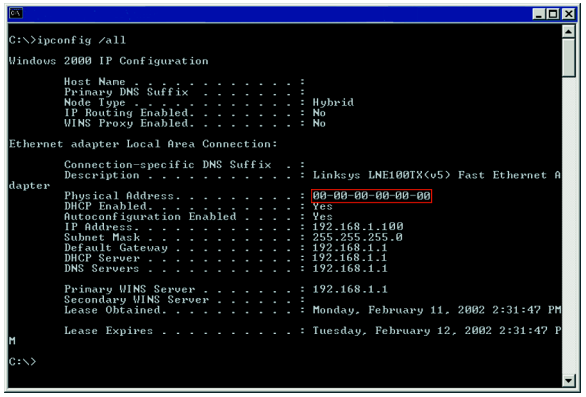


Figure B-3: MAC Address/Physical Address

Appendix C: Upgrading Firmware

To upgrade the Gateway's firmware:

1. Download the Gateway's firmware upgrade file from *www.linksys.com*.
2. Extract the file on your computer.
3. Open the Gateway's web-based utility and click the **Administration** tab.
4. Click the **Firmware Upgrade** tab.
5. Click the **Browse** button to find the extracted file, and then double-click it.
6. Click the **Upgrade** button, and follow the on-screen instructions.

Figure C-1: Firmware Upgrade

Appendix D: Glossary

This glossary contains some basic networking terms you may come across when using this product. For more advanced terms, see the complete Linksys glossary at http://www.linksys.com/glossary.

Access Point - A device that allows wireless-equipped computers and other devices to communicate with a wired network. Also used to expand the range of a wireless network.

Ad-hoc - A group of wireless devices communicating directly with each other (peer-to-peer) without the use of an access point.

AES (**A**dvanced **E**ncryption **S**tandard) - A security method that uses symmetric 128-bit block data encryption.

Bandwidth - The transmission capacity of a given device or network.

Bit - A binary digit.

Boot - To start a device and cause it to start executing instructions.

Broadband - An always-on, fast Internet connection.

Browser - An application program that provides a way to look at and interact with all the information on the World Wide Web.

Byte - A unit of data that is usually eight bits long

Cable Modem - A device that connects a computer to the cable television network, which in turn connects to the Internet.

Daisy Chain - A method used to connect devices in a series, one after the other.

DDNS (**D**ynamic **D**omain **N**ame **S**ystem) - Allows the hosting of a website, FTP server, or e-mail server with a fixed domain name (e.g., www.xyz.com) and a dynamic IP address.

Default Gateway - A device that forwards Internet traffic from your local area network.

DHCP (**D**ynamic **H**ost **C**onfiguration **P**rotocol) - A networking protocol that allows administrators to assign temporary IP addresses to network computers by "leasing" an IP address to a user for a limited amount of time, instead of assigning permanent IP addresses.

DMZ (**Dem**ilitarized **Z**one) - Removes the Router's firewall protection from one PC, allowing it to be "seen" from the Internet.

DNS (**D**omain **N**ame **S**erver) - The IP address of your ISP's server, which translates the names of websites into IP addresses.

Domain - A specific name for a network of computers.

Download - To receive a file transmitted over a network.

DSL (**D**igital **S**ubscriber **L**ine) - An always-on broadband connection over traditional phone lines.

Dynamic IP Address - A temporary IP address assigned by a DHCP server.

EAP (**E**xtensible **A**uthentication **P**rotocol) - A general authentication protocol used to control network access. Many specific authentication methods work within this framework.

Encryption - Encoding data transmitted in a network.

Ethernet - IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium.

Firewall - A set of related programs located at a network gateway server that protects the resources of a network from users from other networks.

Firmware - The programming code that runs a networking device.

FTP (**F**ile **T**ransfer **P**rotocol) - A protocol used to transfer files over a TCP/IP network.

Full Duplex - The ability of a networking device to receive and transmit data simultaneously.

Gateway - A device that interconnects networks with different, incompatible communications protocols.

Half Duplex - Data transmission that can occur in two directions over a single line, but only one direction at a time.

HTTP (**H**yper**T**ext **T**ransport **P**rotocol) - The communications protocol used to connect to servers on the World Wide Web.

Infrastructure - A wireless network that is bridged to a wired network via an access point.

IP (**I**nternet **P**rotocol) - A protocol used to send data over a network.

IP Address - The address used to identify a computer or device on a network.

IPCONFIG - A Windows 2000 and XP utility that displays the IP address for a particular networking device.

IPSec (**I**nternet **P**rotocol **Sec**urity) - A VPN protocol used to implement secure exchange of packets at the IP layer.

ISP (**I**nternet **S**ervice **P**rovider) - A company that provides access to the Internet.

LAN - The computers and networking products that make up your local network.

MAC (**M**edia **A**ccess **C**ontrol) **Address** - The unique address that a manufacturer assigns to each networking device.

Mbps (**M**ega**B**its **P**er **S**econd) - One million bits per second; a unit of measurement for data transmission.

NAT (**N**etwork **A**ddress **T**ranslation) - NAT technology translates IP addresses of a local area network to a different IP address for the Internet.

Network - A series of computers or devices connected for the purpose of data sharing, storage, and/or transmission between users.

Packet - A unit of data sent over a network.

Passphrase - Used much like a password, a passphrase simplifies the WEP encryption process by automatically generating the WEP encryption keys for Linksys products.

Ping (**P**acket **IN**ternet **G**roper) - An Internet utility used to determine whether a particular IP address is online.

POP3 (**P**ost **O**ffice **P**rotocol **3**) - A standard mail server commonly used on the Internet.

Port - The connection point on a computer or networking device used for plugging in cables or adapters.

Power **o**ver **E**thernet (**PoE**) - A technology enabling an Ethernet network cable to deliver both data and power.

PPPoE (**P**oint to **P**oint **P**rotocol **o**ver **E**thernet) - A type of broadband connection that provides authentication (username and password) in addition to data transport.

PPTP (**P**oint-to-**P**oint **T**unneling **P**rotocol) - A VPN protocol that allows the Point to Point Protocol (PPP) to be tunneled through an IP network. This protocol is also used as a type of broadband connection in Europe.

RADIUS (**R**emote **A**uthentication **D**ial-**I**n **U**ser **S**ervice) - A protocol that uses an authentication server to control network access.

RJ-45 (**R**egistered **J**ack-**45**) - An Ethernet connector that holds up to eight wires.

Roaming - The ability to take a wireless device from one access point's range to another without losing the connection.

Router - A networking device that connects multiple networks together.

Server - Any computer whose function in a network is to provide user access to files, printing, communications, and other services.

SMTP (**S**imple **M**ail **T**ransfer **P**rotocol) - The standard e-mail protocol on the Internet.

SNMP (**S**imple **N**etwork **M**anagement **P**rotocol) - A widely used network monitoring and control protocol.

SPI (**S**tateful **P**acket **I**nspection) **Firewall** - A technology that inspects incoming packets of information before allowing them to enter the network.

SSID (**S**ervice **S**et **ID**entifier) - Your wireless network's name.

Static IP Address - A fixed address assigned to a computer or device that is connected to a network.

Static Routing - Forwarding data in a network via a fixed path.

Subnet Mask - An address code that determines the size of the network.

Switch - 1. A data switch that connects computing devices to host computers, allowing a large number of devices to share a limited number of ports. 2. A device for making, breaking, or changing the connections in an electrical circuit.

TCP (**T**ransmission **C**ontrol **P**rotocol) - A network protocol for transmitting data that requires acknowledgement from the recipient of data sent.

TCP/IP (**T**ransmission **C**ontrol **P**rotocol/**I**nternet **P**rotocol) - A set of instructions PCs use to communicate over a network.

Telnet - A user command and TCP/IP protocol used for accessing remote PCs.

TFTP (**T**rivial **F**ile **T**ransfer **P**rotocol) - A version of the TCP/IP FTP protocol that has no directory or password capability.

Throughput - The amount of data moved successfully from one node to another in a given time period.

TKIP (**T**emporal **K**ey **I**ntegrity **P**rotocol) - a wireless encryption protocol that provides dynamic encryption keys for each packet transmitted.

Topology - The physical layout of a network.

TX Rate - Transmission Rate.

Upgrade - To replace existing software or firmware with a newer version.

Upload - To transmit a file over a network.

URL (**U**niform **R**esource **L**ocator) - The address of a file located on the Internet.

VPN (**V**irtual **P**rivate **N**etwork) - A security measure to protect data as it leaves one network and goes to another over the Internet.

WAN (**W**ide **A**rea **N**etwork)- The Internet.

WEP (**W**ired **E**quivalent **P**rivacy) - A method of encrypting network data transmitted on a wireless network for greater security.

WLAN (**W**ireless **L**ocal **A**rea **N**etwork) - A group of computers and associated devices that communicate with each other wirelessly.

WPA (**W**i-Fi **P**rotected **A**ccess) - a wireless security protocol using TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.

Appendix E: Specifications

Model Number	AG310
Standards	ANSI T1.413 Issue 2, ITU G.992.1 (G.dmt), G.992.2 (G.lite), G.992.3 (ADSL2), G.992.4 (ADSL2 Lite), G.992.5 (ADSL2+), G.994.1 (G.hs), G.996.1 (G.test)
Ports	Power, DSL, Ethernet (1-4), Phone, Line
Buttons	Power, Reset
Cabling Type	Category 5 UTP/STP
LEDs	Power, Ethernet (1-4), Voice Status, Phone, Line, DSL, Internet
UPnP able/cert	Able
Security Features	Password protected configuration for web access PAP and CHAP authentication Denial of Service (DoS) Prevention URL filtering, and keyword, Java, ActiveX, Proxy, Cookie blocking ToD filter (Blocks Access by Time) VPN Passthrough for IPSec, PPTP, and L2TP Protocols Access restriction by MAC and IP addresses
Dimensions	170 x 170 x 31 mm (6.69 x 6.69 x 1.22 in)
Unit Weight	0.408 kg (0.90 lb)
Power	12VDC 1.25A

Certifications CE, UL, A-tick, UPnP	FCC Part 15B Subpart B Class B, FCC Part 15C Subpart B, FCC Part 68,
Operating Temp.	0º~40ºC (32º~104ºF)
Storage Temp.	-20º~70ºC (-4º~158ºF)
Operating Humidity	10~85% Non-Condensing
Storage Humidity	5~90% Non-Condensing

Appendix F: Warranty Information

Linksys warrants to You that, for a period of two years (the "Warranty Period"), your Linksys Product will be substantially free of defects in materials and workmanship under normal use. Your exclusive remedy and Linksys' entire liability under this warranty will be for Linksys at its option to repair or replace the Product or refund Your purchase price less any rebates. This limited warranty extends only to the original purchaser.

If the Product proves defective during the Warranty Period call Linksys Technical Support in order to obtain a Return Authorization Number, if applicable. BE SURE TO HAVE YOUR PROOF OF PURCHASE ON HAND WHEN CALLING. If You are requested to return the Product, mark the Return Authorization Number clearly on the outside of the package and include a copy of your original proof of purchase. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE. You are responsible for shipping defective Products to Linksys. Linksys pays for UPS Ground shipping from Linksys back to You only. Customers located outside of the United States of America and Canada are responsible for all shipping and handling charges.

ALL IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THE WARRANTY PERIOD. ALL OTHER EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF NON-INFRINGEMENT, ARE DISCLAIMED. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to You. This warranty gives You specific legal rights, and You may also have other rights which vary by jurisdiction.

This warranty does not apply if the Product (a) has been altered, except by Linksys, (b) has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Linksys, or (c) has been subjected to abnormal physical or electrical stress, misuse, negligence, or accident. In addition, due to the continual development of new techniques for intruding upon and attacking networks, Linksys does not warrant that the Product will be free of vulnerability to intrusion or attack.

TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL LINKSYS BE LIABLE FOR ANY LOST DATA, REVENUE OR PROFIT, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, REGARDLESS OF THE THEORY OF LIABILITY (INCLUDING NEGLIGENCE), ARISING OUT OF OR RELATED TO THE USE OF OR INABILITY TO USE THE PRODUCT (INCLUDING ANY SOFTWARE), EVEN IF LINKSYS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT WILL LINKSYS' LIABILITY EXCEED THE AMOUNT PAID BY YOU FOR THE PRODUCT. The foregoing limitations will apply even if any warranty or remedy provided under this Agreement fails of its essential purpose. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to You.

This Warranty is valid and may be processed only in the country of purchase.

Please direct all inquiries to: Linksys, P.O. Box 18558, Irvine, CA 92623.

Appendix G: Regulatory Information

FCC Statement

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

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

Safety Notices

Caution: To reduce the risk of fire, use only No.26 AWG or larger telecommunication line cord.

Do not use this product near water, for example, in a wet basement or near a swimming pool.

Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.

Industry Canada (Canada)

This device complies with Industry Canada ICES-003 rule.
Cet appareil est conforme à la norme NMB003 d'Industrie Canada.

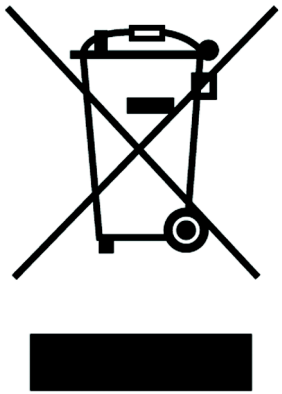
EC Declaration of Conformity (Europe)

In compliance with the EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC, and Amendment Directive 93/68/EEC, this product meets the requirements of the following standards:

- EN55022 Emission
- EN55024 Immunity

User Information for Consumer Products Covered by EU Directive 2002/96/EC on Waste Electric and Electronic Equipment (WEEE)

This document contains important information for users with regards to the proper disposal and recycling of Linksys products. Consumers are required to comply with this notice for all electronic products bearing the following symbol:



English

Environmental Information for Customers in the European Union

European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

Ceština/Czech

Informace o ochraně životního prostředí pro zákazníky v zemích Evropské unie

Evropská směrnice 2002/96/ES zakazuje, aby zařízení označené tímto symbolem na produktu anebo na obalu bylo likvidováno s netříděným komunálním odpadem. Tento symbol udává, že daný produkt musí být likvidován odděleně od běžného komunálního odpadu. Odpovídáte za likvidaci tohoto produktu a dalších elektrických a elektronických zařízení prostřednictvím určených sběrných míst stanovených vládou nebo místními úřady. Správná likvidace a recyklace pomáhá předcházet potenciálním negativním dopadům na životní prostředí a lidské zdraví. Podrobnější informace o likvidaci starého vybavení si laskavě vyžádejte od místních úřadů, podniku zabývajícího se likvidací komunálních odpadů nebo obchodu, kde jste produkt zakoupili.

Dansk/Danish

Miljøinformation for kunder i EU

EU-direktiv 2002/96/EF kræver, at udstyr der bærer dette symbol på produktet og/eller emballagen ikke må bortskaffes som usorteret kommunalt affald. Symbolet betyder, at dette produkt skal bortskaffes adskilt fra det almindelige husholdningsaffald. Det er dit ansvar at bortskaffe dette og andet elektrisk og elektronisk udstyr via bestemte indsamlingssteder udpeget af staten eller de lokale myndigheder. Korrekt bortskaffelse og genvinding vil hjælpe med til at undgå mulige skader for miljøet og menneskers sundhed. Kontakt venligst de lokale myndigheder, renovationstjenesten eller den butik, hvor du har købt produktet, angående mere detaljeret information om bortskaffelse af dit gamle udstyr.

Deutsch/German

Umweltinformation für Kunden innerhalb der Europäischen Union

Die Europäische Richtlinie 2002/96/EC verlangt, dass technische Ausrüstung, die direkt am Gerät und/oder an der Verpackung mit diesem Symbol versehen ist nicht zusammen mit unsortiertem Gemeindeabfall entsorgt werden darf. Das Symbol weist darauf hin, dass das Produkt von regulärem Haushaltmüll getrennt entsorgt werden sollte. Es liegt in Ihrer Verantwortung, dieses Gerät und andere elektrische und elektronische Geräte über die dafür zuständigen und von der Regierung oder örtlichen Behörden dazu bestimmten Sammelstellen zu entsorgen. Ordnungsgemäßes Entsorgen und Recyceln trägt dazu bei, potentielle negative Folgen für Umwelt und die menschliche Gesundheit zu vermeiden. Wenn Sie weitere Informationen zur Entsorgung Ihrer Altgeräte benötigen, wenden Sie sich bitte an die örtlichen Behörden oder städtischen Entsorgungsdienste oder an den Händler, bei dem Sie das Produkt erworben haben.

Eesti/Estonian

Keskkonnaalane informatsioon Euroopa Liidus asuvatele klientidele

Euroopa Liidu direktiivi 2002/96/EÜ nõuete kohaselt on seadmeid, millel on tootel või pakendil käesolev sümbol, keelatud kõrvaldada koos sorteerimata olmejäätmetega. See sümbol näitab, et toode tuleks kõrvaldada eraldi tavalistest olmejäätmevoogudest. Olete kohustatud kõrvaldama käesoleva ja ka muud elektri- ja elektroonikaseadmed riigi või kohalike ametiasutuste poolt ette nähtud kogumispunktide kaudu. Seadmete korrektne kõrvaldamine ja ringlussevõtt aitab vältida võimalikke negatiivseid tagajärgi keskkonnale ning inimeste tervisele. Vanade seadmete kõrvaldamise kohta täpsema informatsiooni saamiseks võtke palun ühendust kohalike ametiasutustega, jäätmekäitlusfirmaga või kauplusega, kust te toote ostsite.

Español/Spanish

Información medioambiental para clientes de la Unión Europea

La Directiva 2002/96/CE de la UE exige que los equipos que lleven este símbolo en el propio aparato y/o en su embalaje no deben eliminarse junto con otros residuos urbanos no seleccionados. El símbolo indica que el producto en cuestión debe separarse de los residuos domésticos convencionales con vistas a su eliminación. Es responsabilidad suya desechar este y cualesquiera otros aparatos eléctricos y electrónicos a través de los puntos de recogida que ponen a su disposición el gobierno y las autoridades locales. Al desechar y reciclar correctamente estos aparatos estará contribuyendo a evitar posibles consecuencias negativas para el medio ambiente y la salud de las personas. Si desea obtener información más detallada sobre la eliminación segura de su aparato usado, consulte a las autoridades locales, al servicio de recogida y eliminación de residuos de su zona o pregunte en la tienda donde adquirió el producto.

Ξλληνικά/Greek

Στοιχεία περιβαλλοντικής προστασίας για πελάτες εντός της Ευρωπαϊκής Ένωσης

Η Κοινοτική Οδηγία 2002/96/EC απαιτεί ότι ο εξοπλισμός ο οποίος φέρει αυτό το σύμβολο στο προϊόν και/ή στη συσκευασία του δεν πρέπει να απορρίπτεται μαζί με τα μικτά κοινοτικά απορρίμματα. Το σύμβολο υποδεικνύει ότι αυτό το προϊόν θα πρέπει να απορρίπτεται ξεχωριστά από τα συνήθη οικιακά απορρίμματα. Είστε υπεύθυνος για την απόρριψη του παρόντος και άλλου ηλεκτρικού και ηλεκτρονικού εξοπλισμού μέσω των καθορισμένων εγκαταστάσεων συγκέντρωσης απορριμμάτων οι οποίες παρέχονται από το κράτος ή τις αρμόδιες τοπικές αρχές. Η σωστή απόρριψη και ανακύκλωση συμβάλλει στην πρόληψη πιθανών αρνητικών συνεπειών για το περιβάλλον και την υγεία. Για περισσότερες πληροφορίες σχετικά με την απόρριψη του παλιού σας εξοπλισμού, παρακαλώ επικοινωνήστε με τις τοπικές αρχές, τις υπηρεσίες απόρριψης ή το κατάστημα από το οποίο αγοράσατε το προϊόν.

Français/French

Informations environnementales pour les clients de l'Union européenne

La directive européenne 2002/96/CE exige que l'équipement sur lequel est apposé ce symbole sur le produit et/ou son emballage ne soit pas jeté avec les autres ordures ménagères. Ce symbole indique que le produit doit être éliminé dans un circuit distinct de celui pour les déchets des ménages. Il est de votre responsabilité de jeter ce matériel ainsi que tout autre matériel électrique ou électronique par les moyens de collecte indiqués par le gouvernement et les pouvoirs publics des collectivités territoriales. L'élimination et le recyclage en bonne et due forme ont pour but de lutter contre l'impact néfaste potentiel de ce type de produits sur l'environnement et la santé publique. Pour plus d'informations sur le mode d'élimination de votre ancien équipement, veuillez prendre contact avec les pouvoirs publics locaux, le service de traitement des déchets, ou l'endroit où vous avez acheté le produit.

Italiano/Italian

Informazioni relative all'ambiente per i clienti residenti nell'Unione Europea

La direttiva europea 2002/96/EC richiede che le apparecchiature contrassegnate con questo simbolo sul prodotto e/o sull'imballaggio non siano smaltite insieme ai rifiuti urbani non differenziati. Il simbolo indica che questo prodotto non deve essere smaltito insieme ai normali rifiuti domestici. È responsabilità del proprietario smaltire sia questi prodotti sia le altre apparecchiature elettriche ed elettroniche mediante le specifiche strutture di raccolta indicate dal governo o dagli enti pubblici locali. Il corretto smaltimento ed il riciclaggio aiuteranno a prevenire conseguenze potenzialmente negative per l'ambiente e per la salute dell'essere umano. Per ricevere informazioni più dettagliate circa lo smaltimento delle vecchie apparecchiature in Vostro possesso, Vi invitiamo a contattare gli enti pubblici di competenza, il servizio di smaltimento rifiuti o il negozio nel quale avete acquistato il prodotto.

Latviešu valoda/Latvian

Ekoloģiska informācija klientiem Eiropas Savienības jurisdikcijā

Direktīvā 2002/96/EK ir prasība, ka aprīkojumu, kam pievienota zīme uz paša izstrādājuma vai uz tā iesaiņojuma, nedrīkst izmest nešķirotā veidā kopā ar komunālajiem atkritumiem (tiem, ko rada vietēji iedzīvotāji un uzņēmumi). Šī zīme nozīmē to, ka šī ierīce ir jāizmet atkritumos tā, lai tā nenonāktu kopā ar parastiem mājsaimniecības atkritumiem. Jūsu pienākums ir šo un citas elektriskas un elektroniskas ierīces izmest atkritumos, izmantojot īpašus atkritumu savākšanas veidus un līdzekļus, ko nodrošina valsts un pašvaldību iestādes. Ja izmešana atkritumos un pārstrāde tiek veikta pareizi, tad mazinās iespējamais kaitējums dabai un cilvēku veselībai. Sīkākas ziņas par novecojuša aprīkojuma izmešanu atkritumos jūs varat saņemt vietējā pašvaldībā, atkritumu savākšanas dienestā, kā arī veikalā, kur iegādājāties šo izstrādājumu.

Lietuvškai/Lithuanian

Aplinkosaugos informacija, skirta Europos Sąjungos vartotojams

Europos direktyva 2002/96/EC numato, kad įrangos, kuri ir (arba) kurios pakuotė yra pažymėta šiuo simboliu, negalima šalinti kartu su nerūšiuotomis komunalinėmis atliekomis. Šis simbolis rodo, kad gaminį reikia šalinti atskirai nuo bendro buitinių atliekų srauto. Jūs privalote užtikrinti, kad ši ir kita elektros ar elektroninė įranga būtų šalinama per tam tikras nacionalinės ar vietinės valdžios nustatytas atliekų rinkimo sistemas. Tinkamai šalinant ir perdirbant atliekas, bus išvengta galimos žalos aplinkai ir žmonių sveikatai. Daugiau informacijos apie jūsų senos įrangos šalinimą gali pateikti vietinės valdžios institucijos, atliekų šalinimo tarnybos arba parduotuvės, kuriose įsigijote tą gaminį.

Malti/Maltese

Informazzjoni Ambjentali għal Klijenti fl-Unjoni Ewropea

Id-Direttiva Ewropea 2002/96/KE titlob li t-tagħmir li jkun fih is-simbolu fuq il-prodott u/jew fuq l-ippakkjar ma jistax jintrema ma' skart muniċipali li ma ġiex isseparat. Is-simbolu jindika li dan il-prodott għandu jintrema separatament minn ma' l-iskart domestiku regolari. Hija responsabbiltà tiegħek li tarmi dan it-tagħmir u kull tagħmir ieħor ta' l-elettriku u elettroniku permezz ta' faċilitajiet ta' ġbir appuntati apposta mill-gvern jew mill-awtoritajiet lokali. Ir-rimi b'mod korrett u r-riċiklaġġ jgħin jipprevjeni konsegwenzi negattivi potenzjali għall-ambjent u għas-saħħa tal-bniedem. Għal aktar informazzjoni dettaljata dwar ir-rimi tat-tagħmir antik tiegħek, jekk jogħġbok ikkuntattja lill-awtoritajiet lokali tiegħek, is-servizzi għar-rimi ta' l-iskart, jew il-ħanut minn fejn xtrajt il-prodott.

Magyar/Hungarian

Környezetvédelmi információ az európai uniós vásárlók számára

A 2002/96/EC számú európai uniós irányelv megkívánja, hogy azokat a termékeket, amelyeken, és/vagy amelyek csomagolásán az alábbi címke megjelenik, tilos a többi szelektálatlan lakossági hulladékkal együtt kidobni. A címke azt jelöli, hogy az adott termék kidobásakor a szokványos háztartási hulladékelszállítási rendszerektől elkülönített eljárást kell alkalmazni. Az Ön felelőssége, hogy ezt, és más elektromos és elektronikus berendezéseit a kormányzati vagy a helyi hatóságok által kijelölt gyűjtőredszereken keresztül számolja fel. A megfelelő hulladékfeldolgozás segít a környezetre és az emberi egészségre potenciálisan ártalmas negatív hatások megelőzésében. Ha elavult berendezéseinek felszámolásához további részletes információra van szüksége, kérjük, lépjen kapcsolatba a helyi hatóságokkal, a hulladékfeldolgozási szolgálattal, vagy azzal üzlettel, ahol a terméket vásárolta.

Nederlands/Dutch

Milieu-informatie voor klanten in de Europese Unie

De Europese Richtlijn 2002/96/EC schrijft voor dat apparatuur die is voorzien van dit symbool op het product of de verpakking, niet mag worden ingezameld met niet-gescheiden huishoudelijk afval. Dit symbool geeft aan dat het product apart moet worden ingezameld. U bent zelf verantwoordelijk voor de vernietiging van deze en andere elektrische en elektronische apparatuur via de daarvoor door de landelijke of plaatselijke overheid aangewezen inzamelingskanalen. De juiste vernietiging en recycling van deze apparatuur voorkomt mogelijke negatieve gevolgen voor het milieu en de gezondheid. Voor meer informatie over het vernietigen van uw oude apparatuur neemt u contact op met de plaatselijke autoriteiten of afvalverwerkingsdienst, of met de winkel waar u het product hebt aangeschaft.

Norsk/Norwegian

Miljøinformasjon for kunder i EU

EU-direktiv 2002/96/EF krever at utstyr med følgende symbol avbildet på produktet og/eller pakningen, ikke må kastes sammen med usortert avfall. Symbolet indikerer at dette produktet skal håndteres atskilt fra ordinær avfallsinnsamling for husholdningsavfall. Det er ditt ansvar å kvitte deg med dette produktet og annet elektrisk og elektronisk avfall via egne innsamlingsordninger slik myndighetene eller kommunene bestemmer. Korrekt avfallshåndtering og gjenvinning vil være med på å forhindre mulige negative konsekvenser for miljø og helse. For nærmere informasjon om håndtering av det kasserte utstyret ditt, kan du ta kontakt med kommunen, en innsamlingsstasjon for avfall eller butikken der du kjøpte produktet.

Polski/Polish

Informacja dla klientów w Unii Europejskiej o przepisach dotyczących ochrony środowiska

Dyrektywa Europejska 2002/96/EC wymaga, aby sprzęt oznaczony symbolem znajdującym się na produkcie i/lub jego opakowaniu nie był wyrzucany razem z innymi niesortowanymi odpadami komunalnymi. Symbol ten wskazuje, że produkt nie powinien być usuwany razem ze zwykłymi odpadami z gospodarstw domowych. Na Państwu spoczywa obowiązek wyrzucania tego i innych urządzeń elektrycznych oraz elektronicznych w punktach odbioru wyznaczonych przez władze krajowe lub lokalne. Pozbywanie się sprzętu we właściwy sposób i jego recykling pomogą zapobiec potencjalnie negatywnym konsekwencjom dla środowiska i zdrowia ludzkiego. W celu uzyskania szczegółowych informacji o usuwaniu starego sprzętu, prosimy zwrócić się do lokalnych władz, służb oczyszczania miasta lub sklepu, w którym produkt został nabyty.

Português/Portuguese

Informação ambiental para clientes da União Europeia

A Directiva Europeia 2002/96/CE exige que o equipamento que exibe este símbolo no produto e/ou na sua embalagem não seja eliminado junto com os resíduos municipais não separados. O símbolo indica que este produto deve ser eliminado separadamente dos resíduos domésticos regulares. É da sua responsabilidade eliminar este e qualquer outro equipamento eléctrico e electrónico através dos instalações de recolha designadas pelas autoridades governamentais ou locais. A eliminação e reciclagem correctas ajudarão a prevenir as consequências negativas para o ambiente e para a saúde humana. Para obter informações mais detalhadas sobre a forma de eliminar o seu equipamento antigo, contacte as autoridades locais, os serviços de eliminação de resíduos ou o estabelecimento comercial onde adquiriu o produto.

Slovenčina/Slovak

Informácie o ochrane životného prostredia pre zákazníkov v Európskej únii

Podľa európskej smernice 2002/96/ES zariadenie s týmto symbolom na produkte a/alebo jeho balení nesmie byť likvidované spolu s netriedeným komunálnym odpadom. Symbol znamená, že produkt by sa mal likvidovať oddelene od bežného odpadu z domácností. Je vašou povinnosťou likvidovať toto i ostatné elektrické a elektronické zariadenia prostredníctvom špecializovaných zberných zariadení určených vládou alebo miestnymi orgánmi. Správna likvidácia a recyklácia pomôže zabrániť prípadným negatívnym dopadom na životné prostredie a zdravie ľudí. Ak máte záujem o podrobnejšie informácie o likvidácii starého zariadenia, obráťte sa, prosím, na miestne orgány, organizácie zaoberajúce sa likvidáciou odpadov alebo obchod, v ktorom ste si produkt zakúpili.

Slovenčina/Slovene

Okoljske informacije za stranke v Evropski uniji

Evropska direktiva 2002/96/EC prepoveduje odlaganje opreme, označene s tem simbolom – na izdelku in/ali na embalaži – med običajne, nerazvrščene odpadke. Ta simbol opozarja, da je treba izdelek odvreči ločeno od preostalih gospodinjskih odpadkov. Vaša odgovornost je, da to in preostalo električno in elektronsko opremo odnesete na posebna zbirališča, ki jih določijo državne ustanove ali lokalna uprava. S pravilnim odlaganjem in recikliranjem boste preprečili morebitne škodljive vplive na okolje in zdravje ljudi. Če želite izvedeti več o odlaganju stare opreme, se obrnite na lokalno upravo, odpad ali trgovino, kjer ste izdelek kupili.

Suomi/Finnish

Ympäristöä koskevia tietoja EU-alueen asiakkaille

EU-direktiivi 2002/96/EY edellyttää, että jos laitteistossa on tämä symboli itse tuotteessa ja/tai sen pakkauksessa, laitteistoa ei saa hävittää lajittelemattoman yhdyskuntajätteen mukana. Symboli merkitsee sitä, että tämä tuote on hävitettävä erillään tavallisesta kotitalousjätteestä. Sinun vastuullasi on hävittää tämä elektroniikkatuote ja muut vastaavat elektroniikkatuotteet viemällä tuote tai tuotteet viranomaisten määräämään keräyspisteeseen. Laitteiston oikea hävittäminen estää mahdolliset kielteiset vaikutukset ympäristöön ja ihmisten terveyteen. Lisätietoja vanhan laitteiston oikeasta hävitystavasta saa paikallisilta viranomaisilta, jätteenhävityspalvelusta tai siitä myymälästä, josta ostit tuotteen.

Svenska/Swedish

Miljöinformation för kunder i Europeiska unionen

Det europeiska direktivet 2002/96/EC kräver att utrustning med denna symbol på produkten och/eller förpackningen inte får kastas med osorterat kommunalt avfall Symbolen visar att denna produkt bör kastas efter att den avskiljts från vanligt hushållsavfall. Det faller på ditt ansvar att kasta denna och annan elektrisk och elektronisk utrustning på fastställda insamlingsplatser utsedda av regeringen eller lokala myndigheter. Korrekt kassering och återvinning skyddar mot eventuella negativa konsekvenser för miljön och personhälsa. För mer detaljerad information om kassering av din gamla utrustning kontaktar du dina lokala myndigheter, avfallshanteringen eller butiken där du köpte produkten.

For more information, visit www.linksys.com.

Appendix H: Contact Information

Internet Service Provider (ISP)

For support, contact your ISP.

Linksys

Visit Linksys online for information on the latest products and updates to your existing products at:
http://www.linksys.com/international