

*Instant Broadband® Series*

# Cable Gateway

**Modem / Router / USB / Home PNA /  
4-Port Switch / Wireless-Ready**



Use this guide to install the following product:

**BEFCMUH4**

User Guide

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#### FCC PART 15 CLASS B STATEMENT

In compliance with the Federal Communications Commission (FCC), the following FCC Part 15 Regulations are provided regarding the installation and operation of the Linksys BEFCMUH4 Cable Gateway.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

UG-BEFCMUH4-rg-121302NC-BW

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

#### 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 products (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

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# Chapter 1: Introduction

## The Linksys Cable Gateway

Thank you for choosing the Instant Broadband™ Cable Gateway. This Gateway allows you to set up a network with your PCs and share your Internet connection.

The Gateway does this by connecting to your Cable line, and using the Gateway's Ethernet ports to connect your PCs; it's like each PC is connected directly to the Internet. This way, you have an Ethernet network where you have several PCs utilizing one Internet connection simultaneously. Plus, if you add a Linksys wireless PC Card, it can be used as an Access Point and the Gateway can bridge your Ethernet network with your wireless PCs.

The PCs that you connect to the Gateway, when properly configured, create a LAN, or Local Area Network. They are connected with an Ethernet cable plugged into your computer's Ethernet adapter at one end and into one of the Gateway's LAN ports (numbered from one to four) at the other end. The term "Ethernet" is used to refer to your network accessories, such as cables and adapters, because Ethernet refers to the type of network that you are setting up. Ethernet refers to the accessories that transfer computer data from 10Mbps to 100Mbps (speeds used by network devices.)

The Gateway allows you to share your Cable connection using a built-in Cable modem, and can plug directly into your Cable-enabled wall jack (Cable service line). The PCs that are connected to the Gateway share this connection.

## Features

- Prevents DoS (Denial of Service) Attacks
- E-mail and Web-based Logging of Security Events
- MAC Address Filtering, Port Forwarding, DMZ Support
- Configurable through Your Networked PC's Web Browser
- Supports VPN Pass-Through for IPSec, PPTP, and L2TP Protocols
- Internal 4-Port Switch Dramatically Speeds Up Your Network
- DHCP Server Capability to Assign IP Addresses Automatically
- Wireless Capabilities Available with Use of Optional WPC11 (sold separately)
  - Supports a High Data Rate of up to 11Mbps for up to 28 Simultaneous Wireless Connections
  - Capable of 64 and 128-Bit WEP Encryption

## An Introduction to LANs and WANs

Simply put, a **router** is a network device that connects two networks together.

The Cable Gateway has a built-in router that connects your **Local Area Network (LAN)**, which is the group of PCs in your home or office, to the **Wide Area Network (WAN)**, which is the Internet. The Cable Gateway processes and regulates the data that travels between these two networks.

Think of the Cable Gateway as a network device with two sides: the first side is made up of your private **Local Area Network (LAN)** of PCs. The other, public side, is the Internet, or the **Wide Area Network (WAN)**, outside of your home or office.

The Cable Gateway's firewall protects your network of PCs so users on the public, Internet side cannot "see" your PCs. This is how your local network, remains private. The Cable Gateway protects your network by inspecting the first packet coming in through the WAN port before delivery to the final destination in the local network. The Cable Gateway inspects Internet port services like the web server, ftp server, or other Internet applications, and, if allowed, will forward the packet to the appropriate PC on the LAN side.

## IP Addresses

### What's an IP Address?

**IP** stands for Internet Protocol. Every device on an IP-based network, including PCs, print servers, and routers, requires an **IP address** to identify its "location," or address, on the network. This applies to both the WAN and LAN connections. There are two ways of assigning an IP address to your network devices.

### Static IP Addresses

A **static IP address** is a fixed IP address that you assign manually to a PC 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 are commonly used with network devices such as server PCs or print servers.

### Dynamic IP Addresses

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

### DHCP (Dynamic Host Configuration Protocol) Servers

DHCP frees you from having to assign IP addresses manually every time a new user is added to your network. PCs and other network devices using dynamic IP addressing are assigned a new IP address by a **DHCP server**. The PC or network device obtaining an IP address is called the **DHCP client**. By default, the Cable Gateway's WAN setting is DHCP client.

A DHCP server can either be a designated PC on the network or another network device, such as the Cable Gateway. By default, the Cable Gateway acts as a DHCP server for your local network. If you already have a DHCP server running on your network, you *must* disable that DHCP server or the Cable Gateway's DHCP's feature. If you run more than one DHCP server on your network, you will experience network errors, such as conflicting IP addresses.



**Note:** Even if you assign a static IP address to a PC, other PCs can still use DHCP's dynamic IP addressing, as long as the static IP address is not within the DHCP range of the LAN IP Address.

If the Cable Gateway's DHCP feature fails to provide a dynamic IP address, refer to "Appendix A: Troubleshooting."



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

Since the Cable Gateway has firewall security, the only IP address on your network that can be seen from the Internet is the Cable Gateway's WAN IP address.

## Network Setup Overview

This user guide covers the basic steps for setting up a network with the Cable Gateway. After going through the Chapter 2: Getting to Know the Cable Gateway, proceed through the following chapters:

- **Chapter 3: Connecting the Cable Gateway**  
This chapter instructs you on how to connect the coaxial Cable line to the Cable Gateway and connect the PC(s) to the Cable Gateway.
- **Chapter 4: Configuring the PCs**  
This chapter instructs you on how to configure your PC(s) for a DHCP connection, if the network settings are not already set to DHCP.
- **Chapter 5: Using the Cable Gateway's Web-based Utility**  
This chapter explains how to configure the Cable Gateway for wireless networking using your web browser and the Cable Gateway's web-based utility.

When you're finished with the basic steps, you are ready to connect to the Internet through your new network. An example of such a network is shown in Figure 1-1.



Figure 1-1

## Chapter 2: Getting to Know the Cable Gateway

### The Cable Gateway's Back Panel Ports

The Cable Gateway's ports are located on the back panel of the Cable Gateway, as shown in Figure 2-1.



Figure 2-1

- |                              |  |
|------------------------------|--|
| <b>On/Off Switch</b>         | This switch is used for turning the Cable Gateway on and off.  |
| <b>Power</b>                 | The Power port is where you will connect the power adapter.  |
| <b>Reset</b>                 | Press this button to restore the Cable Gateway to its factory default settings.  |
| <b>Home PNA</b>              | This is where you can connect your cable for Home PNA.   |
| <b>USB</b>                   | This is where you can use a USB cable to connect a PC or other network device to the Cable Gateway.  |
| <b>Ports 1-4</b>             | These four ports are used to connect network devices, such as PCs, print servers, and remote hard drives to your local area network (LAN). |
| <b>Cable</b>                 | The Cable port is where you will connect your coaxial Cable line.  |
| <b>Wireless PC Card Slot</b> | This is where you can connect the optional wireless PC card (model number WPC11, not included) for wireless features.                      |

## The Reset Button

Briefly pressing the Reset Button, along with rebooting the Cable Gateway, will refresh the Cable Gateway's connections. If the Cable Gateway locks up, simply press the Reset Button or power it down for three to five seconds.

Pressing the Reset Button and holding it in for a few seconds will clear all of the Cable Gateway's data and restore the factory defaults. This should be done only if you are experiencing networking problems and have exhausted all of the other troubleshooting options. By resetting the Cable Gateway, you run the risk of creating conflicts between your PCs' actual IP Addresses and what the Cable Gateway thinks the IP Addresses of the PCs should be. You may be forced to reboot each network PC.

## Rebooting the Cable Gateway

You should only reboot the Cable Gateway after all other troubleshooting methods have been exhausted but before calling Linksys Technical Support. There are three ways to reboot the Cable Gateway:

- 1) Briefly press the Reset Button.
- 2) Turn the Cable Gateway's power off for a few seconds and power it back on again.
- 3) Unplug the Cable Gateway's power adapter and plug it back in again.

Rebooting the Cable Gateway may cause conflicts with IP Addresses.

## The Cable Gateway's Front Panel LEDs

<b>Power</b>	Green. The Power LED is solid when the Cable Gateway is powered on.
<b>Diag</b>	Red. If the Diag LED is solid or flashes after the startup process, the Cable Gateway may be malfunctioning. See "Appendix A: Troubleshooting" if you encounter this problem.
<b>Link/Act USB</b>	Green. This LED is solid when a PC is connected to the Cable Gateway via USB, and drivers are installed.
<b>Link/Act HPNA</b>	Green. This LED is solid when the Cable Gateway is connected to another HPNA device or an HPNA network.
<b>Link/Act WLAN</b>	Green. This LED is solid when a wireless PC Card (model number WPC11, not included) is installed and functioning in the Cable Gateway. The LED flashes during wireless activity.



Figure 2-2

<b>Link/Act</b>	Green. The Link/Act LED serves two purposes. If the LED is solid, the Cable Gateway is successfully connected to a device through the corresponding port (1, 2, 3, or 4). If the LED is flashing, the Cable Gateway is actively sending or receiving data over that port.
<b>Full/Col</b>	Green. The Full/Col LED serves two purposes. If this LED is solid, the connection made through the corresponding port (1, 2, 3 or 4) is running in Full Duplex mode, otherwise it is operating in Half Duplex mode. If the LED flashes, the connection is experiencing collisions. Occasional collisions are normal.
<b>100</b>	Green. This LED is solid when a successful 100Mbps connection is made through the corresponding port (1, 2, 3 or 4). If this LED does not light up, then the connection speed on that port is 10Mbps.
<b>Cable Modem - Cable</b>	Green. This LED will go through a series of flashes as the Cable Gateway goes through its startup and registration process. It will remain solid when registration is complete and the Cable Gateway is operational.
<b>Cable Modem - Receive</b>	Green. This LED flashes when data is being received through the cable Gateway interface.
<b>Cable Modem - Send</b>	Green. This LED flashes when data is being transmitted through the Cable Gateway Interface.

Proceed to "Chapter 3: Connecting the Cable Gateway?"

## The USB Icon

The USB icon, shown in Figure 2-3, marks a USB port on a PC or device.



Figure 2-3

## USB Cabling

The Cable Gateway comes with one USB cable. Connect one end of the USB cable to the Cable Gateway. Connect the other end to a computer's USB port.

The picture shows two USB ports as they might appear on your computer. Note the two USB icons marking the ports.



Figure 5-2

## HPNA Cabling

Due to the limitations of standard telephone cables, HPNA devices require that HPNA cabling does not exceed a total length of 150 meters (500 feet). In other words, if you have more than 500 feet of telephone wires connecting your HPNA device to your network, you will be more likely to experience data loss.

Any standard telephone cable can be used to connect the Cable Gateway to your HPNA network.

# Chapter 3: Connecting the Cable Gateway

You will connect the Cable Gateway to your Cable service's coaxial cable line and to the computers in your home or business.

First, make sure that all the devices that you'll be working with are powered down, including your PCs and the Cable Gateway.

1. Connect the coaxial cable that is provided by your cable service provider to the Cable port that is on the back of the Cable Gateway, as shown in Figure 3-1.



Figure 3-1

2. Connect one end of an Ethernet cable to your PC's Ethernet adapter, as shown in Figure 3-2.

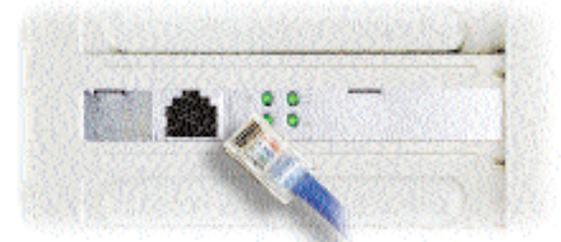


Figure 3-2

Note: If your PC's Ethernet adapter is not set up, please refer to the Ethernet adapter's user guide for more information.

3. Connect the other end of the cable to one of the LAN ports on the back of the Cable Gateway, as shown in Figure 3-3.

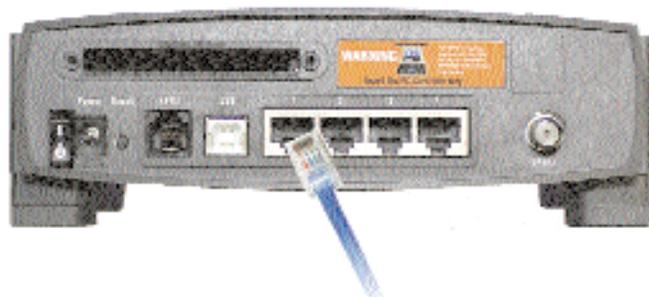


Figure 3-3

Make sure there is an Ethernet cable connected from the Cable Gateway to every PC that you want on your local network. If you are connecting more than four PCs to the Cable Gateway via the Ethernet, you will also need to connect a hub or switch to the Cable Gateway.

4. Connect the power adapter to the Cable Gateway, as shown in Figure 3-4. Plug the other end of the power adapter into the electrical outlet, preferably a surge protector.



Figure 3-4



**Note:** If you have a Linksys wireless PC Card, be sure to fully insert it into the PC Card slot on the back of the Cable Gateway before turning on the power. You must have this card inserted in order to use the Cable Gateway's wireless features.

5. Turn on the Cable Gateway. Then, turn on the first PC that you want to use to configure the Cable Gateway.

Go to “Chapter 4: Configuring the PCs.”

## Chapter 4: Configuring the PCs

### Overview

The instructions in this chapter will help you configure each of your computers to be able to communicate with the Cable Gateway.

To do this, you need to configure your PC's network settings to obtain an IP (or TCP/IP) address automatically (called DHCP). Computers use IP addresses to communicate with each other across a local network or the Internet.

You will need to know which operating system your computer is running, such as Windows 95, 98, Me, 2000, or XP. One way to find out which operating system you have is by clicking the **Start** button and selecting the **Settings** option. Then, open the **Control Panel**, and double-click the **System** icon. The screen that appears should display your operating system.

You may need to configure each computer you are connecting to the Cable Gateway.

The next few pages show you, step by step, how to configure your network settings based on the type of Windows operating system you are using.

If your operating system is not referenced here, refer to your operating system's documentation.

Once you've configured your computers, continue to “Chapter 5: Using the Cable Gateway's Web-based Utility.”

### Windows 95, 98, and Me

1. Go to the Network screen. Do this by clicking the **Start** button, selecting **Settings** and opening the **Control Panel**. From there, double-click the **Network** icon.

- On the Configuration tab, select the **TCP/IP** line for the applicable Ethernet adapter, as shown in Figure 4-1. Do not choose a TCP/IP entry whose name mentions DUN, PPPoE, VPN, or AOL. If the word **TCP/IP** appears by itself, select that line. (If there is no TCP/IP line listed, refer to “Appendix C: Installing the TCP/IP Protocol” or your Ethernet adapter’s documentation to install TCP/IP now.) Click the **Properties** button.

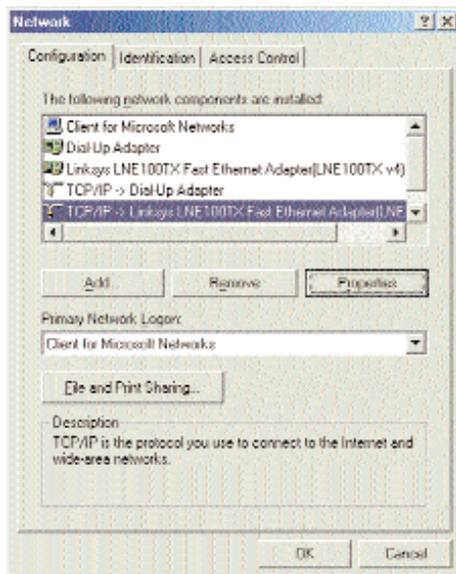


Figure 4-1

- Click the **IP Address** tab. Select **Obtain an IP address automatically**, as shown in Figure 4-2.

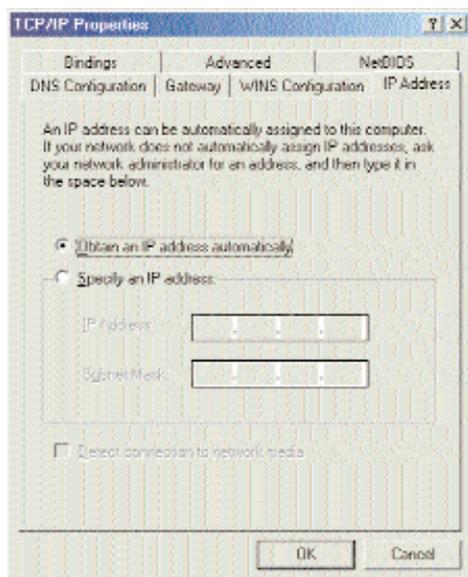


Figure 4-2

- Now click the **Gateway** tab to ensure that the Installed Gateway field is left blank. Click the **OK** button.
- Click the **OK** button again. Windows may ask you for the original Windows installation disk or additional files. Supply them by pointing to the correct file location, e.g., D:\win98, D:\win9x, c:\windows\options\cabs, etc. (if “D” is the letter of your CD-ROM drive).
- Windows may ask you to restart your PC. Click the **Yes** button. If Windows does not ask you to restart, restart your computer anyway.

### Go to “Chapter 5: Using the Cable Gateway’s Web-based Utility.”

### Windows 2000

- Go to the Network screen by clicking the **Start** button. Click **Settings** and then **Control Panel**. From there, double-click the **Network and Dial-up Connections** icon.
- Select the **Local Area Connection** icon for the applicable Ethernet adapter (usually it is the first Local Area Connection listed). Do not choose a TCP/IP entry whose name mentions DUN, PPPoE, VPN, or AOL. Double-click the **Local Area Connection**.
- The Local Area Connection Status screen will appear, as shown in Figure 4-3. Click the **Properties** button.

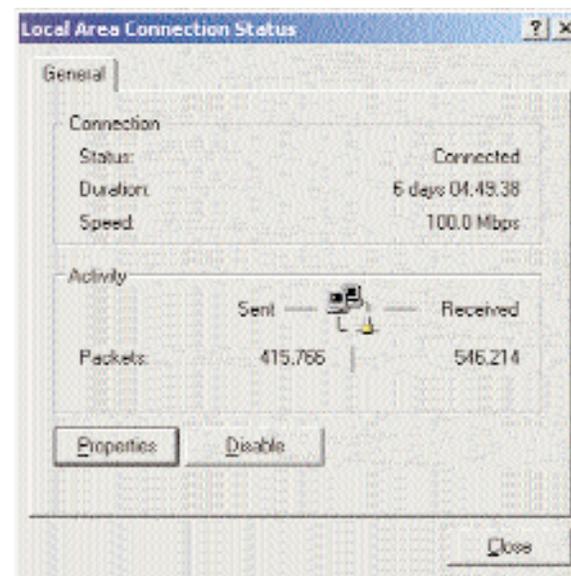
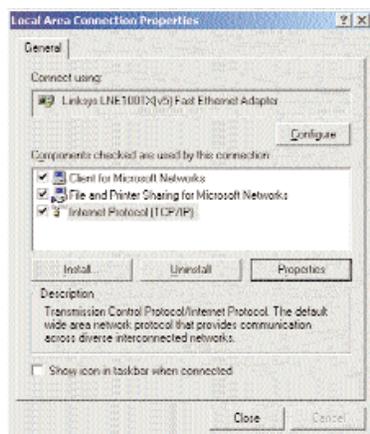


Figure 4-3

4. Select **Internet Protocol (TCP/IP)**, as shown in Figure 4-4, and click the **Properties** button.



5. Select **Obtain**

Figure 4-4

**an IP address automatically**, as shown in Figure 4-5. Once the new window appears, click the **OK** button. Click the **OK** button again to complete the PC configuration.

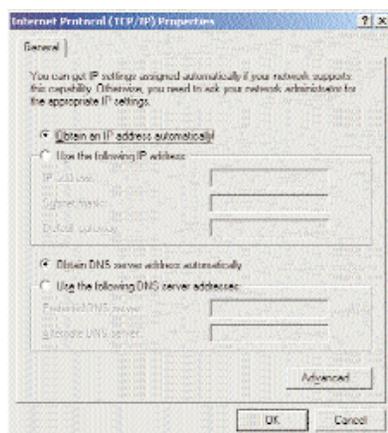


Figure 4-5

6. Restart your computer.

Go to “Chapter 5: Using the Cable Gateway’s Web-based Utility.”

## 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. Open the Network screen. To do this, click the **Start** button and select the **Control Panel**. From there, click the **Network and Internet Connections** icon, followed by the **Network Connections** icon.
2. Select the **Local Area Connection** icon for the applicable Ethernet adapter (usually it is the first Local Area Connection listed). Double-click the **Local Area Connection** and click the **Properties** button.

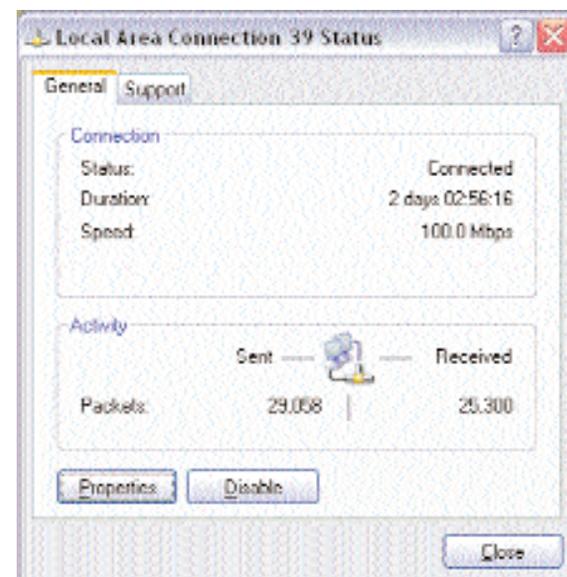


Figure 4-6

3. The Local Area Connection Status screen will appear. Click the **Properties** button.

4. Select **Internet Protocol (TCP/IP)**, and click the **Properties** button.

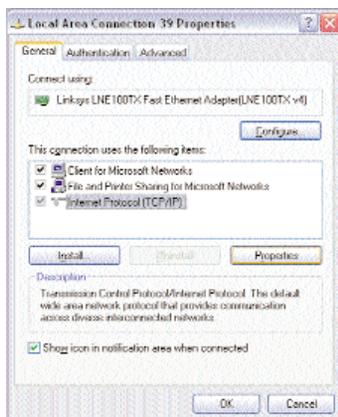


Figure 4-7

5. Select **Obtain an IP address automatically**. Once the new window appears, click the **OK** button. Click the **OK** button again (or the **Close** button if any settings were changed) to complete the PC configuration.

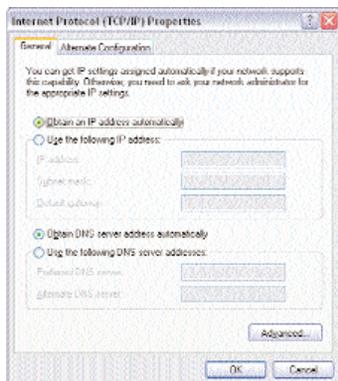


Figure 4-8

6. Restart your computer.

Go to “Chapter 5: Using the Cable Gateway’s Web-based Utility”.

## Chapter 5: Using the Cable Gateway’s Web-based Utility

### Accessing the Web-Based Utility

For your convenience, an administrative utility has been programmed into the Cable Gateway. From this browser-based utility, you can view the Cable Gateway’s current status and, when wireless functions are enabled, administer the wireless settings. This chapter explains all of the functions in this utility.

1. Open your web browser, and enter **192.168.0.1** into the web browser’s *Address* field, as shown in Figure 5-1. Then, press the **Enter** key.

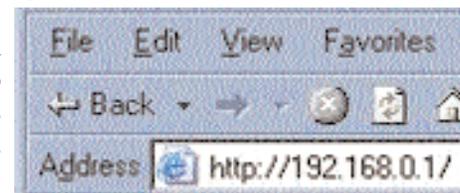


Figure 5-1

2. An *Enter Network Password* window, similar to that shown in Figure 5-2, appears. Leave the *User Name* field empty, and enter **admin** (the default password) in lowercase letters in the Password field. Then, click the **OK** button. Don’t check the box next to **Save this password in your password list**, because you should change the password for better network security.



Figure 5-2

The *Utility* screen will be displayed next in your browser. Located on the left of your screen, you have five choices to navigate through the utility: Basic, Advanced, Firewall, Status, and Wireless. When you click on any of these, you will have a choice of tabs at the top of the screen. When you click **Basic**, you have a choice of Setup and DHCP. When you click **Advanced**, you have a choice of Options, IP Filtering, MAC Filtering, Port Filtering, Forwarding, Port Triggers, DMZ Host. When you click **Firewall**, you have a choice of Web Filter and Event Log. When you click **Status**, you have a choice of Software, Connection, Security, and Diagnostics. When you click **Wireless**, you have a choice of Basic, Privacy, and Advanced.

## The Basic Tabs

### The Setup Tab

This screen allows you to change the setup of the Cable Gateway.

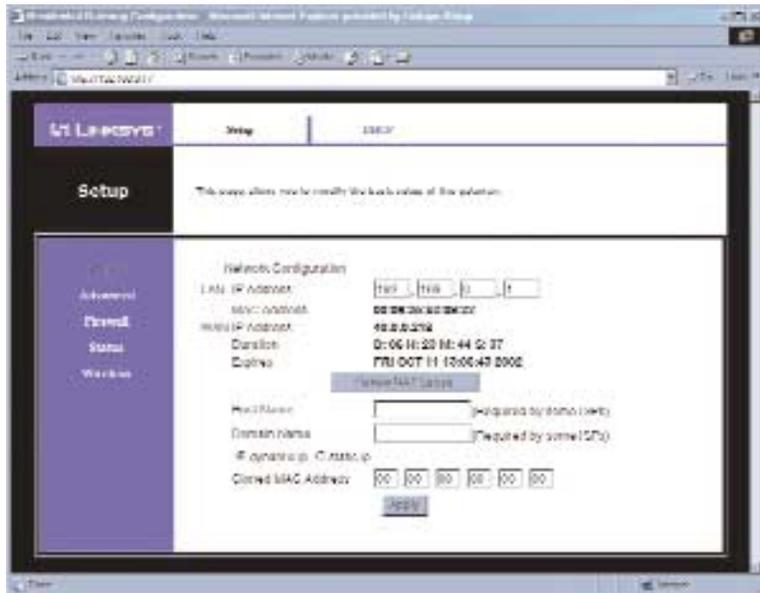


Figure 5-3

#### Network Configuration

##### LAN IP Address

The values for the Cable Gateway's IP address are shown here. The default value is **192.168.0.1**.

##### MAC Address

This is the Cable Gateway's MAC address. This is the address that will be registered with your Cable Provider to enable Internet access.

##### WAN IP Address

The values for the Cable Gateway's IP address that are seen by external users on the Internet. This IP address is assigned by your Cable Provider.

## Cable Gateway

### Duration

The length of the DHCP lease for the IP assigned by your Cable Provider.

### Expires

The date and time that the DHCP lease expires. After this time, your Cable Provider may assign a different IP address to your Cable Gateway.

### Renew NAT Lease

Click the **Renew NAT Lease** button to manually renew the DHCP lease of the IP address assigned by the Cable Provider.

### Host Name

If your ISP requires a host name, enter it in this field.

### Domain Name

If your ISP requires a domain name, enter it in this field.

### Dynamic IP/Static IP

Click the button next to the type of IP Address that your ISP uses.

### Cloned MAC Address

The Router's **MAC address** is a 12-digit code assigned to a unique piece of hardware for identification, like a social security number. Enter the 12 digits of your adapter's MAC address in the fields. This clones your network adapter's MAC address onto the Router, so you do NOT have to call your ISP to change the registered MAC address to the Router's MAC address.

When finished making your changes on this tab, click the **Apply** button

Click the **Apply** button to save any changes.

## The DHCP Tab

This screen allows you to configure the DHCP server.

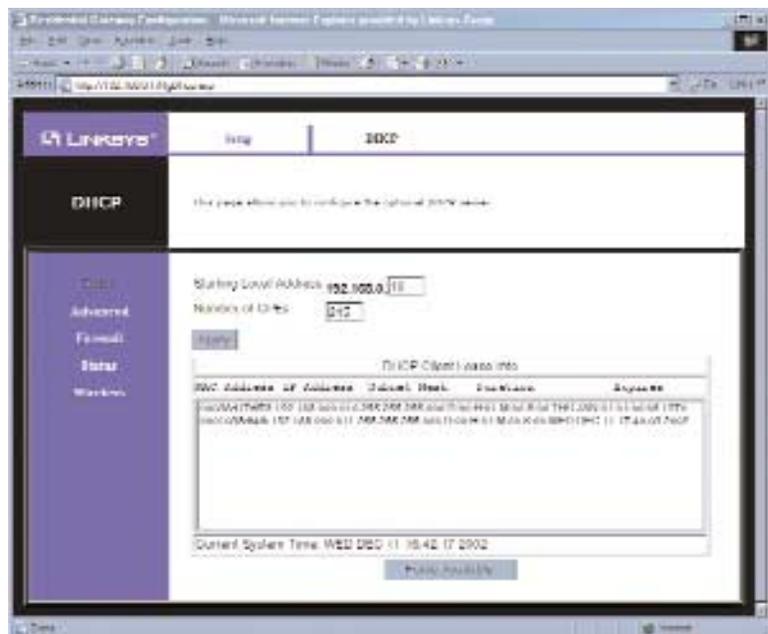


Figure 5-4

<b>Number of CPEs</b>	Enter the maximum number of PCs that you want the DHCP server to assign IP addresses to. This number cannot be greater than 253.
<b>Starting Local Address</b>	Enter a value for the DHCP server to start with when issuing IP Addresses.
<b>DHCP Client Lease Info</b>	The MAC Address, IP Address, Subnet Mask, Duration, Expiration, and the Current System Time will be displayed.
<b>Force Available</b>	When you have a computer with a DHCP lease that still has time on the lease, but you want to replace it with another computer, you will have to cancel the lease. To do that, select the computer in the <i>DHCP Client Lease Info</i> table that you want to replace, then click the <b>Force Available</b> button. The selected computer's IP address will then be available for another computer to connect to the network.

Click the **Apply** button to apply any changes to the settings.

## The Advanced Tabs

### Options Tab

This screen allows you to choose advanced features for your Gateway.

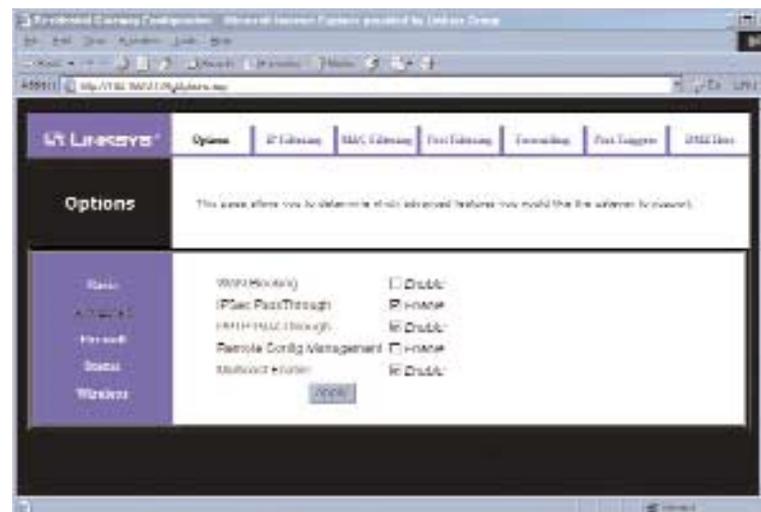


Figure 5-5

### WAN Blocking

This feature is designed to protect users from Internet hackers and other attacks. By enabling the WAN Blocking, you can prevent your network from being pinged, or detected, by other Internet users. The feature also reinforces your network security by hiding your network ports.

### IPSec PassThrough

This feature lets you use *IPSec PassThrough*. To use this feature, click **Enable**.

### PPTP PassThrough

Point-to-Point Tunneling Protocol (PPTP) is the method used to enable VPN (Virtual Private Network) sessions. Click **Enable** to use this feature.

**Remote Config Management**

This feature allows you to manage the Cable Gateway from a remote location, via the Internet. Click **Enable**. To remotely manage your Cable Gateway, enter `http://<WAN IP Address>:8080` into the browser of any PC on the Internet. Press the Enter key.



**Note:** Linksys recommends that you change the password for your Cable Gateway if you enable Remote Config Management.

**Multicast Enable**

This feature allows for multiple transmissions to specific recipients at the same time. Select **Enable** to support the feature.

**IP Filtering Tab**

This screen allows you to configure IP address filters for your Gateway.

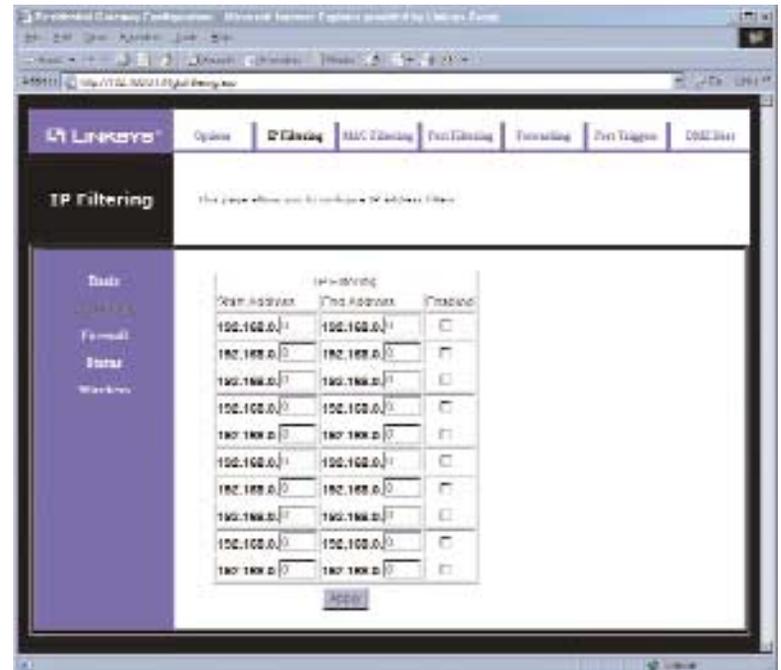


Figure 5-3

To filter an IP address, enter the IP addresses into the *Start Address* and *End Address* fields. Click the **Enabled** button to enable the changes.

Click the **Apply** button to apply any changes to the settings.

## MAC Filtering Tab

This screen allows you to configure MAC Address filters.

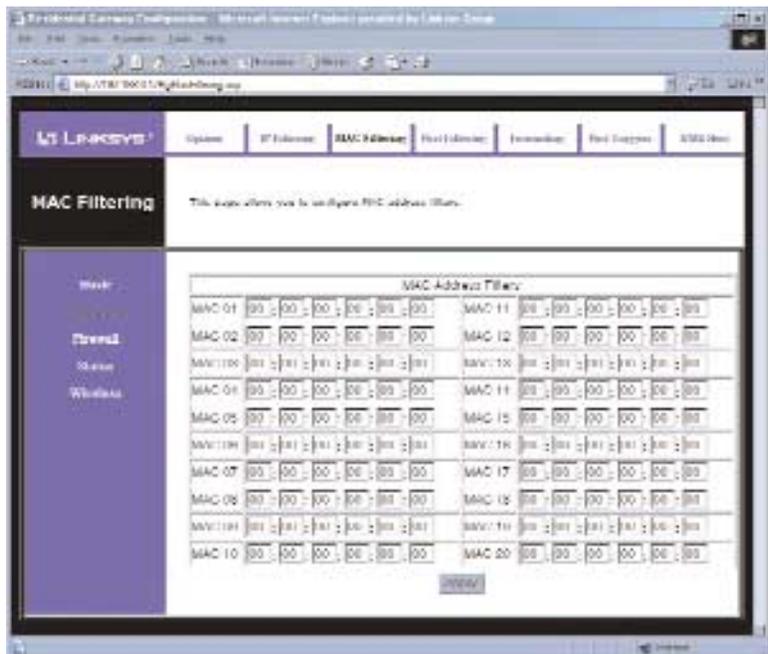


Figure 5-3

Enter the **MAC Addresses** that you want to filter into the *MAC Address Filters* fields.

Click the **Apply** button to apply any changes to the settings.

## Port Filtering Tab

This screen allows you to configure TCP/UDP port filters. This feature allows you to filter users by network port numbers

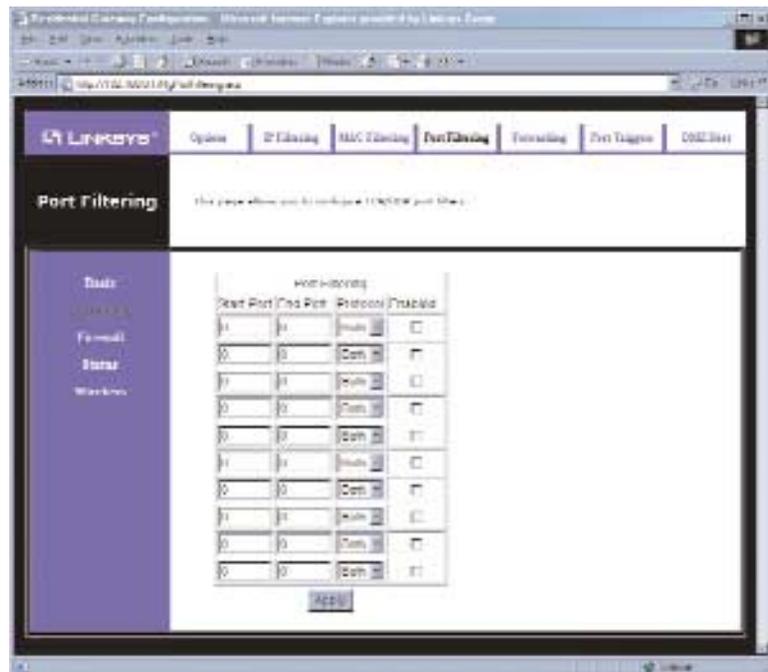


Figure 5-3

To filter users by network port numbers, enter a range of network ports into the *Start Port* and *End Port* fields. Select the protocol for each port number you want to filter, **TCP**, **UDP**, or **Both**. Click the **Enabled** button to enable the changes. Users connected to the Gateway will no longer be able to access any port number listed there.

Click the **Apply** button to apply any changes to the settings.

## Forwarding Tab

This screen allows you configure port forwarding for local IP Addresses.

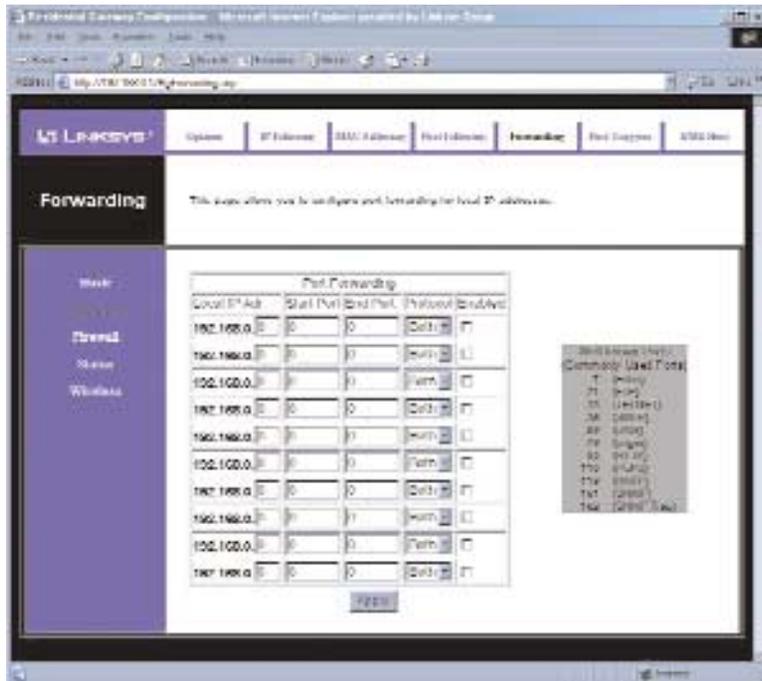


Figure 5-3

Port Forwarding 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 Cable Gateway will forward those requests to the appropriate PC.

## Cable Gateway

You may use this feature to establish a web server or FTP server for Internet users to access. Be sure that you enter a valid IP address; you may need to establish a static IP address with your ISP in order to properly run an Internet server. For added security, Internet users will be able to communicate with the server, but they will not actually be connected. The packets will be forwarded through the Cable Gateway instead. If you need to forward all ports to one PC, see the DMZ Host Tab.

To add a server using Forwarding:

1. Enter the **IP address** of the server that you want the Internet users to be able to access into the *Local IP Addr* field. To find the IP address, go to “Appendix D: Finding the MAC Address and IP Address for Your Ethernet Adapter.”
2. Enter the **range** of the external port(s) used by the server or Internet application in the Start Port and End Port columns. Check with the Internet application software documentation for more information.
3. Select the protocol for each port number you want to forward, **TCP**, **UDP**, or **Both**.
4. Click the **Enabled** button to enable the changes.
5. Configure as many entries as needed—the Cable Gateway supports up to ten ranges of ports.

To delete a server entry, enter **0** in the Port and Local IP Address fields.

Click the **Apply** button to apply any changes.

## Port Triggers Tab

This screen allows you configure TCP/UDP port triggers. Port Triggering is a method that allows multiple computers on your network to access a server, such as a game server. A trigger request is made to the Router, which opens an incoming port for that computer.

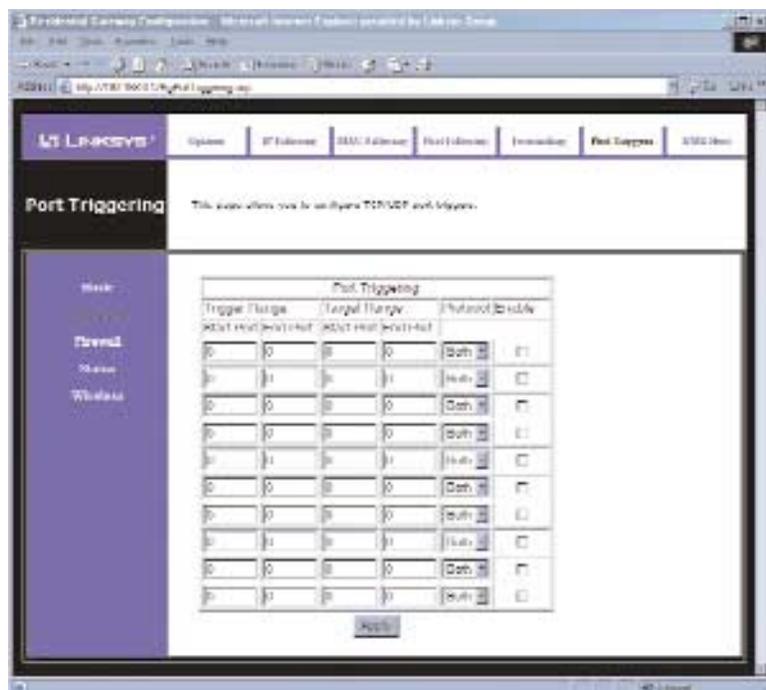


Figure 5-3

To use Port Triggering and allow a computer to access a server:

1. Enter the **Trigger Range** and **Target Range** of the external port(s) used by the server or Internet application in the Start Port and End Port columns. Check with the Internet application software documentation for more information.
2. Select the protocol for each port you want to forward, **TCP**, **UDP**, or **Both**.
3. Click the **Enable** button to enable the changes.

To delete a server entry, enter **0** in the *Trigger Range* and *Target Range* fields.

Click the **Apply** button to apply any changes.

## DMZ Host Tab

This screen allows you to configure an address that is visible to the WAN. The DMZ Host setting allows one local computer to be exposed to the Internet for the use of special-purpose services such as Internet gaming or video conferencing.

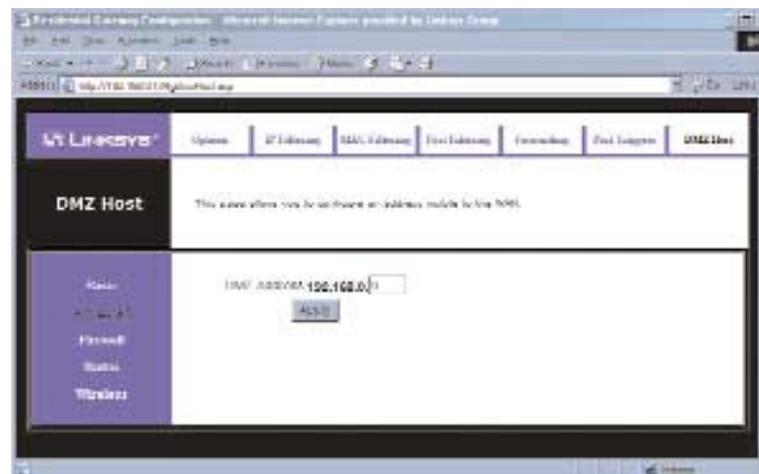


Figure 5-3

To expose one computer, enter the computer's IP address into the field and click the **Apply** button. To Disable DMZ, enter **0** and click the **Apply** button.

## The Firewall Tabs

### The Web Filter Tab

This page allows you to configure web page filtering.

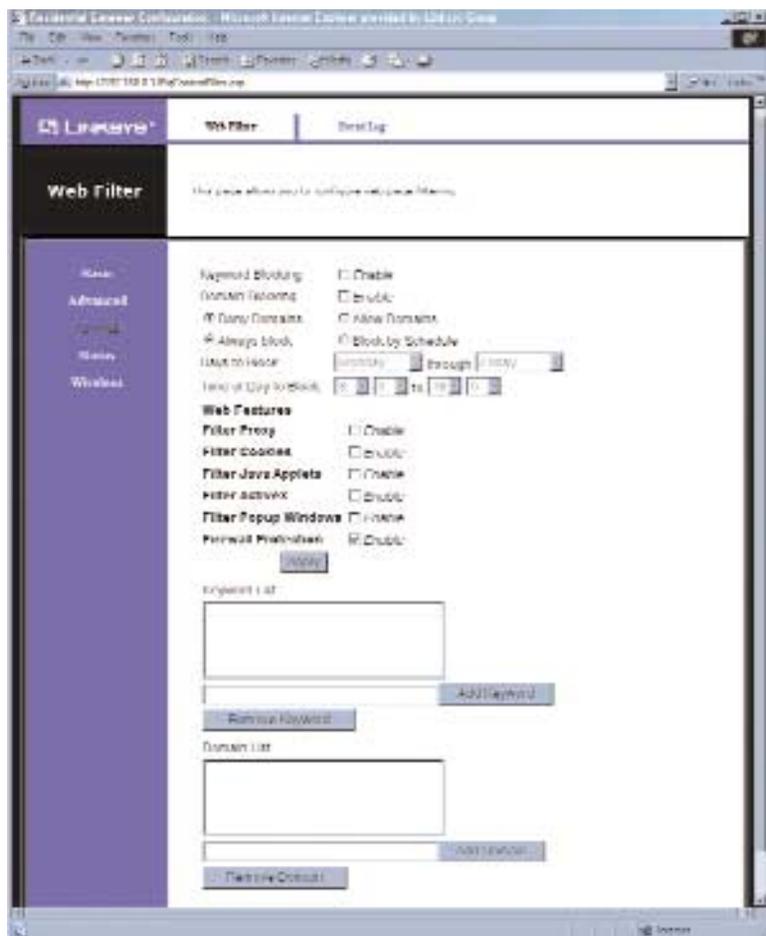


Figure 5-3

#### Keyword Blocking

Click **Enable** to use this feature. Then, enter the word you want to block. All websites containing that word will be blocked. Click the **Add Keyword** button after each entry. To remove a word from the list, highlight the word, then click the **Remove Keyword** button.

#### Domain Blocking

Click **Enable** to use this feature. Then, enter the website you want to block. Click the **Add Domain** button after each entry. To remove a word from the list, highlight the word, then click the **Remove Domain** button.

#### Deny Domains

Click **Deny Domains** if you want to disallow the websites in the Domain List.

#### Allow Domains

Click **Allow Domains** if you want to allow a the websites in the Domain List.

#### Always Block

Click **Always Block** to block the entries at all times.

#### Block by Schedule

Click **Block by Schedule** to block at specific times and days. Then, select the range of days from the drop-down menu for **Days to Block** and select the time from **Time of Day to Block**.

#### Days to Block

Select the range of days you want to block from the drop-down menu.

#### Time of Day to Block

Select the time of day you want to block from the drop-down menu.

#### Web Features: Filter Proxy

Click **Enable** to filter proxy.

#### Filter Cookies

Click **Enable** to filter cookies.

#### Filter Java Applets

Click **Enable** to filter Java applets.

#### Filter ActiveX

Click **Enable** to filter ActiveX.

#### Filter Popup Windows

Click **Enable** to filter popup windows.

#### Firewall Protection

Click **Enable** to use firewall protection.

Click the **Apply** button.

## The Event Log Tab

This screen provides access to the firewall event log.

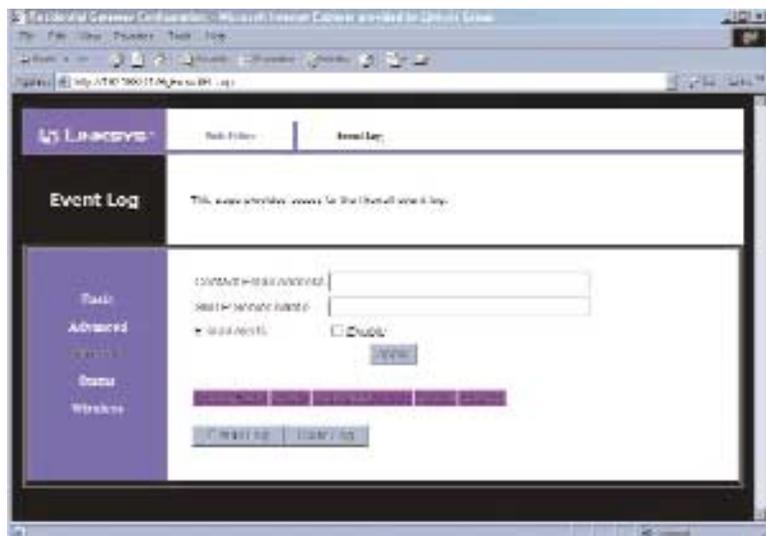


Figure 5-3

### Contact Email Address

Enter your email address into the Contact Email Address field so you can be notified when there is an occurrence.

### SMTP Server Name

Enter your server name into the SMTP Server Name field.

### Email Alerts

To enable the **Email Alerts**, click the box next to **Enable**.

### Description

A brief description is given of the occurrence.

### Count

A list is made of the amount of occurrences.

### Last Occurrence

The time and date of the last occurrence is given.

### Target

The target of the occurrence is given.

### Source

The source of the occurrence is given.

Click the **Apply** button to apply the changes. Click the **E-mail Log** button to view the log. Click the **Clear Log** button to clear the log.

## The Status Tabs

### The Software Tab

This screens shows a summary of information on the Cable Gateway, its software, and its status, as shown in Figure 5-3. There are two sections: Information and Status.

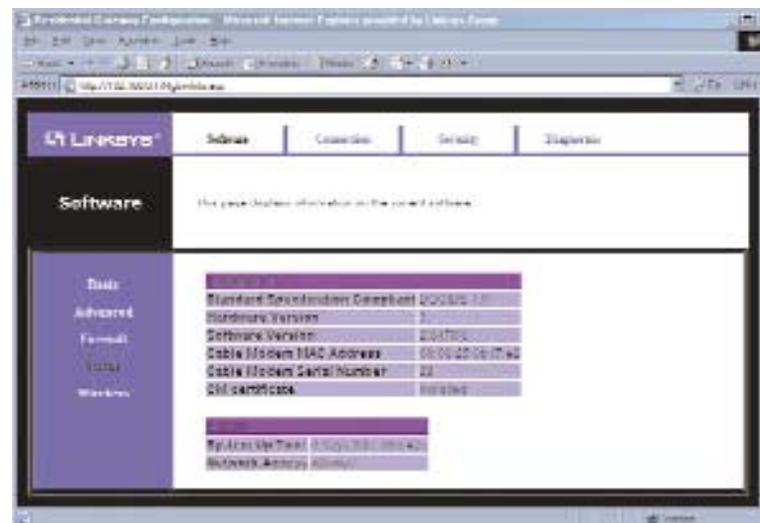


Figure 5-3

### Information

#### Standard Specification Compliant

This field identifies which version of various cable industry standards (i.e. DOCSIS) and standards version number (i.e.. Ver.1.1 ) the Cable Gateway complies to.

#### Hardware Version

This field identifies the version of this Cable Gateway's hardware.

#### Software Version

This field identifies the version of firmware running on the Cable Gateway.

- Cable Modem MAC Address** This is the Cable Gateway's MAC Address. This is the address that will be registered with your Cable provider to enable Internet access.
  
- Cable Modem Serial Number** This field identifies a unique identifying number and bar code format assigned to every Cable Gateway manufactured.
  
- CM certificate** This field identifies if the cable modem certificate is installed on the Cable Gateway.
  
- Status System Up Time** This field displays the period of time the Cable Gateway has been functioning properly.
  
- Network Access** This field identifies if the Cable Gateway is registered with your Cable provider.

### The Connection Tab

This screen shows a summary of information on the Cable Gateway's cable connection, as show in Figure 5-4.

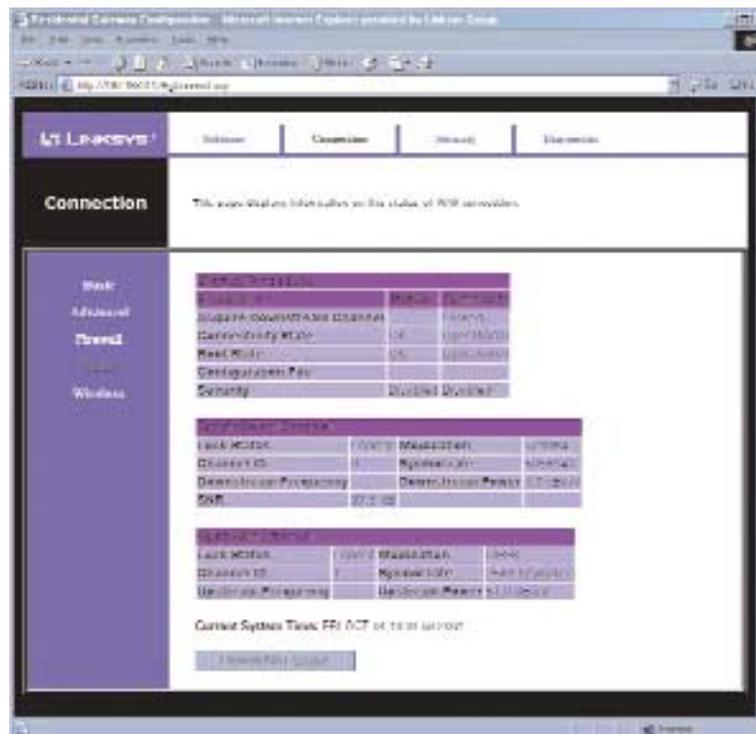
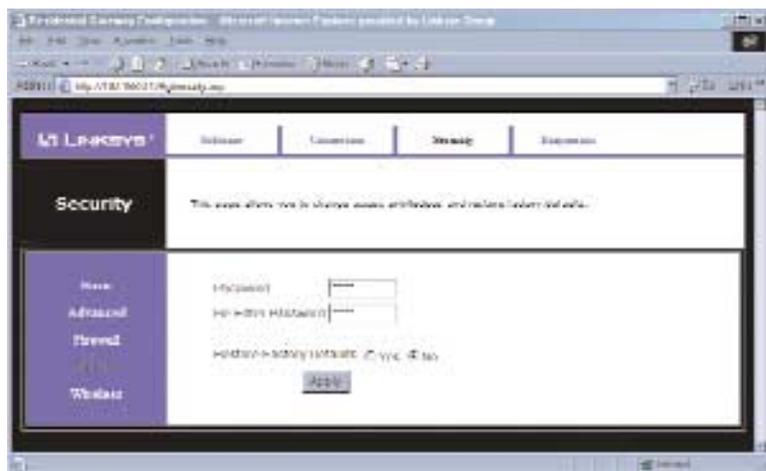


Figure 5-3

- Procedure** These statistics reflect your ISP's and the Cable Gateway's connection procedure.
  
- Downstream Channel** These statistics reflect the information coming into your network from the Internet
  
- Upstream Channel** These statistics reflect the information going from your network to the Internet.

## The Security Tab

This screen allows you to change your password for the Cable Gateway and restore the Cable Gateway's factory default settings, as shown in Figure 5-5.



### Password

To change your network administrator's password for the Cable Gateway, enter the new password into the Password field. Then, re-enter it into the Re-Enter Password field and click the **Apply** button. The Enter Network Password window (shown in Figure 5-2) will now reappear, prompting you to enter the new password. This will provide you access to the Cable Gateway with your new password.

**Restore Factory Defaults** To restore the Cable Gateway's factory defaults and remove all of your custom settings, select **Yes** beside Restore Factory Defaults and click the **Apply** button.

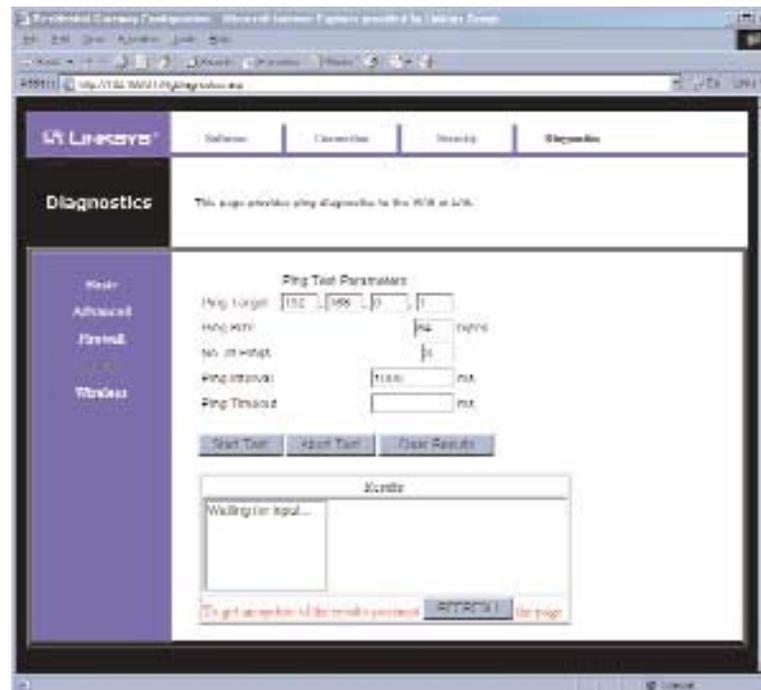
Restoring the factory defaults may affect settings applied by your Cable provider. Contact your Cable provider if you have any problems connecting after restoring the factory defaults.



**Note:** Restoring factory defaults may end the wireless connection for any of your wireless PCs.

## The Diagnostics Tab

This page provides ping diagnostics for the LAN and WAN networks.



### Ping Test Parameters

#### Ping Target

Enter the target into the fields provided.

#### Ping Size

Enter the size of the pings into the field.

<b>No. of Pings</b>	Enter the number of pings into the field.
<b>Ping Interval</b>	Enter the interval of the pings into the field.
<b>Ping Timeout</b>	Enter the timeout of the pings into the field.
<b>Start Test</b>	Click the <b>Start Test</b> button to start the ping test.
<b>Abort Test</b>	Click the <b>Abort Test</b> button to stop the ping test.
<b>Clear Results</b>	Click the <b>Clear Results</b> button to clear the entries in the fields.

Click the **Refresh** button to update the screen.

## The Wireless Tabs

In order for the Cable Gateway's wireless functions to work properly, the Linksys Instant Wireless® Network PC Card (model number WPC11) must be properly inserted into the Cable Gateway's Wireless PC Card Slot, before powering on the Cable Gateway. The wireless settings in the Cable Gateway will only work with this card.

If this card is not properly inserted into the Cable Gateway's Wireless PC Card Slot, a screen similar to that shown in Figure 5-6 appears when Wireless is clicked in the Web-Based Utility.



**Figure 5-6**

With the Linksys Instant Wireless® Network PC Card (model number WPC11) properly inserted, the first tab to appear when Wireless is clicked is the Basic tab.

## The Basic Tab

From the Basic tab, shown in Figure 5-7, you can view and set basic wireless settings for your wireless network.

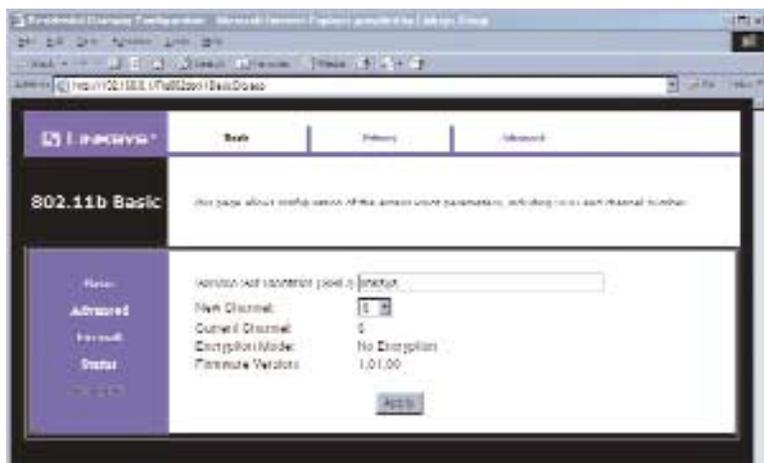


Figure 5-5

- Service Set Identifier (SSID)** The *SSID* is a unique name for your wireless network. It is case sensitive and must not exceed 32 characters. The default SSID is "linksys" but you should change this to a personal wireless network name. All wireless points in your network must use the same SSID.
- New Channel** Select the appropriate channel for your network from the list provided. All wireless points in your network must use the same channel in order to function properly.
- Current Channel** This displays the channel at which your wireless network currently broadcasts.
- Encryption Mode** This displays the type of encryption utilized for your wireless network.
- Firmware Version** This displays the firmware version for the Linksys Instant Wireless® Network PC Card (model number WPC11) inserted into the Cable Gateway's Wireless PC Card Slot.

Click the **Apply** button to apply the settings.

## The Privacy Tab

From the Privacy tab, you can enable and configure WEP encryption on your wireless network. Using WEP encryption is a good way of keeping your network secure and can be used in either 64-bit or 128-bit mode. All points in your wireless network must be use with the same type of WEP encryption with the same settings for it to work.

When the Privacy tab is first selected, before WEP encryption has not yet been enabled, you will see a screen similar to that shown in Figure 5-6.

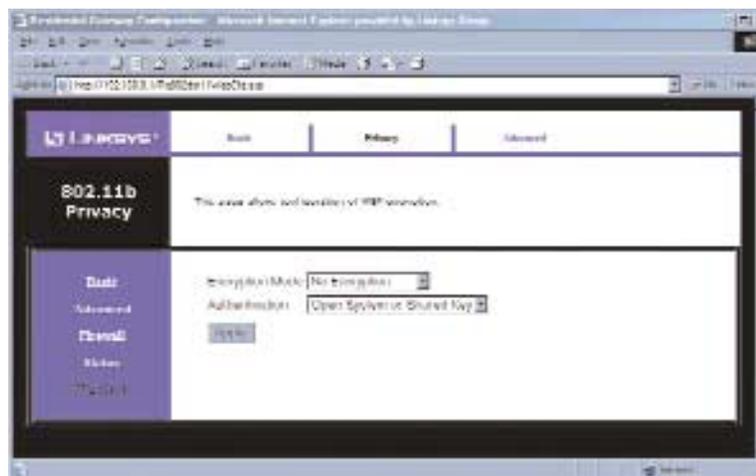


Figure 5-6

- Encryption Mode** Select the Encryption Mode, either **64-bit** or **128-bit**, for your wireless network. While 128-bit mode is slightly more secure, you may notice a drop in performance.
- Authentication** You may choose between **Open System, Shared Key, and Open System or Shared Key**. The Authentication type default is set to **Open System or Shared Key**.

Select the **Encryption Mode** and **Authentication** type you wish to use and proceed to the following sections on 64-bit or 128-bit encryption to continue.

## Using 64-Bit Encryption

Selecting 64-bit encryption will bring up a screen similar to that shown in Figure 5-7.

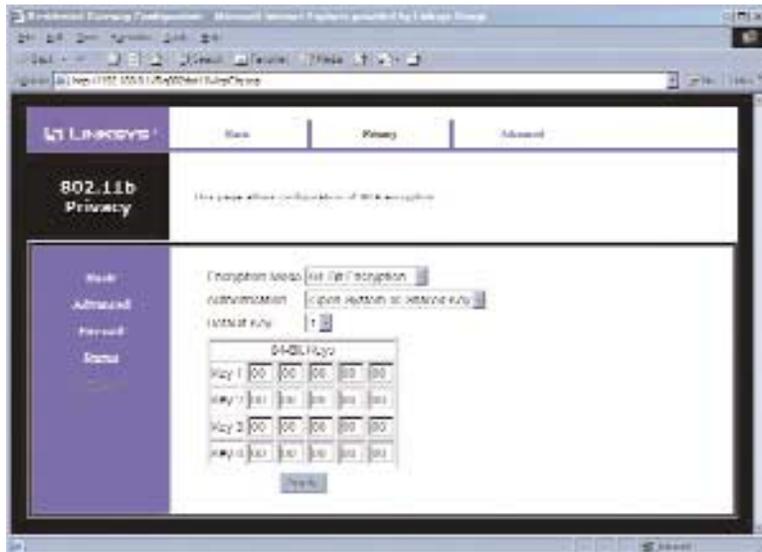


Figure 5-7

Select the *Default Key* that you will be using for your wireless network, and then enter the encryption key in the fields under the heading “64-Bit Keys” for the corresponding key number you chose. The WEP key must be composed of hexadecimal digits, which are any character between the numbers “0” through “9” and the letters from “a” through “f”.

Then, click the **Apply** button.



**Important:** All points on your wireless network must use the same WEP encryption method and the same Key for WEP to function properly.



**Important:** Some wireless products allow the use of a “passphrase” in generating a WEP key. The Cable Gateway does not, at present, allow the use of a “passphrase” and requires the WEP key to be entered manually.

Do not utilize a “passphrase” in your wireless network when using the Cable Gateway.

## Using 128-Bit Encryption

Selecting 128-bit encryption will bring up a screen similar to that shown in Figure 5-8.

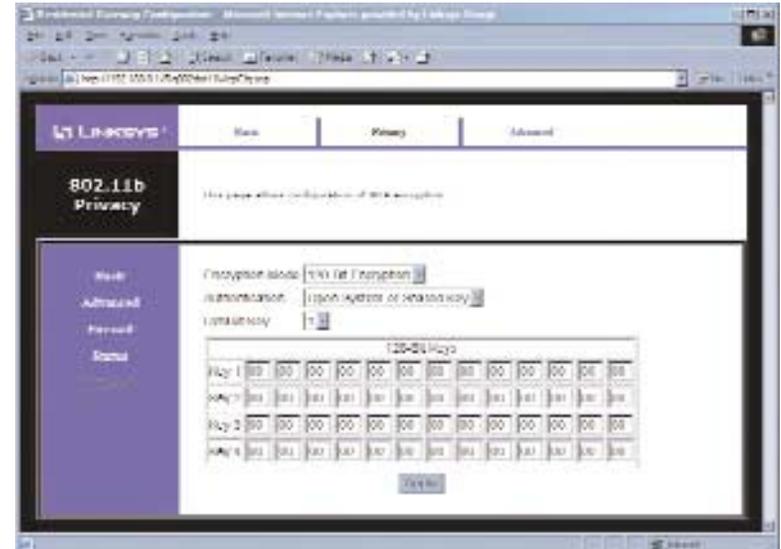


Figure 5-8

Select the *Default Key* that you will be using for your wireless network and then enter the encryption key in the fields, under the heading “128-Bit Keys”, for the corresponding key number you chose. The WEP key must be composed of hexadecimal digits, which are any character between the numbers “0” through “9” and the letters from “a” through “f”.

Then, click the **Apply** button.



**Important:** All points on your wireless network must use the same WEP encryption method and the same Key for WEP to function properly.



**Important:** Some wireless products allow the use of a “passphrase” in generating a WEP key. The Cable Gateway does not, at present, allow the use of a “passphrase” and requires the WEP key to be entered manually.

Do not utilize a “passphrase” in your wireless network when using the Cable Gateway.

## The Advanced Tab

From the Advanced tab, shown in Figure 5-9, you can configure the Cable Gateway's more advanced wireless features.

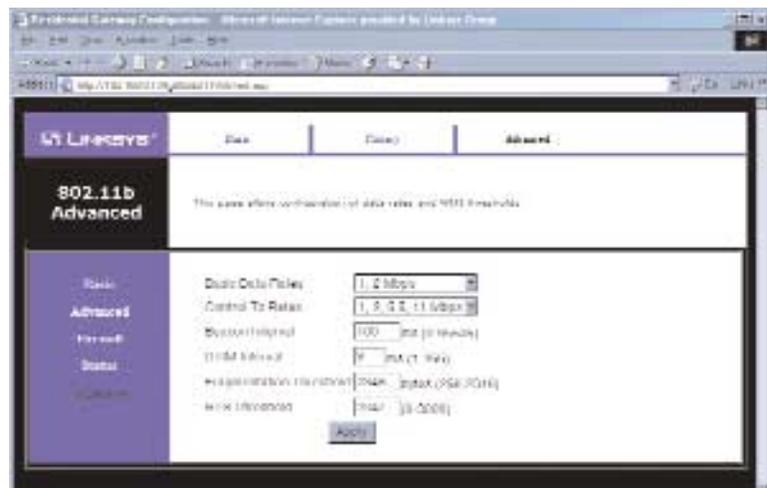


Figure 5-8

**Basic Data Rates** The basic transfer rates should be set depending on the speed of your wireless network. You must select **1, 2 Mbps** if you have older 802.11 compliant equipment on your network, such as wireless adapters that support only 1 or 2 Mbps. Faster wireless adapters can support the second choice from the drop-down menu: **1, 2, 5.5, 11 Mbps**.

**Control TX Rates** The control transfer rates should be set depending on the speed of your wireless network. You must select **1, 2 Mbps** if you have older 802.11 compliant equipment on your network, such as wireless adapters that support only 1 or 2 Mbps. Faster wireless adapters can support the second choice from the drop-down menu: **1, 2, 5.5, 11 Mbps**.

**Beacon Interval** This value indicates the frequency interval of the beacon. A beacon is a packet broadcast by the Cable Gateway to keep the network synchronized. A beacon includes the wireless LAN service area, the IP address, the Broadcast destination addresses, a time stamp, Delivery Traffic Indicator Maps, and the Traffic Indicator Message (TIM).

## DTIM Interval

This value indicates the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the Cable Gateway has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. Clients for the Cable Gateway hear the beacons and awaken to receive the broadcast and multicast messages.

**Fragmentation Threshold** This value indicates how much of the Cable Gateway's resources are devoted to recovering packet errors. The value should remain at its default setting of 2,346. If you have decreased this value and experience high packet error rates, you can increase it again, but it will likely decrease overall network performance. Only minor modifications of this value are recommended.

## RTS Threshold

This value should remain at its default setting of 2,347. Should you encounter inconsistent data flow, only minor modifications are recommended.

click the **Apply** button to save any changes.

# Appendix A: Troubleshooting

## Common Problems and Solutions

This section provides possible solutions to problems regarding the Cable Gateway's installation and operation. If your situation is described here, the problem should be solved by applying the corresponding solution. If you can't find an answer here, check the Linksys website at [www.linksys.com](http://www.linksys.com).

1. The Cable Gateway is not working.
  - Verify that the Power cord and other network cables are plugged in.
  - Check the LAN and Cable Modem - Cable LEDs on the Cable Gateway's front and verify that they are lit appropriately.
  - Check the settings on your PC.
  - Check the Cable Gateway's settings.
2. I can't connect to the Cable Gateway.
  - Verify that the Cable Gateway is properly installed; LAN connections are OK, and it is powered ON.
  - Make sure that your PC and the Cable Gateway are on the same network segment. If you are not sure, initiate the DHCP function, and let the PC get the IP address automatically.
  - Make sure that your PC is using an IP address within the default range of 192.168.0.2 to 192.168.0.254 and thus compatible with the Cable Gateway default IP Address of 192.168.0.1
  - Also, the Subnet Mask should be set to 255.255.255.0 to match the Cable Gateway. For the Cable Gateway, you can check these settings by using Control Panel-Network to check the Properties for the TCP/IP protocol.
3. The Diag LED stays lit when it shouldn't.
  - The Diag LED lights up when the device is first powered up. The system will boot up itself and check for proper operation. After finishing the checking procedure, the LED turns off to show the system is working fine. If the LED remains lit after this time, the device is not working properly. Contact your cable provider if this problem persists.
4. The Cable Link LED will not go solid.
  - Verify that the coaxial cable is firmly plugged into the Cable Gateway's cable port, with the other end plugged directly into the Cable wall jack.
  - Verify that your Cable account is active.

## Cable Gateway

5. I can't access the Internet from the Cable Gateway.
  - Check if both ends of the network cable and power adapter are properly connected. Check if the status LEDs on the front panel are functioning properly.
  - If using Windows 95, 98 or Me, check the TCP/IP setup on the client side. Run **winiipcfg** by clicking on the **Start** button, selecting **Run**, and typing **winiipcfg** in the Run field. Press **Enter**. The PC should have an IP address of 192.168.0.xxx ("xxx" is from 2 to 254.). The Subnet Mask is 255.255.255.0; the default gateway IP should be the Cable Gateway's IP Address, and check that the DNS is correct.
  - Check the same setup values in the Cable Gateway's Summary page.
6. When I enter a URL or IP address, I get a time out error.
  - Check to see if your other PCs work. If they do, verify that your PC's IP settings are correct (IP address, Subnet Mask, Default Gateway, and DNS)
  - If the PCs are configured correctly, but still not working, check the Cable Gateway. Make sure that it is connected and ON. Connect to it and check its settings. (If you cannot connect to it, check the LAN and power connections.)
  - If the Cable Gateway is configured correctly, check your Internet connection to see that it is working correctly.
  - Manually configure the TCP/IP with a DNS address provided by your ISP.

## Frequently Asked Questions

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

Does the Cable Gateway support IPSec Pass-Through? Yes, it is a feature built into the Cable Gateway.

Does the Cable Gateway support IPX or AppleTalk? No. TCP/IP is the only protocol standard for the Internet and has become the global standard for communications. IPX, a NetWare communications protocol used only to route messages from one node to another, and AppleTalk, a communications protocol used on Apple and Macintosh networks, can be used for LAN to LAN connections, but those protocols cannot connect from WAN to LAN.

**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 Cable Gateway to be used with low cost Internet accounts, 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 Cable Gateway support any operating system other than Windows 95, 98, Me, NT, 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. USB features are only supported by Windows 98, Me, 2000, and XP.

**Does the Cable 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 Cable Gateway.

**How do I get KaZaA to work with the Cable Gateway?** KaZaA is fully compatible with the Cable Gateway, but you must make sure that, during installation, you select “no idea” when asked about your firewall selection. Set your proxy settings to “No Proxy Server” in your *File>Preferences*.

**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 ~ 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 Cable 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 do I get Half-Life: Team Fortress to work with the Cable 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.

**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 web-site at [www.linksys.com](http://www.linksys.com) for more information.

**If all else fails in the installation, what can I do?** Reset the Cable Gateway by holding down the reset button until the Diag LED fully turns on and off.

**Will the Cable Gateway function in a Macintosh environment?** Yes, but the Cable Gateway's setup pages are accessible only through Internet Explorer v4.0 or Netscape Navigator v4.0 or higher for Macintosh. NOTE: Linksys does not provide technical support for Macintosh computers.

**With which type of firewall is the Cable Gateway equipped?** The Cable Gateway uses NAT and TCP/IP port inspections. It also has SPI (Stateful Packet Inspection).

**I am not able to access the Cable Gateway's web configuration screen. 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.

**What is DMZ?** 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.

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

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

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

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

Does the Cable Gateway replace a modem? Is there a cable modem in the Cable Gateway? Yes. The Cable Gateway has an integrated cable modem, so this product will replace your current cable modem.

What are the Cable Gateway's advanced features? The Cable Gateway's advanced features include Filters, Forwarding, and DMZ host.

How do I get mIRC to work with the Cable Gateway? Set port forwarding to 113 for the computer on which you are using mIRC. If you are experiencing difficulty after setting the port forwarding, try changing the Direct Client-to-Client (DCC) settings to a range from 1024 to 1030 on the DCC option and Forwarding page of the Web-based Setup Utility.

**If your questions are not addressed here, refer to the contact information on the last page of this manual, or online at [support.linksys.com](http://support.linksys.com).**

## Appendix B: Configuring Wireless Security in Windows XP



**Note:** WEP Encryption is an additional data security measure and not essential for Gateway operation.

An acronym for Wired Equivalent Privacy, WEP is an encryption scheme used to protect your wireless data communications. WEP uses a combination of 64-bit or 128-bit keys to provide access control to your network and encryption security for every data transmission. To decode a data transmission, each point in a network must use an identical 64-bit or 128-bit key. Higher encryption levels mean higher levels of security, but due to the complexity of the encryption, they may mean decreased network performance.

You may also have heard the term “40-bit” used in conjunction with WEP Encryption. This is simply another term for 64-bit WEP encryption. This level of WEP encryption has been called 40-bit because it uses a 40-bit secret key along with a 24-bit Initialization Vector ( $40 + 24 = 64$ ). Wireless vendors may use either name. Linksys uses the term “64-bit” when referring to this level of encryption.

If possible, make sure your wireless network is functioning before attempting to configure WEP.

A 128-bit WEP encrypted wireless network will NOT communicate with a 64-bit WEP encrypted wireless network. Therefore, make sure that all of your wireless devices are using the same encryption level. All wireless devices complying with the 802.11b standard will support 64-bit WEP.

Configure WEP in the Wireless Setup section of “Chapter 5: Using the Gateway’s Web-based Utility.” Go to **Features Setup** tab. Click on **Wireless**, then **Setup**. Use the WEP Key in the Key 1 field to configure WEP in Windows XP.

The following steps will help you enable WEP and enter the encryption key manually for your wireless PC cards, in order to enable your Windows XP system to communicate with the Gateway wirelessly.

These steps assume that you are running Windows XP in the default mode.

Be sure you have the WEP Key generated in the Gateway, shown in the Key 1 field.

1. Click the **Start** button and go to the **Control Panel**.

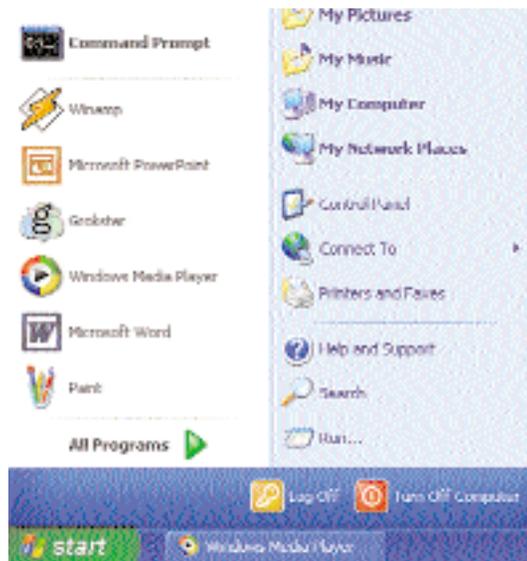


Figure B-1

2. In the “Control Panel” window, click the **Network and Internet Connections** icon.

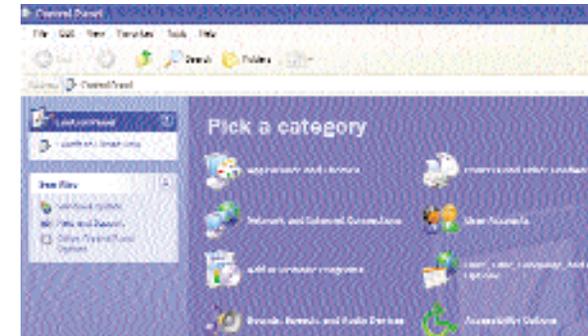


Figure B-2

3. Click on the **Network Connections** icon.

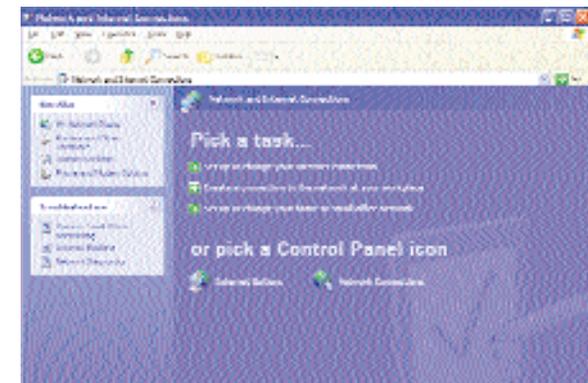


Figure B-3

4. The “Network Connections” window will appear. Under LAN or High-Speed Internet you will see all Network cards that are installed and operating in your computer. Double-click the **Wireless Network Connection** icon associated with your wireless adapter.

If the “Wireless Network Connection Status” window appears, continue to the next step.

If a “Connect to Wireless Network” window appears, in the Available Networks section, click the desired wireless network, specified by the Gateway’s SSID. Then, double-click the **Wireless Network Connection** icon.

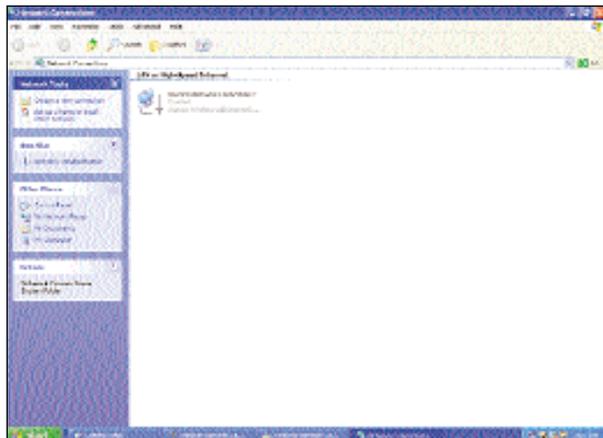


Figure B-4

5. When the “Wireless Network Connection Status” window appears, click the **Properties** button.

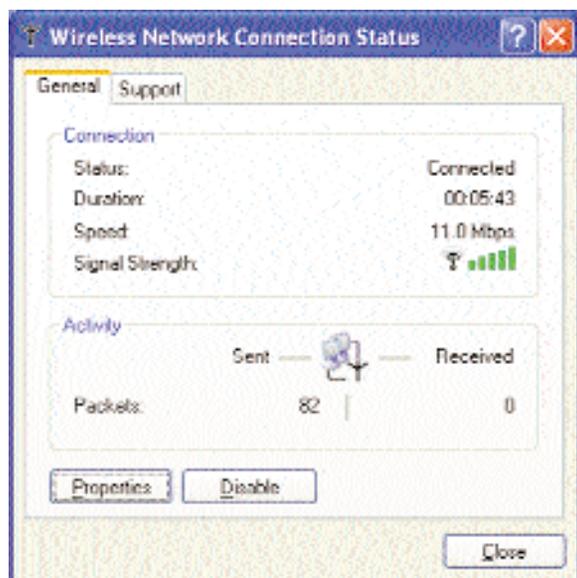


Figure B-5

6. When the “Wireless Network Connection Properties” window appears, click the **Wireless Networks** Tab.

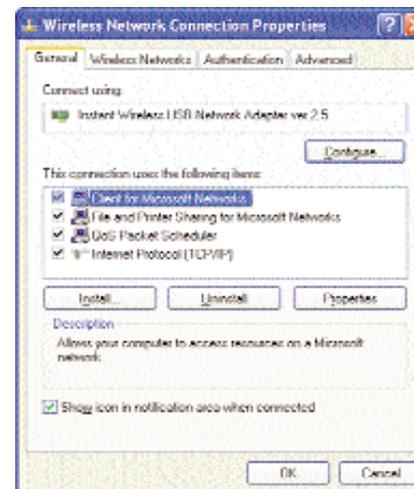


Figure B-6

7. If the appropriate wireless network, specified by the Gateway’s SSID, is displayed in the “Preferred networks” section, double-click it and continue to the next step.

Otherwise, click on the appropriate wireless network, specified by the Gateway’s SSID, in the “Available networks” section. Then, click the **Configure** button.



Figure B-7

8. The “Wireless Network Properties” window will appear.

Click the check box for the **Data encryption (WEP enabled)** option.

Remove the check from the **Network Authentication (Shared mode)** and **The key is provided for me automatically** fields.

In the “Network key” field, enter the exact Key (all 10 or 26 digits, depending on the level of encryption) generated by the Gateway.

Verify that the “Key format” field displays “Hexadecimal digits” and that the “Key length” field displays either “40 bits (10 digits)” or “104 bits (26 digits)”. If this is not displayed, you have entered the key incorrectly.

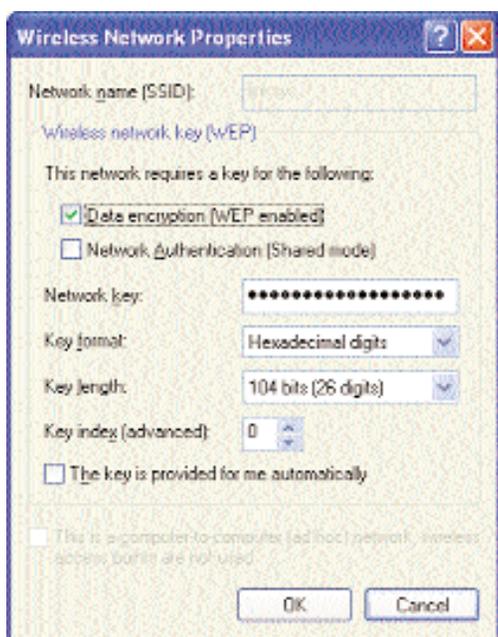


Figure B-8

Click the **OK** button to save the settings. Click on **OK** buttons until you get back to the “Wireless Network Connection Status” window. Close any open windows to get back to the Windows XP desktop.

Close any applications and reboot your PC. After reboot, WEP configuration is complete and you should be able to connect wirelessly to the Gateway.

## Appendix C: Installing the TCP/IP Protocol

Follow these instructions to install the TCP/IP protocol on one of your PCs *only* after a network card has been successfully installed inside the PC. These instructions are for Windows 95, Windows 98, and Windows Me. For TCP/IP setup under Windows NT, 2000, and XP, see your Windows manual.

1. Click the **Start** button. Choose **Settings** and then **Control Panel**.
2. Double-click on the **Network** icon to bring up your Network window. Select the **Configuration** tab.



Figure C-1

3. Click the **Add** button.
4. Double-click on **Protocol**.
5. Highlight **Microsoft** under the list of manufacturers.

6. Find and double-click **TCP/IP** in the list to the right (see Figure C-2).

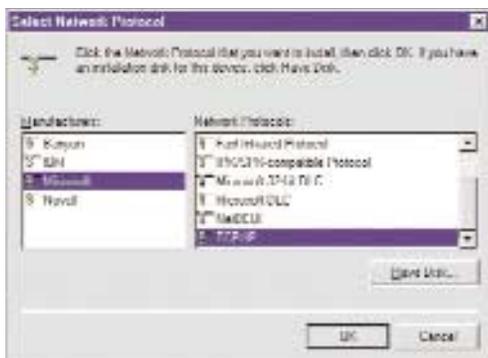


Figure C-2

7. After a few seconds, the main Network window will appear. The TCP/IP Protocol should now be listed.

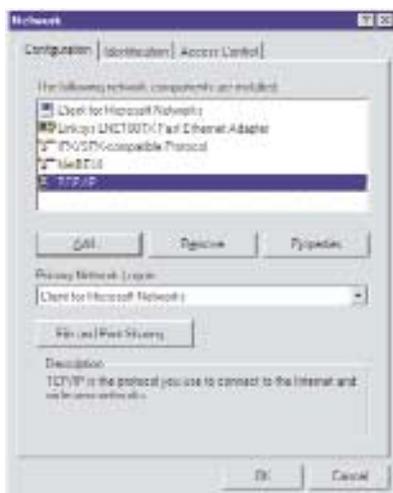


Figure C-3

8. Click the **OK** button. Windows may ask for original Windows installation files. Supply them as needed, e.g., c:\windows\options\cabs, D:\win98, D:\win95.
9. Windows will ask you to restart the PC. Click the **Yes** button.

**The TCP/IP installation is now complete.**

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

This section describes how to find the MAC address for your Ethernet adapter to do either MAC Filtering for the Gateway and ISP. You can also find the IP address of your computer's Ethernet adapter. The IP address is used for filtering. Follow the steps in this appendix to find the MAC address or IP address for your adapter in Windows 95, 98, Me, NT, 2000, and XP.

### For Windows 95, 98, and Me:

1. Click on **Start** and **Run**. In the Open field, enter **winipcfg**. Then press the **Enter** key or the **OK** button.

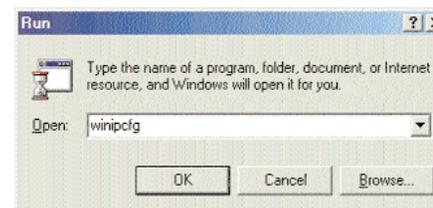


Figure D-1

2. When the IP Configuration window appears, select the Ethernet adapter you are using to connect to the Gateway via a CAT 5 Ethernet cable.

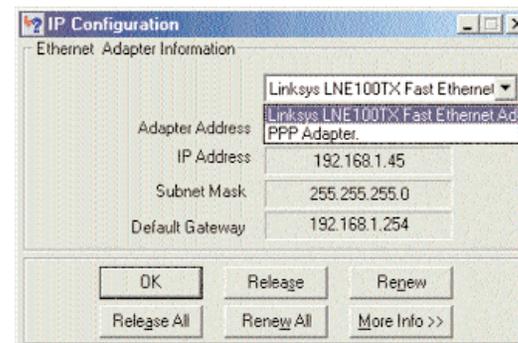


Figure D-2

- Write down the Adapter Address as shown on your computer screen (see Figure D-3). This is the MAC address for your Ethernet adapter and will be shown as a series of numbers and letters.

The MAC address/Adapter Address is what you will use for MAC Filtering.

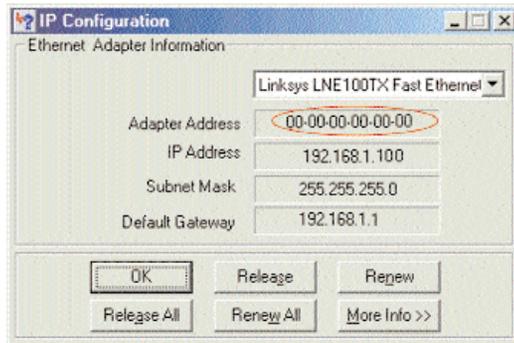


Figure D-3

The example in Figure D-3 shows the IP address of your Ethernet adapter as 192.168.1.100. Your computer may show something different.



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

#### For Windows NT, 2000, and XP:

The following steps show an alternative way of obtaining the MAC address and IP address for your Ethernet adapter.

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

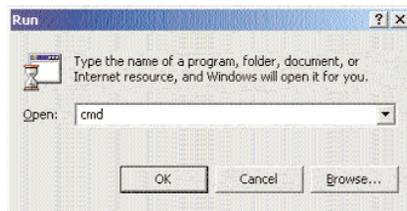


Figure D-4

- In the command prompt, enter **ipconfig /all**. Then press the **Enter** key.

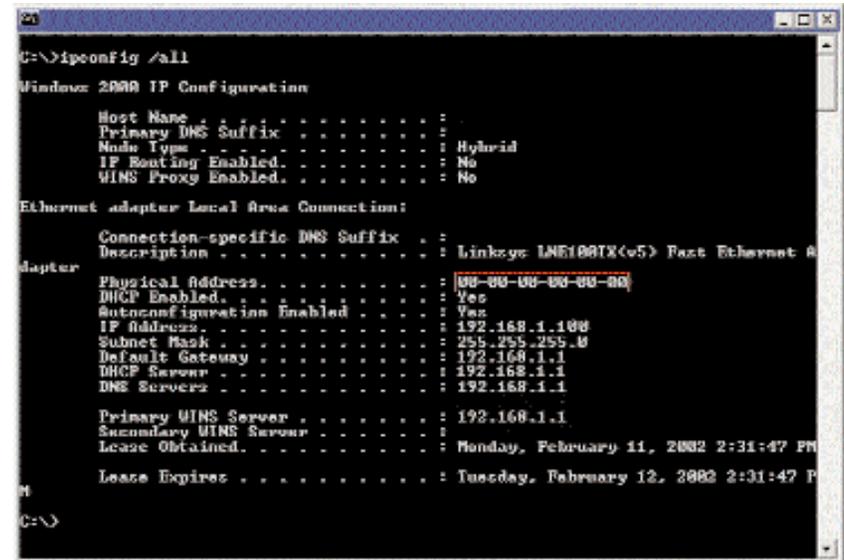


Figure D-5

- Write down the Physical Address as shown on your computer screen; it is the MAC address for your Ethernet adapter. This will appear as a series of letters and numbers.

The MAC address/Physical Address is what you will use for MAC Filtering.



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

The example in Figure D-5 shows the IP address of your Ethernet adapter as 192.168.1.100. Your computer may show something different.

When entering the information using the Router's web-based utility, you will type the **12-digit MAC address** in this format, XXXXXXXXXXXX *without the hyphens* for MAC Filtering.

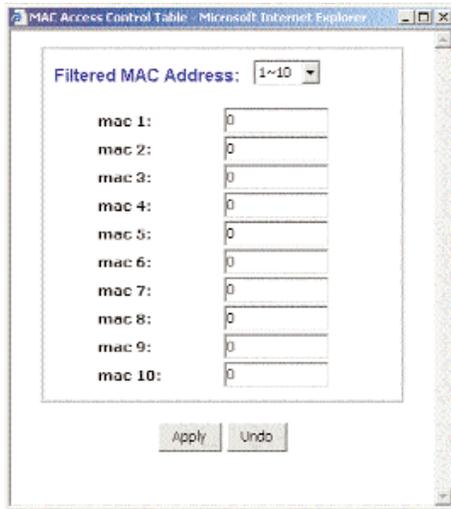


Figure D-6

## Appendix E: Glossary

**10BaseT** - An Ethernet standard that uses twisted wire pairs.

**100BaseTX** - IEEE physical layer specification for 100 Mbps over two pairs of Category 5 UTP or STP wire.

**802.11b** - One of the IEEE standards for wireless networking hardware. Products that adhere to a specific IEEE standard will work with each other, even if they are manufactured by different companies. The 802.11b standard specifies a maximum data transfer rate of 11Mbps, an operating frequency of 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.

**Adapter** - Printed circuit board that plugs into a PC to add to capabilities or connectivity to a PC. In a networked environment, a network interface card (NIC) is the typical adapter that allows the PC or server to connect to the intranet and/or Internet.

**Auto-negotiate** - To automatically determine the correct settings. The term is often used with communications and networking. For example, Ethernet 10/100 cards, hubs and switches can determine the highest speed of the node they are connected to and adjust their transmission rate accordingly.

**Beacon Interval** - A beacon is a packet broadcast by the Access Point to keep the network synchronized. A beacon includes the wireless LAN service area, the AP address, the Broadcast destination addresses, a time stamp, Delivery Traffic Indicator Maps, and the Traffic Indicator Message (TIM).

**Bit** - A binary digit. The value - 0 or 1-used in the binary numbering system. Also, the smallest form of data.

**Boot** - To cause the computer to start executing instructions. Personal computers contain built-in instructions in a ROM chip that are automatically executed on startup. These instructions search for the operating system, load it and pass control to it.

**Broadband** - A data-transmission scheme in which multiple signals share the bandwidth of a medium. This allows the transmission of voice, data and video signals over a single medium. Cable television uses broadband techniques to deliver dozens of channels over one cable.

**Browser** - A browser is an application program that provides a way to look at and interact with all the information on the World Wide Web or PC. The word "browser" seems to have originated prior to the Web as a generic term for user interfaces that let you browse text files online.

**Buffer** - A buffer is a shared or assigned memory area used by hardware devices or program processes that operate at different speeds or with different sets of priorities. The buffer allows each device or process to operate without being held up by the other. In order for a buffer to be effective, the size of the buffer and the algorithms for moving data into and out of the buffer need to be considered by the buffer designer. Like a cache, a buffer is a "midpoint holding place" but exists not so much to accelerate the speed of an activity as to support the coordination of separate activities.

**Cable Modem** - A device that connects a computer to the cable television network, which in turn connects to the Internet. Once connected, cable modem users have a continuous connection to the Internet. Cable modems feature asymmetric transfer rates: around 36 Mbps downstream (from the Internet to the computer), and from 200 Kbps to 2 Mbps upstream (from the computer to the Internet).

**Category 5** - ANSI/EIA (American National Standards Institute/Electronic Industries Association) Standard 568 is one of several standards that specify "categories" (the singular is commonly referred to as "CAT") of twisted pair cabling systems (wires, junctions, and connectors) in terms of the data rates that they can sustain. CAT 5 cable has a maximum throughput of 100 Mbps and is usually utilized for 100BaseTX networks.

**Default Gateway** - The routing device used to forward all traffic that is not addressed to a station within the local subnet.

**Denial of Service** - A protocol that directs the network to no longer respond to requests that might arise as the result of a Denial of Service attack.

**Denial of Service Attack** - An assault on a network that floods it with so many additional requests that regular traffic is either slowed or completely interrupted.

**DHCP (Dynamic Host Configuration Protocol)** - A protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Using the Internet's set of protocol (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. It's especially useful in education and other environments where users change frequently. Using very short leases, DHCP can dynamically reconfigure networks in which there are more computers than there are available IP addresses.

DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

**DMZ (Demilitarized Zone)** - Allows one IP address (or 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 address if you want to use DMZ Hosting.

**DNS** - The domain name system (DNS) is the way that Internet domain name are located and translated into Internet Protocol (IP) addresses. A domain name is a meaningful and easy-to-remember "handle" for an Internet address.

**Domain** - A subnetwork comprised of a group of clients and servers under the control of one security database. Dividing LANs into domains improves performance and security.

**Download** - To receive a file transmitted over a network. In a communications session, download means receive, upload means transmit.

**DTIM (Delivery Traffic Indication Message)** - A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the AP has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. AP Clients hear the beacons and awaken to receive the broadcast and multicast messages.

**Dynamic IP Address** - An IP address that is automatically assigned to a client station in a TCP/IP network, typically by a DHCP server. Network devices that serve multiple users, such as servers and printers, are usually assigned static IP addresses.

**Encryption** - A security method that applies a specific algorithm to data in order to alter the data's appearance and prevent other devices from reading the information.

**Ethernet** - IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium. Has a transfer rate of 10 Mbps. Forms the underlying transport vehicle used by several upper-level protocols, including TCP/IP and XNS.

**Firewall** - A firewall is a set of related programs, located at a network gateway server, that protects the resources of a network from users from other networks. (The term also implies the security policy that is used with the programs.) An enterprise with an intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources and for controlling what outside resources to which its own users have access.

Basically, a firewall, working closely with a router, examines each network packet to determine whether to forward it toward its destination.

**Firmware** - Code that is written onto read-only memory (ROM) or programmable read-only memory (PROM). Once firmware has been written onto the ROM or PROM, it is retained even when the device is turned off.

**Fragmentation** - Breaking a packet into smaller units when transmitting over a network medium that cannot support the original size of the packet.

**FTP (File Transfer Protocol)** - A protocol used to transfer files over a TCP/IP network (Internet, UNIX, etc.). For example, after developing the HTML pages for a Web site on a local machine, they are typically uploaded to the Web server using FTP.

FTP includes functions to log onto the network, list directories and copy files. It can also convert between the ASCII and EBCDIC character codes. FTP operations can be performed by typing commands at a command prompt or via an FTP utility running under a graphical interface such as Windows. FTP transfers can also be initiated from within a Web browser by entering the URL preceded with ftp://.

Unlike e-mail programs in which graphics and program files have to be "attached," FTP is designed to handle binary files directly and does not add the overhead of encoding and decoding the data.

**Full Duplex** - The ability of a device or line to transmit data simultaneously in both directions.

**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.

**Hardware** - Hardware is the physical aspect of computers, telecommunications, and other information technology devices. The term arose as a way to distinguish the "box" and the electronic circuitry and components of a computer from the program you put in it to make it do things. The program came to be known as the software.

**HPNA (Home Phonetline Networking Alliance)** - An industry standard for interconnecting computers within a home using existing telephone lines. Using HPNA (also known as HomePNA), multiple computer users in a home can share a single Internet connection, open or copy files from different computers, share printers, and play multi-user computer games. The latest version, HPNA 2.0, allows data transmission at a rate of 10 Mbps over a home's standard telephone line wiring system using the Ethernet CSMA/CD framing and transmission protocol. HPNA can be used without interrupting normal voice or fax services. One user can talk on the phone at the same time other users are sharing the same line to access the Web or share other computer resources.

**Hub** - The device that serves as the central location for attaching wires from workstations. Can be passive, where there is no amplification of the signals; or active, where the hubs are used like repeaters to provide an extension of the cable that connects to a workstation.

**ICQ** - A conferencing program for the Internet that provides interactive chat, e-mail and file transfer and can alert you when someone on your predefined list has also come online.

**IEEE** (The Institute of Electrical and Electronics Engineers) - The IEEE describes itself as "the world's largest technical professional society, promoting the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession, and the well-being of our members."

The IEEE fosters the development of standards that often become national and international standards. The organization publishes a number of journals, has many local chapters, and several large societies in special areas, such as the IEEE Computer Society.

**IP** (Internet Protocol) - The method or protocol by which data is sent from one computer to another on the Internet. It is a standard set of rules, procedures, or conventions relating to the format and timing of data transmission between two computers that they must accept and use to be able to understand each other.

**IP Address** - In the most widely installed level of the Internet Protocol (IP) today, an IP address is a 32-bit binary number that identifies each sender or receiver of information that is sent in packet across the Internet. When you request an HTML page or send e-mail, the Internet Protocol part of TCP/IP includes your IP address in the message (actually, in each of the packets if more than one is required) and sends it to the IP address that is obtained by looking up the domain name in the Uniform Resource Locator you requested or in the e-mail address you're sending a note to. At the other end, the recipient can see the IP address of the Web page requestor or the e-mail sender and can respond by sending another message using the IP address it received.

**IPSec** (Internet Protocol Security) - A suite of protocols used to implement secure exchange of packets at the IP layer. IPSec supports two basic modes: Transport and Tunnel. Transport encrypts the payload of each packet, leaving the header untouched, while Tunnel mode encrypts both the header and the pay-

load and is therefore more secure. IPSec must be supported on both transmitter and receiver and must share a public key. Tunnel mode is widely deployed in VPNs (Virtual Private Networks).

**IPX** (Internetwork Packet EXchange) - A NetWare communications protocol used to route messages from one node to another. IPX packets include network addresses and can be routed from one network to another.

**ISP** (Internet Service Provider) - A company that provides individuals and companies access to the Internet and other related services such as Web site building and virtual hosting.

**LAN** (local area network) - A group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

**MAC** (Media Access Control) **Address** - 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.

**Mbps** (Megabits per second) - One million bits per second; unit of measurement for data transmission.

**mIRC** - mIRC runs under Windows and provides a graphical interface for logging onto IRC servers and listing, joining and leaving channels.

**Multicasting** - Sending data to a group of nodes instead of a single destination.

**Network** - A system that transmits any combination of voice, video and/or data between users.

**NIC** (Network Interface Card) - A board installed in a computer system, usually a PC, to provide network communication capabilities to and from that computer system. Also called an adapter.

**Node** - A network junction or connection point, typically a computer or workstation.

**Notebook** (PC) - A notebook computer is a battery-powered personal computer generally smaller than a briefcase that can easily be transported and conveniently used in temporary spaces such as on airplanes, in libraries, temporary

offices, and at meetings. A notebook computer, sometimes called a laptop computer, typically weighs less than five pounds and is three inches or less in thickness.

**Packet** - A unit of data routed between an origin and a destination in a network.

**Packet Filtering** - Discarding unwanted network traffic based on its originating address or range of addresses or its type (e-mail, file transfer, etc.).

**PC Card** - A credit-card sized removable module that contains memory, I/O, or a hard disk.

**Port** - A pathway into and out of the computer or a network device such as a switch or router. For example, the serial and parallel ports on a personal computer are external sockets for plugging in communications lines, modems and printers.

**PPTP (Point-to-Point Tunneling Protocol)** - A protocol which allows the Point to Point Protocol (PPP) to be tunneled through an IP network. PPTP does not specify any changes to the PPP protocol but rather describes a "tunneling service" for carrying PPP (a tunneling service is any network service enabled by tunneling protocols such as PPTP, L2F, L2TP, and IPSEC tunnel mode). One example of a tunneling service is secure access from a remote small office network to a headquarters corporate intranet via a Virtual Private Network (VPN) that traverses the Internet. However, tunneling services are not restricted to corporate environments and may also be used for personal (i.e., non-business) applications.

**RJ-11 (Registered Jack-11)** - A telephone connector that holds up to six wires. The RJ-11 the common connector used to plug a telephone into a wall.

**RJ-45 (Registered Jack-45)** - A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.

**Router** - Protocol-dependent device that connects subnetworks together. Routers are useful in breaking down a very large network into smaller subnetworks; they introduce longer delays and typically have much lower throughput rates than bridges.

**RTS (Request To Send)** - An RS-232 signal sent from the transmitting station to the receiving station requesting permission to transmit.

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

**Software** - Instructions for the computer. A series of instructions that performs a particular task is called a "program." The two major categories of software are "system software" and "application software." System software is made up of control programs such as the operating system and database management system (DBMS). Application software is any program that processes data for the user.

A common misconception is that software is data. It is not. Software tells the hardware how to process the data.

**SPI (Stateful Packet Inspection)** - A firewall technology that monitors the state of the transaction so that it can verify that the destination of an inbound packet matches the source of a previous outbound request. It examines not just the headers of the packet, but also the contents, to determine more about the packet than just its source and destination information. It is called "stateful" because verifies that the stated destination computer has previously requested the current communication. In this way, it verifies that all communications are initiated by the recipient computer and are taking place only with sources that are known and trusted from previous interactions. In addition to being a more rigorous inspection, stateful packet inspection closes off ports until connection to the specific port is requested. This allows an added layer of protection from the threat of port scanning.

**SSID (Service Set Identifier)** - A unique name shared among all points in a wireless network. The SSID must be identical for each point in the wireless network and is case-sensitive.

**Static IP Address** - A permanent IP address that is assigned to a node in an IP or a TCP/IP network.

**STP (Shielded Twisted Pair)** - Telephone wire that is wrapped in a metal sheath to eliminate external interference.

**Subnet Mask** - The method used for splitting IP networks into a series of subgroups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.

**Switch** - 1. A data switch 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 (Transmission Control Protocol)** - A method (protocol) used along with the IP (Internet Protocol) to send data in the form of message units (datagram) between network devices over a LAN or WAN. While IP takes care of handling the actual delivery of the data (routing), TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient delivery over the network. TCP is known as a "connection oriented" protocol due to requiring the receiver of a packet to return an acknowledgment of receipt to the sender of the packet resulting in transmission control.

**TCP/IP (Transmission Control Protocol/Internet Protocol)** - The basic communication language or set of protocols for communications over a network (developed specifically for the Internet). TCP/IP defines a suite or group of protocols and not only TCP and IP.

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

**TX Rate** - Transmission Rate.

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

**Upload** - To transmit a file over a network. In a communications session, upload means transmit, download means receive.

**URL (Uniform Resource Locator)** - The address that defines the route to a file on the Web or any other Internet facility. URLs are typed into the browser to access Web pages, and URLs are embedded within the pages themselves to provide the hypertext links to other pages.

**USB (Universal Serial Bus)** - A "plug-and-play" interface between a computer and peripherals, such as digital cameras, scanners, game controllers, speakers, keyboards, portable data storage, or printers. With USB, you can add a new peripheral to your computer without having to add an adapter card or powering down the computer. USB also supports hot-swapping, the addition or removal of devices while the computer is running.

USB 1.1-compliant devices support data rates of 1.5Mbps (low-speed) and up to 12Mbps (full-speed). USB 2.0-compliant devices are backward compatible with earlier USB devices, and they support data rates of 1.5Mbps (low-speed), 12Mbps (full-speed), and up to 480Mbps (high-speed).

**UTP** - Unshielded twisted pair is the most common kind of copper telephone wiring. Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company. To reduce crosstalk or electromagnetic induction between pairs of wires, two insulated copper wires are twisted around each other. Each signal on twisted pair requires both wires. Since some telephone sets or desktop locations require multiple connections, twisted pair is sometimes installed in two or more pairs, all within a single cable.

**WAN (Wide Area Network)**- A communications network that covers a relatively large geographic area, consisting of two or more LANs. Broadband communication over the WAN is often through public networks such as the telephone (DSL) or cable systems, or through leased lines or satellites. In its most basic definition, the Internet could be considered a WAN.

**WEP (Wired Equivalent Privacy)** - A data privacy mechanism based on a 64-bit or 128-bit shared key algorithm, as described in the IEEE 802.11 standard.

**WINPCFG** - Configuration utility based on the Win32 API for querying, defining and managing IP addresses within a network. A commonly used utility for configuring networks with static IP addresses.

**WLAN (Wireless Local Area Network)** - A group of computers and associated devices that communicate with each other wirelessly.

# Appendix F: Specifications

Model Number	BEFCMUH4
Standards	DOCSIS 1.0, PC Card 16-bit standard, IEEE 802.3 (10BaseT), IEEE 802.3u (100BaseTX), USB Specifications 1.1, IEEE 802.11b (Wireless)*
Ports/Switches/Buttons	
HPNA	RJ-11
Cable	F-type female 75 ohm connector
USB	Type B USB Port
LAN	Four 10/100 RJ-45 Switched Ports
PCMCIA	Type II Slot (for use with Linksys WPC11 only)
Switch	On/Off
Button	Reset
Other	Power Input
Speed	
LAN	10/100 Mbps (Half/Full Duplex)
Wireless*	Up to 11 Mbps
Cabling Type	
Cable	Coaxial
LAN	UTP Category 5 or better
USB	Type B USB
HPNA	RJ-11
LEDs	
Cable	Power, Diag
LAN	Cable, Receive, Send
WLAN	100, Full/Col, Link/Act
USB	Link/Act
HPNA	Link/Act

\* Requires Optional WPC11 (sold separately) for Wireless Connectivity

Cable Modem Downstream	
Modulation	64QAM, 256QAM
Data Rate	30Mbps (64QAM), 43Mbps (256QAM)
Frequency Range	88MHz to 860MHz
Bandwidth	6MHz
Input Signal Level	-15dBmV to +15dBmV
Cable Modem Upstream	
Modulation	QPSK, 16QAM
Data Rate (Kbps)	320, 640, 1280, 2560, 5120 (QPSK) 640, 1280, 2560, 5120, 10240 (16QAM)
Frequency Range	5MHz to 42MHz
Bandwidth	200, 400, 800, 1600, 3200KHz
Output Signal Level	+8 to +58dBmV (QPSK), +8 to +55dBmV (16QAM)
Management	
MIB Group	SNMPv2 with MIB II, DOCSIS MIB, Bridge MIB
Security	
Baseline Privacy	56-Bit DES with RSA Key Management

## Environmental

Dimensions:	7.26" x 6.1" x 2.26" (184 mm x 155 mm x 57 mm)
Unit Weight:	20 oz. (0.567 kg)
Power:	External, 12V AC, 1.25 A
Certifications:	FCC Class B, Part 68, CE Mark
Operating Temp.:	0°C to 40°C (32°F to 104°F)
Storage Temp.:	0°C to 60°C (32°F to 140°F)
Operating Humidity:	10% to 85%, Non-Condensing
Storage Humidity:	10% to 90%, Non-Condensing

## Appendix G: Warranty Information

BE SURE TO HAVE YOUR PROOF OF PURCHASE AND A BARCODE FROM THE PRODUCT'S PACKAGING ON HAND WHEN CALLING. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE.

IN NO EVENT SHALL LINKSYS'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE, OR ITS DOCUMENTATION. LINKSYS DOES NOT OFFER REFUNDS FOR ANY PRODUCT.

LINKSYS OFFERS CROSS SHIPMENTS, A FASTER PROCESS FOR PROCESSING AND RECEIVING YOUR REPLACEMENT. LINKSYS PAYS FOR UPS GROUND ONLY. ALL CUSTOMERS LOCATED OUTSIDE OF THE UNITED STATES OF AMERICA AND CANADA SHALL BE HELD RESPONSIBLE FOR SHIPPING AND HANDLING CHARGES. PLEASE CALL LINKSYS FOR MORE DETAILS.

## Appendix H: Contact Information

For help with the installation or operation of the Cable Gateway, contact Linksys Technical Support at one of the phone numbers or Internet addresses below.

<b>Sales Information</b>	800-546-5797 (1-800-LINKSYS)
<b>Technical Support</b>	800-326-7114 (toll free from U.S. or Canada)*
<b>RMA Issues</b>	949-271-5461
<b>Fax</b>	949-265-6655
<b>Email</b>	support@linksys.com
<b>Web site</b>	<a href="http://www.linksys.com">http://www.linksys.com</a>
	<a href="http://support.linksys.com">http://support.linksys.com</a>
<b>FTP site</b>	<a href="ftp://ftp.linksys.com">ftp://ftp.linksys.com</a>

\* Before phoning Technical Support, try rebooting the Cable Gateway, as shown in “Chapter 2: Getting to Know the Cable Gateway” under the heading “Rebooting the Cable Gateway”.



[www.linksys.com](http://www.linksys.com)

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