

LINKSYS®

A Division of Cisco Systems, Inc.

2.4GHz
802.11g

Wireless-G



Ethernet Bridge

User Guide

Model No. **WET54GS5**

CISCO SYSTEMS



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How to Use this Guide

Your guide to the Wireless-G Ethernet Bridge has been designed to make understanding networking with the Wireless-G Ethernet Bridge easier than ever. Look for the following items when reading this guide:



This checkmark means there is a Note of interest and is something you should pay special attention to while using the Wireless-G Ethernet Bridge.



This exclamation point means there is a Caution or warning and is something that could damage your property or the Wireless-G Ethernet Bridge.



This question mark provides you with a reminder about something you might need to do while using the Wireless-G Ethernet Bridge.

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

word: definition.

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

Figure 0-1: Sample Figure Description

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

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Chapter 1: Introduction

Welcome

Thank you for choosing the Wireless-G Ethernet Bridge. The versatile Wireless-G Ethernet Bridge can make any wired Ethernet-equipped device a part of your wireless network. At home, use the Bridge to connect game consoles, set-top boxes, or computers to your Wireless-G network and its shared high-speed Internet connection. In the office, convert your Ethernet-wired printer, camera, notebook or desktop into a wireless networked device.

It's completely driver-free, so it works on any platform and under any operating system! Since there's no drivers to load, setup is a snap—configure the network settings through your PC's web browser, then plug it into your device and go. And physical installation is simplified by support for Power Over Ethernet. With an optional POE Adapter, you can mount the Bridge wherever you want—power and data are both supplied through the Category 5 Ethernet cable.

You can also use the Wireless-G Ethernet Bridge as a kind of “cable-less cable” to connect remote areas together. Maybe Shipping is all the way across the warehouse from Receiving. Or maybe you want to set up a home office in your detached garage. With a Wireless-G Ethernet Bridge in the garage, and another one (or a Wireless-G Access Point) in the house, you're connected—no digging trenches, and no overhead wires. Let the Wireless-G Ethernet Bridge from Linksys open up exciting new possibilities for your wireless network.

Use the instructions in this Guide to help you set up and connect the Bridge. These instructions should be all you need to get the most out of the Wireless-G Ethernet Bridge.

802.11g: *an IEEE wireless networking standard that specifies a maximum data transfer rate of 54Mbps, an operating frequency of 2.4GHz, and backward compatibility with 802.11b devices.*

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

What's in this Guide?

This user guide covers the steps for setting up and using the Wireless-G Ethernet Bridge.

- **Chapter 1: Introduction**
This chapter describes the Wireless-G Ethernet Bridge applications and this user guide.
- **Chapter 2: Planning your Wireless Network**
This chapter describes the basics of wireless networking.
- **Chapter 3: Getting to Know the Wireless-G Ethernet Bridge**
This chapter describes the physical features of the Bridge.
- **Chapter 4: Connecting the Wireless-G Ethernet Bridge for Setup.**
This chapter instructs you on how to connect the Bridge to your network for setup.
- **Chapter 5: Setting Up the Wireless-G Ethernet Bridge.**
This chapter explains how to set up the Bridge using the Setup Wizard.
- **Chapter 6: Connecting the Wireless-G Ethernet Bridge for Network Use.**
This chapter explains how to connect the Bridge to a network device so the device can join your wireless network. It also describes placement options for the Bridge.
- **Chapter 7: Using the Wireless-G Ethernet Bridge Web-based Utility**
This chapter explains how to use the Web-based Utility so you can change the Bridge's settings or advanced configuration.
- **Appendix A: Troubleshooting**
This appendix describes some problems and solutions, as well as frequently asked questions, regarding installation and use of the Wireless-G Ethernet Bridge.
- **Appendix B: Wireless Security**
This appendix explains the risks of wireless networking and some solutions to reduce the risks.
- **Appendix C: Upgrading Firmware**
This appendix instructs you on how to upgrade the firmware on the Bridge should you need to do so.
- **Appendix D: Windows Help**
This appendix describes how you can use Windows Help for instructions about networking, such as installing the TCP/IP protocol.

Wireless-G Ethernet Bridge

- **Appendix E: Glossary**
This appendix gives a brief glossary of terms frequently used in networking.
- **Appendix F: Specifications**
This appendix provides the technical specifications for the Bridge.
- **Appendix G: Warranty Information**
This appendix supplies the warranty information for the Bridge.
- **Appendix H: Regulatory Information**
This appendix supplies the regulatory information regarding the Bridge.
- **Appendix I: Contact Information**
This appendix provides contact information for a variety of Linksys resources, including Technical Support.

Chapter 2: Planning Your Wireless Network

Network Topology

A wireless local area network (WLAN) is exactly like a regular local area network (LAN), except that each computer in the WLAN uses a wireless device to connect to the network. Computers in a WLAN share the same frequency channel and SSID, which is an identification name shared by the wireless devices belonging to the same wireless network.

Ad-Hoc versus Infrastructure Mode

Unlike wired networks, wireless networks have two different modes in which they may be set up: infrastructure and ad-hoc. An infrastructure configuration is a WLAN and wired LAN communicating to each other through an access point. An ad-hoc configuration is wireless-equipped computers communicating directly with each other. Choosing between these two modes depends on whether or not the wireless network needs to share data or peripherals with a wired network or not.

If the computers on the wireless network need to be accessible by a wired network or need to share a peripheral, such as a printer, with the wired network computers, the wireless network should be set up in Infrastructure mode. The basis of Infrastructure mode centers around an access point, which serves as the main point of communications in a wireless network (see Figure 2-1). Access points transmit data to PCs equipped with wireless network cards, which can roam within a certain radial range of the access point. Multiple access points can be arranged to work in succession to extend the roaming range, and can be set up to communicate with your Ethernet hardware as well.

If the wireless network is relatively small and needs to share resources only with the other computers on the wireless network, then the Ad-Hoc mode can be used. Ad-Hoc mode allows computers equipped with wireless transmitters and receivers to communicate directly with each other, eliminating the need for an access point. The drawback of this mode is that in Ad-Hoc mode, wireless-equipped computers are not able to communicate with computers on a wired network. And, of course, communication between the wireless-equipped computers is limited by the distance and interference directly between them.

Figure 2-2 shows a typical scenario of four Wireless-G Ethernet Bridges in ad-hoc mode. Figure 2-3 shows a typical wireless bridging scenario using two Wireless-G Ethernet Bridges. Each wireless network is connected to a Wireless-G Ethernet Bridge through a switch. A separate notebook computer is equipped with a wireless network adapter and can communicate with either wireless network when it is configured with the appropriate SSID and channel.

LAN (Local Area Network): the computers and networking products that make up your local network.

SSID: your wireless network's name.

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

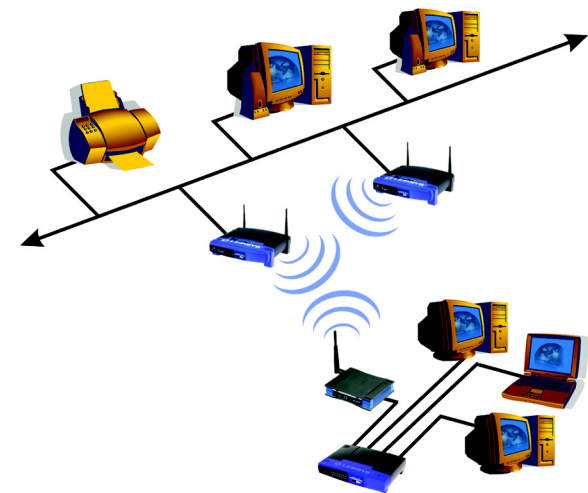


Figure 2-1: Infrastructure Network

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

Network Layout

The Wireless-G Ethernet Bridge is compatible with all 802.11b and 802.11g routers, such as model numbers BEFW11S4 and WRT54G, as well as access points, including model numbers WAP11 and WAP54G. The Camera will also communicate with network adapters, such as the Wireless-B and Wireless-G Network Adapters (model numbers WPC11 and WPC54G) for your laptop computers, Wireless-B and Wireless-G PCI Adapters (model numbers WMP11 and WMP54G) for your desktop PCs, and Wireless-B and Wireless-G USB Adapters (model numbers WUSB11 and WUSB54G) for your computers when you want to enjoy USB connectivity.

With these, and many other, Linksys products, your networking options are limitless. Go to the Linksys website at www.linksys.com for more information about products that work with the Wireless-G Ethernet Bridge.



Figure 2-2: Ad-Hoc Network



Figure 2-3: Network Using Wireless Bridging

Chapter 3: Getting to Know the Wireless-G Ethernet Bridge

The Back Panel

All connections to the Bridge are made through the ports on its back panel, shown in Figure 3-1.

Reset When pressed, the Reset button resets the Bridge to its factory default settings.



Important: If you reset the Wireless-G Ethernet Bridge, you will erase all of your settings (WEP encryption, wireless settings, etc.) and replace them with the factory defaults. Do not reset the Wireless-G Ethernet Bridge if you want to retain these settings.

LAN The LAN port is where you will connect the Ethernet network cable.

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



NOTE: If you use a Power over Ethernet (PoE) device to supply data and power through the Ethernet network cable, then you do not need to use the Power port.

The Front Panel

The LEDs indicate network activity experienced by the Bridge. (See Figure 3-2.)

Power	Green. The Power LED will light up when the Bridge is powered on. While the Bridge is booting up and performing a self-test, the Power LED will flash. It will stop flashing and remain lit when the self-test has ended.
Ethernet	Green. The Ethernet LED will be lit steadily when the Bridge is connected to the wired network. The LED will flash when there is wired network traffic.
Wireless-G	Green. The Wireless-G LED will be lit steadily when the Bridge is connected to the wireless network. The LED will flash when there is wireless network traffic.

Chapter 4: Connecting the Wireless-G Ethernet Bridge for Setup

1. Attach the Bridge's antenna.
2. Plug the included Ethernet network cable into the LAN port on the back panel of the Bridge, shown in Figure 4-1.
3. Plug the other end of the Ethernet network cable into the RJ-45 port of the hub, switch, or PC you wish to use to configure the Bridge.
4. Plug the supplied power cable into the Power port on the back panel of the Bridge, shown in Figure 4-2. Then plug the other end into an electrical outlet.

Proceed to “Chapter 5: Setting Up the Wireless-G Ethernet Bridge.”

Chapter 5: Setting Up the Wireless-G Ethernet Bridge

Now that you've connected the Wireless-G Ethernet Bridge to your wired network, you are ready to set it up. The Setup Wizard will guide you through all the necessary steps.



Note: While the Wireless-G Ethernet Bridge has been designed to work correctly right out of the box, setting it up on a wireless computer will require you to use the Linksys default settings (SSID: linksys and mode: infrastructure). These settings can then be changed through the Bridge's Setup Wizard or Web-based Utility.

1. Insert the Setup CD-ROM into your PC's CD-ROM drive. The Setup Utility should run automatically, and the screen in Figure 5-1 should appear. If it does not, click the **Start** button and choose **Run**. In the field that appears, enter **D:\setup.exe** (if "D" is the letter of your CD-ROM drive).
 - Setup - Click the **Setup** button to proceed with the Setup Wizard.
 - User Guide - Click the **User Guide** button to open the PDF file of this User Guide.
 - LINKSYS Web - Click the **LINKSYS Web** button to access the Linksys website using an active Internet connection.
 - Exit - Click the **Exit** button to exit the Setup Wizard.
2. Click the **Setup** button to begin the setup process.
3. Make sure the Bridge is correctly connected to your wired network (see Figure 5-2). Then click the **Next** button.

Wireless-G Ethernet Bridge

- The screen shown in Figure 5-3 displays a list of Wireless-G Ethernet Bridges on your network, along with the status information for each Bridge. (If you have only one Bridge on your network, it will be the only one displayed.) Select the Bridge you are currently installing by clicking its name in the **Selection** box. Write down the IP address of the Wireless-G Ethernet Bridge, so you can use it to access the Web-based Utility later. Then click the **Yes** button.

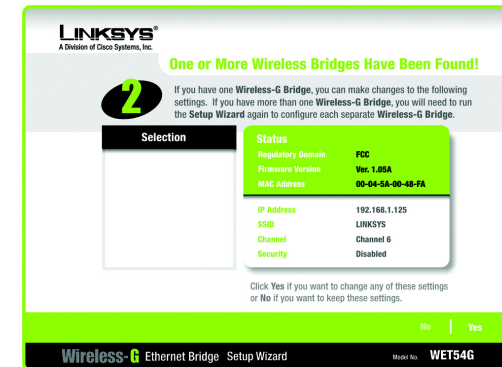


Figure 5-3: List of Bridges

- For security purposes, you will be asked for your password in order to access the Bridge, as shown in Figure 5-4. In lowercase letters, enter **admin** in the **Password** field (later you can change the password through the Web-based Utility). Then click the **Enter** button.

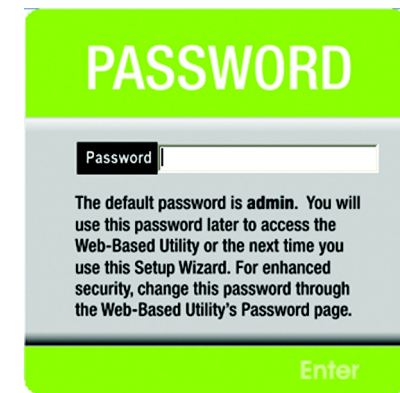


Figure 5-4: Password

- The screen shown in Figure 5-5 shows a choice of two wireless modes. Click the **Infrastructure** radio button if you want your wireless computers to network with computers on your wired network using a wireless access point. Click the **Ad-Hoc** radio button if you want multiple wireless computers to network directly with each other. Do not use the Ad-Hoc mode if you want to network your wireless computers with computers on your wired network.

In the **WB Name** field, enter a unique name for the Bridge. Memorable names are helpful, especially if you are using multiple bridges on the same network. Click the **Next** button to continue or the **Back** button to return to the previous screen.

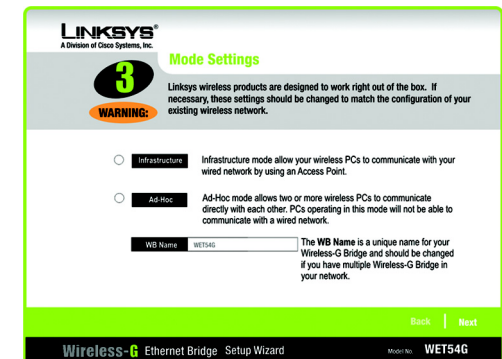


Figure 5-5: Mode Settings

7. The **Wireless Settings** screen, shown in Figure 5-6, will now appear. Enter your wireless network's SSID. If you chose Ad-Hoc mode, select the channel at which the network broadcasts its wireless signal.

If you have Wireless-G (802.11g) and Wireless-B (802.11b) devices in your network, then keep the default **Network Mode** setting, **Mixed**. If you have only Wireless-G devices, select **G-Only**. Then click the **Next** button to continue or the **Back** button to return to the previous screen.

- SSID - The SSID is the unique name shared among all devices in a wireless network. The SSID must be identical for all devices in the wireless network. It is case-sensitive and must not exceed 32 alphanumeric characters, which can be any keyboard character.
 - Channel - From the drop-down menu, select the appropriate channel to match your network settings (available for Ad-Hoc mode only). All devices in your wireless network must use the same channel in order to communicate.
 - Network Mode - Keep the default setting, **Mixed**, if you have Wireless-G and Wireless-B devices in your network. Select **G-Only** if you have only Wireless-G devices in your network.
8. The **IP Settings** screen will appear next, shown in Figure 5-7. If your network has a DHCP server, click the radio button next to **Automatically obtain an IP address (DHCP)**. Click the **Next** button to continue or the **Back** button to return to the previous screen. Then proceed to step 9.

If your network does not have a DHCP server, click the radio button next to **Set IP configuration manually to select this option**. Enter an IP Address, IP Mask, and Gateway appropriate to your network. You must specify an IP address on this screen. If you are unsure about the IP Mask and Gateway, it is better to leave these two fields blank. Click the **Next** button to continue or the **Back** button to return to the previous screen. Then proceed to step 9.

- IP Address - This IP address must be unique to your network.
- IP Mask - The Bridge's IP Mask (also known as Subnet Mask) must be the same as your wired network's Subnet Mask.
- Gateway - Enter the IP address of your network's Gateway (usually this is your router's IP address).

Figure 5-6: Wireless Settings

Figure 5-7: IP Settings

9. The **Security Settings (Optional)** screen, shown in Figure 5-8, appears next. From the drop-down menu, select one of the wireless security mode options supported by the Bridge: WPA PSK (Pre-Shared Key) and WEP. (WPA stands for Wi-Fi Protected Access, which is a security standard stronger than WEP encryption. WEP stands for Wired Equivalent Privacy. If you do not want to use the security function, keep the default setting, **Disabled**. The security modes are briefly discussed below. For more detailed instructions on configuring wireless security for the Bridge, refer to “Appendix B: Wireless Security.”

WEP (64-bit WEP/128-bit WEP) - In order to utilize WEP encryption, select **64-bit** or **128-bit WEP** from the drop-down menu. Then, enter a Passphrase. (If you want to enter a WEP key manually, leave the **Passphrase** field blank, and complete the **Key 1** field.) Click the **Next** button to continue.

- Passphrase - Instead of manually entering a WEP key, you can enter a Passphrase, so a WEP key will be automatically generated. The Passphrase is case-sensitive and should have 16 or fewer alphanumeric characters. It must match the passphrase of your wireless network and is compatible with Linksys wireless products only. (You will have to enter the WEP key(s) manually on any non-Linksys wireless products.

If you want to manually enter a WEP key, leave the **Passphrase** field blank and complete the **Key 1** field.

- Key 1 - If you entered a Passphrase, then you will see the automatically generated WEP key. Click the Next button, and proceed to step 10.

If you did not enter a Passphrase, then enter a WEP key in the **Key 1** field. If you are using 64-bit WEP encryption, then the key must consist of exactly 10 hexadecimal characters. If you are using 128-bit WEP encryption, then the key must consist of exactly 26 hexadecimal characters. Valid hexadecimal characters are “0”-“9” and “A”-“F”. Then click the **Next** button, and proceed to step 10.

WPA PSK - In order to utilize WPA PSK, select WPA PSK from the drop-down menu. WPA PSK gives you one encryption method, TKIP, with dynamic encryption keys. Select the type of algorithm, **TKIP**, then enter a Pre-Shared Key of 8-32 characters. (See Figure 5-9.)

The screenshot shows the 'Security Settings (Optional)' page for a Linksys Wireless-G Ethernet Bridge. The page has a green header with the Linksys logo and a large green number '6' in a circle. Below the header, there's a section titled 'Security' with a dropdown menu set to 'WEP (64-Bit)'. To the right of the dropdown, it says 'Please choose WPA-PSK, WEP (64-Bit), WEP (128-Bit) or Disabled.' Below this, there are two input fields: 'Passphrase' and 'Key 1'. The 'Passphrase' field has a note: 'Type the passphrase that will be used to generate the WEP key. The passphrase is case-sensitive and should not be longer than 16 characters.' The 'Key 1' field has a note: 'If you choose the Passphrase option for WEP, a WEP key will generate automatically. To manually enter a WEP key, select a WEP algorithm and leave the Passphrase option blank.' At the bottom right, there are 'Back' and 'Next' buttons. The footer shows 'Wireless-G Ethernet Bridge Setup Wizard' and 'Model No. WET54G'.

Figure 5-8: Security Settings-WEP

The screenshot shows the 'Security Settings (Optional)' page for a Linksys Wireless-G Ethernet Bridge, but with 'WPA-PSK' selected in the dropdown menu. The 'Security' dropdown is set to 'WPA-PSK'. To the right, it says 'Please choose WPA-PSK, WEP (64-Bit), WEP (128-Bit) or Disabled.' Below this, there's an 'Encryption' dropdown set to 'TKIP' with a note: 'Select the type of Encryption your Network uses.' Below that, there's a 'Pre-Shared Key' input field with a note: 'Enter the Pre-Shared Key used by your network. The Pre-Shared Key can be any keyboard character between 8 and 32 characters.' At the bottom right, there are 'Back' and 'Next' buttons. The footer shows 'Wireless-G Ethernet Bridge Setup Wizard' and 'Model No. WET54G'.

Figure 5-9: Security Settings-WPA-PSK

10. Review your settings on the **Confirmation** screen, shown in Figure 5-10. Write down the Bridge's IP Address if you want to configure advanced settings through the Bridge's Web-based Utility. Click the **Yes** button to save these settings. Click the **No** button to exit the Setup Wizard.

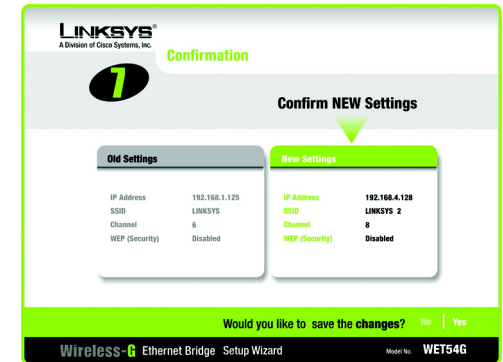


Figure 5-10: Confirmation

11. The next screen, shown in Figure 5-11, shows that the configuration is complete. To configure any other Wireless-G Ethernet Bridges on your network, run this Setup Wizard again. To register the Bridge, click the **Online Registration** button. To exit the Setup Wizard, click the **Exit** button.

The Wireless-G Ethernet Bridge is now successfully configured for your network.

For advanced configuration, proceed to “Chapter 7: Using the Wireless-G Ethernet Bridge Web-based Utility.” Otherwise, go to “Chapter 6: Connecting the Wireless-G Ethernet Bridge for Network Use.”

Chapter 6: Connecting the Wireless-G Ethernet Bridge for Network Use

Connection to a Network Device

1. After configuration, unplug the power cable from the electrical outlet, and unplug the Ethernet network cable from the PC.
2. Plug the Ethernet network cable into the RJ-45 port on the Ethernet-ready network device you wish to add to the wireless network.
3. Plug the power cable into a local electrical outlet.

The installation of the Wireless-G Ethernet Bridge is complete. Proceed to the next section, “Placement Options,” if you want to mount the Bridge on a wall or have the Bridge stand on a surface.



Note: The Bridge features Power Over Ethernet (PoE) support. PoE technology allows a PoE adapter (also known as a power injector, power hub, or inline power device) to supply data and power to an Ethernet device using a single Ethernet network cable. To use the Bridge's PoE feature, follow the instructions for your specific PoE device.

Placement Options

There are three ways to place the Bridge. The first way is to place the Bridge horizontally on a surface, as shown in Figure 6-1. (If necessary, adjust the antenna so that it points straight up in the air.) The second way is to hang the Bridge on a wall, with the Bridge in a vertical position. The third way is to stand the Bridge vertically on a surface. The second and third options are explained in further detail below.

Wall Mount Option

1. The Bridge has eight rubber inserts, four on each side. Depending on how you want to mount the Bridge, remove two of the rubber inserts.
2. Attach two screws to the wall, so that the Bridge's wall-mount slots line up with the two screws.
3. Maneuver the Bridge so the screws are inserted into the two slots.
4. If necessary, adjust the antenna so that it points straight up in the air.

The installation of the Wireless-G Ethernet Bridge is complete.

Stand Option

1. The Bridge has eight rubber inserts, four on each side. Remove the two rubber inserts that are adjacent to the power port.
2. The Bridge includes two triangular stands. Insert a stand into an opening. Push the stand up to snap it into place.
3. Repeat step 2 using the second stand.
4. Place the Bridge in an appropriate location.
5. If necessary, adjust the antenna so that it points straight up in the air. (See Figure 6-2.)

The installation of the Wireless-G Ethernet Bridge is complete.

Chapter 7: Using the Wireless-G Ethernet Bridge Web-based Utility

Overview

The Bridge is designed to function properly after you configure it using the Setup Wizard. However, if you would like to change these basic settings or make advanced configuration changes, use your web browser and the Wireless-G Ethernet Bridge Web-based Utility. This chapter explains how to use the Utility.

Starting the Web-based Utility

1. Open your web browser, and enter the IP address of the Wireless-G Ethernet Bridge (the default is **192.168.1.226**). Press the **Enter** key, and the screen shown in Figure 7-1 will appear. In lowercase letters, enter the default password, **admin**, in the *Password* field. Click the **OK** button. You can set a new password on the *Password* screen later.
2. The Utility's *Setup* screen, shown in Figure 7-2, will appear.

The Utility provides a convenient, web-browser-based way to alter the Bridge's settings. It offers five main tabs:

- Setup - Enables you to configure the IP address and wireless settings.
- Password - Allows you to change the password or reset all settings to factory defaults.
- Advanced - Lets you change the advanced wireless settings and clone a MAC address onto the Bridge.
- Status - Displays the Bridge's current settings.
- Help - Provides explanations of various configuration settings and links to online technical support resources. You can also upgrade the Bridge's firmware using the *Help* screen.

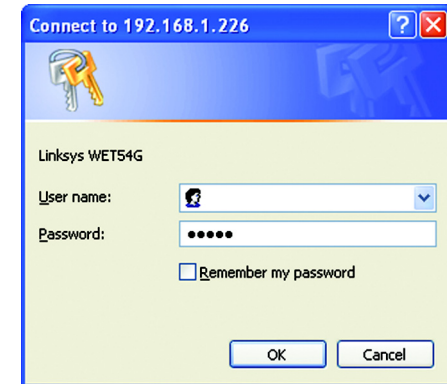


Figure 7-1: Password Screen



Have You: Enabled TCP/IP on your PCs? PCs communicate over the network with this protocol. Refer to "Appendix D: Windows Help" for more information on TCP/IP.



Note: The Wireless-G Ethernet Bridge is designed to function properly after you use the Setup Wizard. However, if you would like to change its basic settings or make advanced configuration changes, use your web browser and the Wireless-G Ethernet Bridge Web-based Utility.

Setup

The **Setup** screen, shown in Figure 7-2, lets you configure the wired and wireless network settings for the Bridge.

- **Firmware** - The version number of the Bridge's firmware is displayed here. Firmware should be upgraded **ONLY** if you experience problems with the Bridge. Firmware updates are posted at www.linksys.com.
- **MAC Address** - The MAC Address of the Bridge is displayed here.

LAN

- **Device Name** - You may assign any name to the Bridge. Unique, memorable names are helpful, especially if you are using multiple bridges on the same wireless network.
- **Configuration Type** - If the Bridge will obtain an IP address automatically from a DHCP server, such as a router, then select **Automatic Configuration-DHCP**. If you are assigning the Bridge a static IP address, then select **Static IP Address**, and enter an IP Address, Subnet Mask, and Gateway address in the **IP Address**, **Subnet Mask**, and **Gateway** fields.

Wireless

- **SSID** - The SSID is the network name shared among all devices in a wireless network. The SSID must be identical for all devices in the wireless network. It is case-sensitive and must not exceed 32 alphanumeric characters, which may be any keyboard character (do not use any spaces). Make sure this setting is the same for all devices in your wireless network. For added security, Linksys recommends that you change the default SSID (linksys) to a name of your choice.

To search for available wireless networks, click the **Site Survey** button.

- **Network Type** - Choose a wireless operating mode for the Bridge. Keep the default setting, **Infrastructure**, if you want your wireless-equipped device to communicate with computers and other devices on your wired network using a wireless access point. Select **Ad-Hoc** button if you want multiple wireless-equipped devices to communicate directly with each other.

If you chose Ad-Hoc mode, then select the correct operating channel for your network from the **Channel** drop-down menu. This should match the channel setting of the other devices in your wireless network.

Select the appropriate network mode. Keep the default, **Mixed**, if you have Wireless-G (802.11g) and Wireless-B (802.11b) devices in your network. Select **G-Only** if you have only Wireless-G devices in your network.

The screenshot shows the Linksys Setup Tab interface. The top navigation bar includes links for Setup, Password, Advanced, Status, and Help. The main content area is divided into two sections: LAN and Wireless.

LAN Section:

- Firmware:** v.2.08, February 24, 2004
- MAC Address:** 00:06:25:98:76:53
- Device Name:** WET54GV2 (with a note: "You may specify a device name up to 19 characters long.")
- Configuration Type:**
 - ☐ Automatic Configuration - DHCP
 - ☒ Static IP Address:
 - IP Address:** 192.168.1.226
 - Subnet Mask:** 255.255.255.0
 - Gateway:** 192.168.1.1
- The above settings will not be applied if Automatic Configuration - DHCP is selected.

Wireless Section:

- SSID:** linksys (with a **Site Survey** button and text: "Search for available wireless network(s).")
- Network Type:** Infrastructure (dropdown menu)
- Channel:** 6 (dropdown menu)
- Mode:** Mixed (dropdown menu)
- Security:**
 - ☐ Enable
 - ☒ Disable (with an **Edit Security Settings** button)
- Note: All devices must use the same settings in order to communicate.
- Buttons: **Apply**, **Cancel**, **Help**

Figure 7-2: Setup Tab

Wireless-G Ethernet Bridge

- Wireless Site Survey

The *Wireless Site Survey* screen, shown in Figure 7-3 shows all the wireless networks detected by the Bridge and their general information. You can use this screen to connect to one of these networks.

For each wireless network detected, the following information is displayed:

- SSID - The network name. To join a wireless network, click its SSID.
- MAC Address - The MAC address of the network's access point.
- Channel - The channel setting.
- Signal Strength (%) - The percentage of wireless signal strength.
- Mode - The type of wireless standard, network mode, and status of WEP encryption.

Click the Refresh button to obtain the most up-to-date data. Click the Cancel button to close this screen. Click the Help button for additional on-screen information.

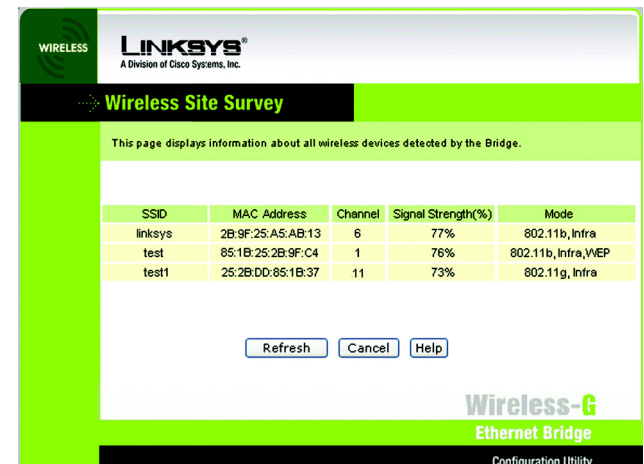


Figure 7-3: Site Survey

- Security

Security - To enable security, select **Enable**, then click **Edit Security Settings**. If you have not enabled security before clicking on Edit Security Settings, the screen in Figure 7-4 will appear. To disable security, select **Disable**.

To save your changes, click the **Apply** button. Click the **Cancel** button to cancel your changes. Click the **Help** button for additional on-screen information.



Figure 7-4: Security Settings



NOTE: Make sure that your security choice matches the security choice of the wireless network you want to join. Otherwise, the connection will fail.

If you click Edit *Security Settings*, The *Security* screen, as shown in Figure 7-5, will appear. From the drop-down menu, select one of the four wireless security modes supported by the Bridge: WPA Pre-Shared Key, WPA RADIUS, RADIUS, and WEP. (WPA stands for Wi-Fi Protected Access, which is a security standard stronger than WEP encryption. WEP stands for Wired Equivalent Privacy, while RADIUS stands for Remote Authentication Dial-In User Service) .The four security modes are briefly discussed here. For detailed instructions on configuring wireless security for the Bridge, turn to “Appendix B: Wireless Security.”

WEP

Use the *WEP* screen, shown in Figure 7-5, to configure the WEP encryption for the Bridge. Select a *Default Transmit Key* (choose which Key to use), and a level of *WEP Encryption*, **64 bits (10 hex digits)** or (**128 bits 26 hex digits**). Then either generate a *WEP Key* using a *Passphrase* or enter the WEP key manually.

- Default Transmit Key - Select which WEP key (1-4) will be used when the Bridge sends data. Make sure the other wireless-equipped devices are using the same key.
- WEP Encryption - In order to use WEP encryption, select **64-Bit (10 hex digits)** or **128-Bit (26 hex digits)** from the drop-down menu.
- Passphrase - Instead of manually entering WEP keys, you can enter a Passphrase. This Passphrase is used to generate one or more WEP keys. It is case-sensitive and should not be longer than 16 alphanumeric characters. (The Passphrase function is compatible with Linksys wireless products only. If you want to communicate with non-Linksys wireless products, you will need to enter your WEP key manually on the non-Linksys wireless products.) After you enter the Passphrase, click the **Generate** button to create WEP key(s).
- Keys 1-4 - If you are not using a Passphrase, then you can enter one or more WEP keys manually.

In each key field, manually enter a set of values. (Do not leave a key field blank, and do not enter all zeroes. These are not valid key values.) If you are using 64-bit WEP encryption, then each key must consist of exactly 10 hexadecimal characters in length. If you are using 128-bit WEP encryption, then each key must consist of exactly 26 hexadecimal characters in length. Valid hexadecimal characters are “0”-“9” and “A”-“F”.

Click the **Apply** button to save your changes. If your page doesn’t automatically refresh itself, then click the **Refresh** button of your web browser.

Figure 7-5: WEP

WPA Pre-Shared Key

WPA gives you TKIP for the encryption method. Enter a WPA Shared Key of 8-32 characters. (See Figure 7-6.) Enter a key shared between the Bridge and the server.

Click the **Apply** button to save your changes. If your page doesn't automatically refresh itself, then click the **Refresh** button of your web browser. Click the **View Log** button to view a log.

The *Log Table* screen appears in Figure 7-7. The log shows the authentication process.

Click the **Refresh** button to refresh the screen. Click the **Close** button to return to the the previous screen.

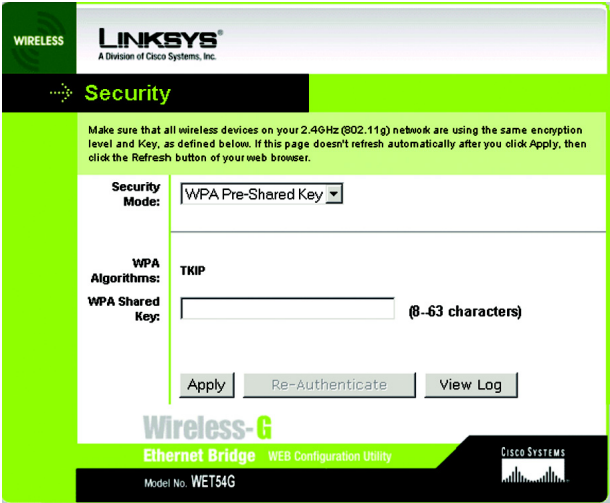


Figure 7-6: WPA Pre-Shared Key

Log Table

No.	Log Message
1	In WPA-PSK mode
2	Set Information Element
3	Authenticator MAC Address: 000625fdd6fd
4	sending EAPOL-Start frame
5	sending EAPOL-Start frame
6	sending EAPOL-Start frame

Figure 7-7: Log Table

RADIUS

This option features WEP used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) It offers three authentication methods: MD5, TLS, and TTLS.

EAP Type

MD5

Select a Default Key (choose which Key to use), and a level of WEP encryption, **64 bits 10 hex digits** or **128 bits 26 hex digits**. Then either generate a WEP key using a Passphrase or enter the WEP key manually. (See Figure 7-8.)

- **Default Transmit Key** Select which WEP key (1-4) will be used when the Bridge sends data. Make sure that the receiving device (wireless client) is using the same key.
- **WEP Encryption.** An acronym for Wired Equivalent Privacy, WEP is an encryption method used to protect your wireless data communications. WEP uses 64-bit or 128-bit keys to provide access control to your network and encryption security for every data transmission. To decode data transmissions, all devices in a network must use an identical WEP key. Higher encryption levels offer higher levels of security, but due to the complexity of the encryption, they may decrease network performance. Select **64 bits (10 hex digits)** or **128 bits (26 hex digits)**.
- **Passphrase.** Instead of manually entering WEP keys, you can enter a passphrase. This passphrase is used to generate one or more WEP keys. It is case-sensitive and should not be longer than 32 alphanumeric characters. (This Passphrase function is compatible with Linksys wireless products only and cannot be used with Windows XP Zero Configuration. If you want to communicate with non-Linksys wireless products or Windows XP Zero Configuration, make a note of the WEP key generated in the Key 1 field, and enter it manually in the wireless client.) After you enter the Passphrase, click the **Generate** button to create WEP keys.
- **Keys 1-4.** WEP keys enable you to create an encryption scheme for wireless network transmissions. If you are not using a Passphrase, then manually enter a set of values. (Do not leave a key field blank, and do not enter all zeroes; they are not valid key values.) If you are using 64-bit WEP encryption, the key must be exactly 10 hexadecimal characters in length. If you are using 128-bit WEP encryption, the key must be exactly 26 hexadecimal characters in length. Valid hexadecimal characters are “0”-“9” and “A”-“F”.
- **User ID and Password.** A user identification and password are required for your security. Enter the ID in the *User ID* field, then the password in the *Password* field.

The screenshot shows the Linksys Security configuration interface. The 'Security Mode' is set to 'Radius'. Under 'EAP Type', 'MD5' is selected. 'Cipher Type' is set to 'WEP'. For 'Default Transmit Key', radio button '1' is selected. 'WEP Encryption' is set to '64-Bit (10 hex digits)'. There is a 'Passphrase' field with a 'Generate' button next to it. Below this are four 'Key' fields (Key 1, Key 2, Key 3, Key 4). Further down are 'User ID' and 'Password' fields. At the bottom of the form are three buttons: 'Apply', 'Re-Authenticate', and 'View Log'.

Figure 7-8: RADIUS-MD5

Encryption - Encoding data transmitted in a network.

When finished making your changes on this tab, click the **Apply** button to save these changes.