LINKSYS®

A Division of Cisco Systems, Inc.

2.4GHz 802.11g

Wireless-G

WIRELESS

Access Point with Power Over Ethernet

User Guide

Model No. **WAP54GP**

CISCO SYSTEMS

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WARNING: This product contains chemicals, including lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. ***Wash hands after handling.***

How to Use this User Guide

The user guide to the Wireless-G Access Point with Power Over Ethernet has been designed to make understanding networking with the Access Point easier than ever. Look for the following items when reading this User Guide:

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

This exclamation point means there is a caution or warning and is something that could damage your property or the Access Point.

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

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.

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Chapter 1: Introduction

Welcome

Thank you for choosing the Wireless-G Access Point with Power Over Ethernet. This Access Point will allow you to network wirelessly better than ever.

How does the Access Point do all of this? An access point allows for greater range and mobility within your wireless network while also allowing you to connect the wireless network to a wired environment. In fact, the Wireless-G Access Point with Power Over Ethernet can support communications on up to eight wireless networks, using Virtual Local Area Network (VLAN) technology.

The Wireless-G Access Point with Power Over Ethernet also offers the convenience of Power over Ethernet (PoE) capability, so it can receive data and power over a single Ethernet network cable.

But what does all of this mean?

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

PCs on a wired network create a LAN, or Local Area Network. They are connected with Ethernet cables, which is why the network is called "wired".

PCs equipped with wireless cards and adapters can communicate without cumbersome cables. By sharing the same wireless settings, within their transmission radius, they form a wireless network. This is sometimes called a WLAN, or Wired Local Area Network. The Access Point bridges wireless networks of both 802.11g and 802.11b standards and wired networks.

Use the instructions in this Guide to help you connect the Access Point, set it up, and configure it to bridge your different networks. These instructions should be all you need to get the most out of the Access Point.

access point*: a device that allows wireless-equipped computers and other devices to communicate with a wired network. Also used to expand the range of a wireless network.*

network: *a series of computers or devices connected together.*

lan *(local area network): the computers and networking products that make up your local network.*

poe *(power over ethernet): a technology enabling an Ethernet network cable to deliver both data and power.*

ethernet: *network protocol that specifies how data is placed on and retrieved from a common transmission medium.*

adapter: *a device that adds network functionality to your PC.*

802.11g: *a 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.*

802.11b: *a wireless networking standard that specifies a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.*

What's in this User Guide?

This user guide covers the steps for setting up and using the Wireless-G Access Point with Power Over Ethernet.

- Chapter 1: Introduction
  This chapter describes the Access Point's 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 Access Point with Power Over Ethernet
  This chapter describes the physical features of the Access Point.
- Chapter 4: Connecting the Wireless-G Access Point with Power Over Ethernet
  This chapter instructs you on how to connect the Access Point to your network.
- Chapter 5: Setting Up the Wireless-G Access Point with Power Over Ethernet
  This chapter explains how to use the Setup Wizard to configure the settings on the Access Point.
- Chapter 6: Configuring the Wireless-G Access Point with Power Over Ethernet
  This chapter explains how to use the Access Point's Web-based Utility for advanced configuration.
- Appendix A: Troubleshooting
  This appendix describes some frequently asked questions regarding installation and use of the Access Point.
- 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 Access Point's firmware.
- Appendix D: Windows Help
  This appendix describes some of the ways Windows can help you with wireless networking.
- Appendix E: Glossary
  This appendix gives a brief glossary of terms frequently used in networking.
- Appendix F: Specifications
  This appendix provides the Access Point's technical specifications.
- Appendix G: Warranty Information
  This appendix supplies the Access Point's warranty information.

- Appendix H: Regulatory Information
  This appendix supplies the Access Point's regulatory information.

- 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 network is a group of computers, each equipped with one wireless adapter. Computers in a wireless network must be configured to share the same radio channel. Several PCs equipped with wireless cards or adapters can communicate with one another to form an ad-hoc network.

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

Linksys wireless adapters also provide users access to a wired network when using an access point, such as the Wireless-G Access Point with Power Over Ethernet, or wireless router. An integrated wireless and wired network is called an infrastructure network. Each wireless PC in an infrastructure network can talk to any computer in a wired network infrastructure via the access point or wireless router.

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

An infrastructure configuration extends the accessibility of a wireless PC to a wired network, and may double the effective wireless transmission range for two wireless adapter PCs. Since an access point is able to forward data within a network, the effective transmission range in an infrastructure network may be doubled.

Roaming

Infrastructure mode also supports roaming capabilities for mobile users. Roaming means that you can move your wireless PC within your network and the access points will pick up the wireless PC's signal, providing that they both share the same channel and SSID.

***roaming**: the ability to take a wireless device from one access point's range to another without losing the connection.*

Before using the roaming capabilities, choose a feasible radio channel and optimum access point position. Proper access point positioning combined with a clear radio signal will greatly enhance performance.

***ssid**: your wireless network's name*

Network Layout

The Wireless-G Access Point with Power Over Ethernet has been designed for use with 802.11g and 802.11b products. The Access Point is compatible with 802.11g and 802.11b adapters, such as the Notebook Adapters for your laptop computers, PCI Adapters for your desktop PCs, and USB Adapters for when you want to enjoy USB connectivity. These wireless products can also communicate with a 802.11g or 802.11b Wireless PrintServer.

To link your wired network with your wireless network, connect the Access Point's Ethernet network port to any switch or router. If you want to use Power Over Ethernet (POE), then connect the Access Point to any switch or router that complies with the POE standard (802.3af)—or you can use a POE injector, such as the Linksys WAPPOE or WAPPOE12.

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 wireless products.

Chapter 3: Getting to Know the Wireless-G Access Point with Power Over Ethernet

The Front Panel

The Access Point's LEDs, which indicate activity and status information, are located on the front panel.

Power Green. The **Power** LED lights up when the Access Point is powered on.

Ethernet Green. The **Ethernet** LED lights up when the Access Point is successfully connected to a device through the Ethernet network port. If the LED is flashing, the Access Point is actively sending to or receiving data from one of the devices over the Ethernet network port.

Wireless-G Green. The **Wireless-G** LED lights up when the Access Point is successfully connected to a wireless device. If the wireless LED is flashing, the Access Point is actively sending to or receiving data from a wireless device.

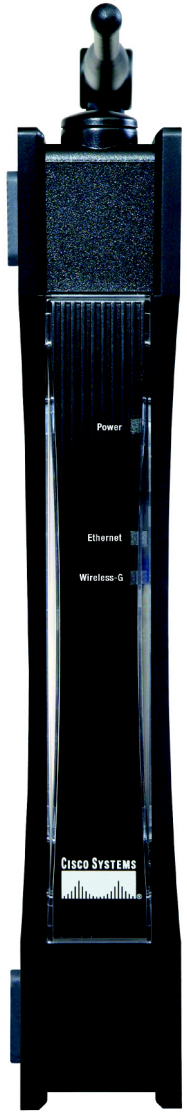

Figure 3-1: Front Panel

The Back Panel

The Access Point's Ethernet network and power ports, as well as the Reset button, are located on the back panel.

Ethernet Port The Ethernet network port connects to an Ethernet network device, such as a switch or router.

Reset Button There are two ways to Reset the Access Point's factory defaults. Either press the **Reset** button, for approximately ten seconds, or restore the defaults using the Access Point's Web-based Utility.

IMPORTANT: Resetting the Access Point will erase all of your settings (including wireless security, IP address, and power output) and replace them with the factory defaults. Do not reset the Access Point if you want to retain these settings.

Power Port The Power port connects to the Access Point's power adapter. (This port will not be used if you are using Power Over Ethernet.)

port: *the connection point on a computer or networking device used for plugging in cables or adapters*

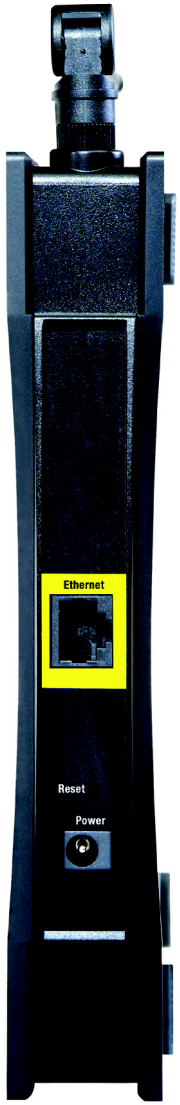

Figure 3-2: Back Panel

Chapter 4: Connecting the Wireless-G Access Point with Power Over Ethernet

Overview

This chapter explains how to connect the Access Point for setups.

Connections for Setup

1. Attach the Access Point's antenna.
2. Connect your Ethernet network cable to your network router or switch. Then connect the other end of the network cable to the Access Point's Ethernet port.
3. If you are using Power Over Ethernet (POE), proceed to the following section, "Placement Options."

   If you are not using POE, then connect the included power adapter to the Access Point's Power port. Then plug the power adapter into an electrical outlet. The LEDs on the front panel will light up as soon as the Access Point's powers on.

Proceed to the following section, "Placement Options."

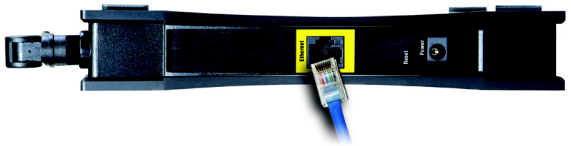

Figure 4-1: Connect the Ethernet Network Cable

Figure 4-2: Connect the Power

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 Access Point. The first way is to place it horizontally on a surface, so it sits on its four rubber feet. The second way is to stand the Access Point vertically on a surface. The third way is to mount it on a wall. The stand and wall-mount options are explained in further detail below.

Stand Option

1. Near the Access Point's bottom panel are two rubber feet and two rubber inserts. Remove them to expose the stand slots you want to use.
2. The Access Point includes four triangular stands. With its rubber pad facing the bottom, insert a stand into a slot, and push the stand upward until the stand snaps into place.

   Repeat this step with the other stands.

Now that the hardware installation is complete, proceed to "Chapter 5: Setting Up the Wireless-G Access Point with Power Over Ethernet," for directions on how to configure the Access Point.

Figure 4-3: The Access Point's Stand Slots

Wall-Mount Option

1. On one of the Access Point's side panels are four rubber feet. Remove four adjacent feet to expose the wall-mount slots you want to use. The distance between two adjacent slots is 145 mm (5.7 inches).
2. Determine where you want to mount the Access Point.
3. Drill four holes into the wall. Make sure adjacent holes are 145 mm (5.7 inches) apart.
4. Insert a screw into each hole, and leave 5 mm (0.2 inches) of its head exposed.
5. Maneuver the Router so the wall-mount slots line up with the four screws.
6. Place the wall-mount slots over the screws and slide the Access Point down until the screws fit snugly into the wall-mount slots.

Now that the hardware installation is complete, proceed to "Chapter 5: Setting Up the Wireless-G Access Point with Power Over Ethernet," for directions on how to configure the Access Point.

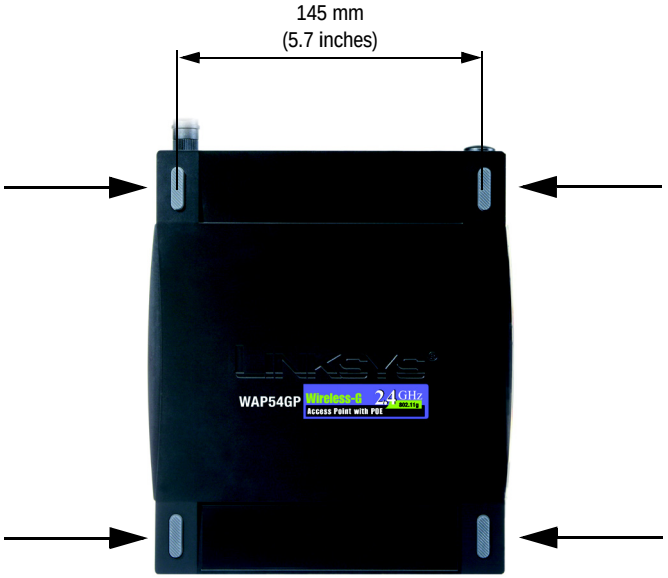

Figure 4-4: The Access Point's Wall-Mount Slots

Chapter 5: Setting Up the Wireless-G Access Point with Power Over Ethernet

Setup Wizard

Now that you've connected the Access Point to your wired network, you are ready to begin setting it up. This Setup Wizard will take you through all the steps necessary to configure the Access Point.

1. Insert the Setup Wizard CD into your PC's CD-ROM drive. Your PC must be on your wired network to set up the Access Point.

2. The Setup Wizard's *Welcome* screen should appear on your monitor. If it does not, then click the **Start** button and select **Run**. In the field provided, enter **D:\setup.exe** (if "D" is the letter of your PC's CD-ROM drive).

   Click the **Click Here to Start** or **Setup** button to proceed with this Setup Wizard. Clicking the **User Guide** button opened this Guide. To exit this Setup Wizard, click the **Exit** button.

Figure 5-1: Setup Wizard's Welcome Screen

3. Optimally, you should set up the Access Point using a PC on your wired network. Connect a network cable to your network switch or router. Click the **Next** button to continue or **Back** to return to the previous screen.

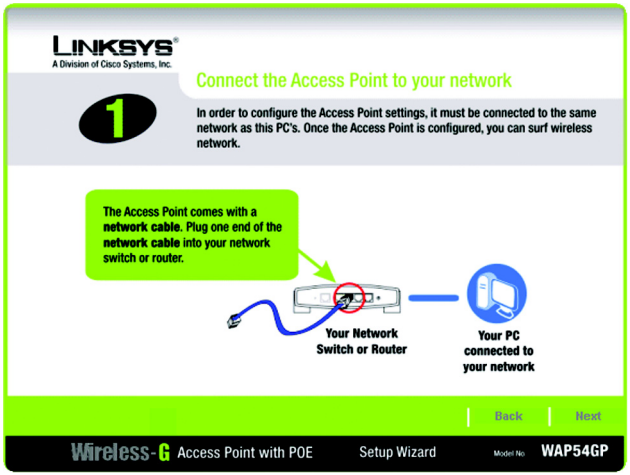

Figure 5-2: Connect the Network Cable to Your Switch or Router

4. The screen shows how the Access Point should be connected as you run the Setup Wizard. Connect the other end of the network cable to the Access Point. Click the **Next** button to continue or **Back** to return to the previous screen.

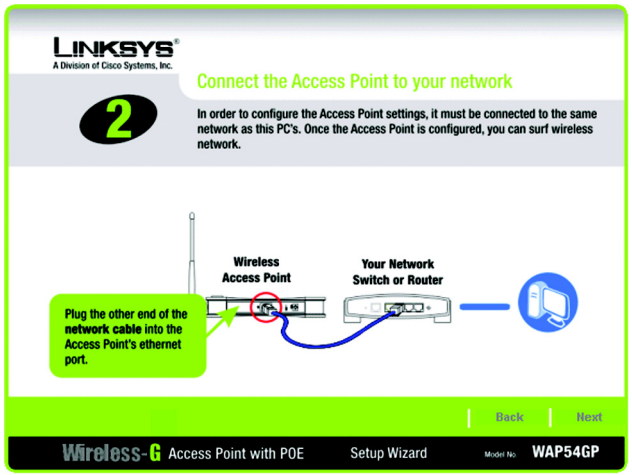

Figure 5-3: Connect the Network Cable to the Access Point

5. Connect the power adapter to the Access Point and an electrical outlet. (If you are using Power Over Ethernet, (POE), then you can skip this step.) Click the **Next** button to continue or **Back** to return to the previous screen.

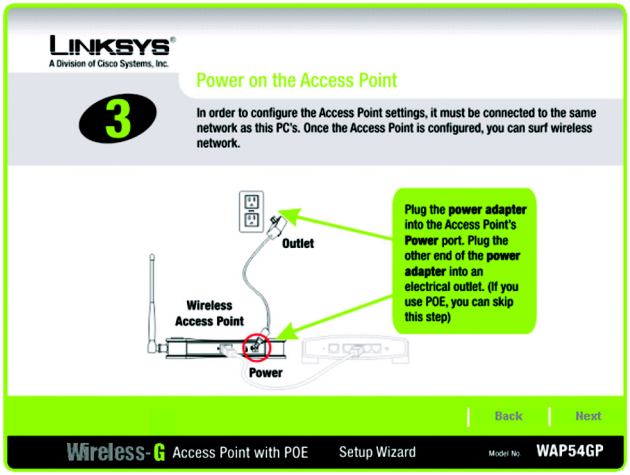

Figure 5-4: Power on the Access Point

6. Make sure the Access Point's Power and Wireless Link LEDs are lit. If they are not, check your cable connections. Click the **Next** button to continue Click the **Next** button to continue or **Back** to return to the previous screen. You can also click **Exit** to exit the Setup Wizard.

Figure 5-5: Check the Access Point's Status

7. The Setup Wizard will run a search for the Access Point within your network and then display a list along with the status information for the selected access point. If this is the only access point on your network, it will be the only one displayed. If there are more than one displayed, select the Access Point by clicking on it. Then click the **Yes** button to continue or **No** to exit the Setup Wizard.

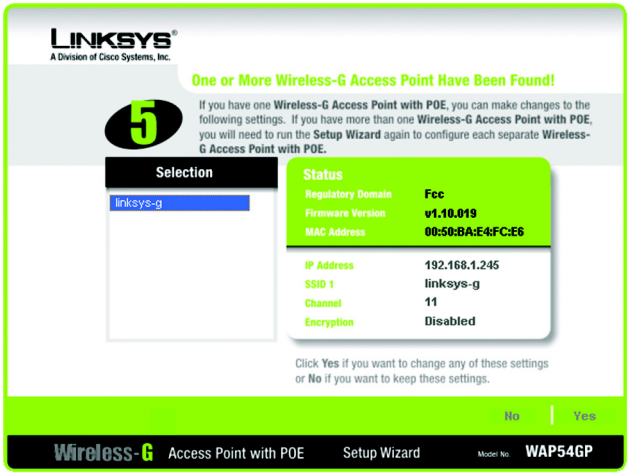

Figure 5-6: Select an Access Point

8. You will be asked to sign onto the Access Point you have selected. Enter the default user name and password, **admin**, in both fields. Then, click **Enter**. (This user name and password can be changed from the Web-based Utility's Administration - Management tab.)

Figure 5-7: Login Screen

9. The *Configure Network Address Settings* screen will appear next. If your network router will automatically assign an IP address to the Access Point, then select **Automatically obtain an IP address (DHCP)**.

   If you want to assign a static or fixed IP address to the Access Point, then select **Set IP configuration manually**. Enter an IP Address and Subnet Mask.

   Then, click the **Next** button to continue or **Back** to return to the previous page.

   - IP Address. This IP address must be unique to your network. (The default IP address is **192.168.1.245**.)
   - Subnet Mask. The Access Point's Subnet Mask must be the same as the subnet mask of your Ethernet network.

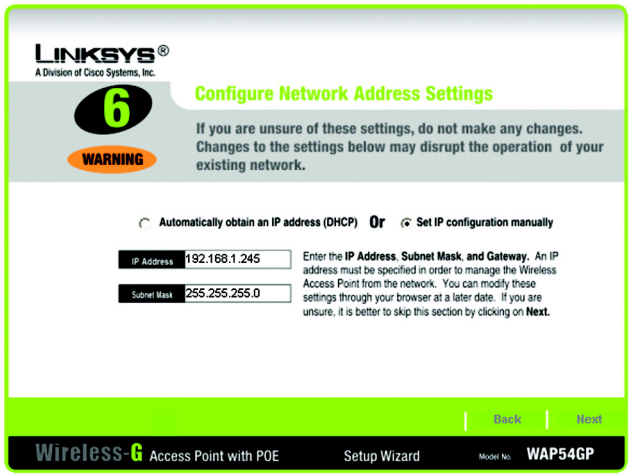

Figure 5-8: Configure Network Address Settings Screen

dhcp *(dynamic host configuration protocol): a networking protocol that allows administrators to assign temporary IP addresses to network computers by "leasing" an IP address to a user for a limited amount of time, instead of assigning permanent IP addresses.*

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

ip address: *the address used to identify a computer or device on a network.*

subnet mask: *an address code that determines the size of the network.*

10. The *Wireless Settings* screen should now appear. The Access Point can connect to up to eight wireless networks at the same time. On this screen, you can configure up to three SSIDs, as well as the Access Point's channel setting and wireless mode. (To configure additional networks, then use the Web-based Utility.)

    Select **Main SSID** and enter your primary SSID in the field provided.

    Select the channel you want the Access Point to use for all of the wireless networks it supports.

    Select the wireless mode you want the Access Point to use for all of the wireless networks it supports.

    Select **SSID1** and enter your second SSID in the field provided.

    Select **SSID2** and enter your third SSID in the field provided.

    After you have entered the settings for your three wireless networks, click the **Next** button to continue or **Back** to return to the previous page.

    - SSID. The SSID is the unique name shared among all devices in a wireless network. It is case-sensitive and must not exceed 32 characters, which may be any keyboard character. Make sure this setting is the same for all devices in your wireless network.
    - Channel. Select the appropriate channel from the list provided to correspond with your network settings. All devices in your wireless network must use the same channel in order to communicate.
    - Mode. Select **Mixed Mode** if you want both Wireless-G and Wireless-B computers allowed on the networks, but note that the speed will be reduced. Select **G-Only** for maximum speed with Wireless-G products only. The final selection, **B-Only**, allows only Wireless-B products on the networks. You can also disable wireless performance if you select **Disable**.

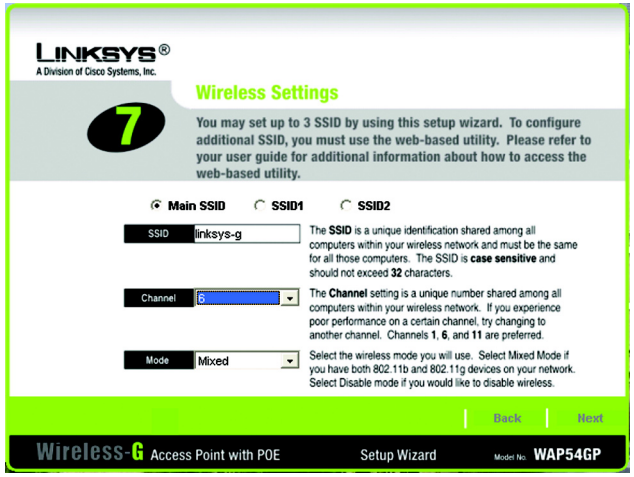

Figure 5-9: Wireless Settings Screen

NOTE: The Access Point uses the same channel setting and mode for all of the wireless networks it supports.