# LINKSYS®

A Division of Cisco Systems, Inc.

## 2.4 GHz 802.11g

WIRELESS

# Wireless-G

## Internet Video Camera

# User Guide

CISCO SYSTEMS

Model No. **WVC54G**

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## How to Use this Guide

Your guide to the Wireless-G Internet Video Camera has been designed to make understanding networking with the Camera 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 Camera.

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

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

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".

# Table of Contents

# List of Figures

# Chapter 1: Introduction

## Welcome

Thank you for choosing the Linksys Wireless-G Internet Video Camera. This Camera sends live video through the Internet to a web browser anywhere in the world! This compact, self-contained unit lets you keep an eye on your home, your kids, your workplace—whatever's important to you.

How does the Camera do all of this? Unlike standard "web cams" that require an attached PC, the Internet Video Camera contains its own web server, so it can connect directly to a network, either over Wireless-G (802.11g) networking, or over 10/100 Ethernet cable. The advanced MPEG-4 video compression produces a high-quality, high-framerate, up to 640 x 480 audio/video stream.

The Internet Video Camera's unique form-factor and wireless connectivity allows you to mount it on a wall nearly anywhere, or slip it into its included stand for desktop use. Once it's connected to your home network, you can "see what it sees" from any PC in the house, while the audio/video stream is secured from the outside world, hidden behind your Router. If you want the video to be visible from outside your home network, you can open an appropriate port on the Router, and then create password-protected accounts to manage access to the Camera, or leave it wide open for the world to see. The SoloLink DDNS Service (trial sign-up included) lets you access your Camera using an easy-to-remember "name", even if your home Internet connection uses a dynamic IP address.

You can also turn on Security Mode, which tells the Camera to send you an e-mail message with a short video attached to up to three e-mail addresses whenever it detects motion in its field of view. You can then log onto the live video stream if the situation warrants. The included Viewer & Recorder utility lets you record the audio/video stream to your local hard drive, "live" or on a predetermined schedule.

Use the instructions in this Guide to help you integrate the Camera into your network. These instructions should be all you need to get the most out of the Wireless-G Internet Video Camera.

*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 Internet Video Camera.

- Chapter 1: Introduction
  This chapter describes the Camera's applications and this User Guide.

- Chapter 2: Planning Your Wireless Network
  This chapter discusses a few of the basics about wireless networking.

- Chapter 3: Getting to Know the Wireless-G Internet Video Camera
  This chapter describes the physical features of the Camera.

- Chapter 4: Connecting the Wireless-G Internet Video Camera
  This chapter instructs you on how to connect the Camera to your network before you run the Setup Wizard.

- Chapter 5: Setting up and Mounting the Wireless-G Internet Video Camera
  This chapter instructs you on how to use the Setup Wizard for setup and configuration of the Camera, as well as how to mount the Camera.

- Chapter 6: Installing and Using the Wireless-G Internet Video Camera Utility
  This chapter explains how to install and use the Wireless-G Internet Video Camera Utility on your PC, so you can view and record video.

- Chapter 7: Setting up the Linksys SoloLink™ DDNS Service
  This chapter discusses the advantages of the SoloLink DDNS Service and walks you through the setup procedure.

- Chapter 8: Using the Wireless-G Internet Video Camera Web-based Utility
  This chapter describes the Web-based Utility and the features available, so you can use and alter advanced configuration settings.

- Appendix A: Troubleshooting
  This appendix describes some problems and solutions, as well as frequently asked questions, regarding installation and use of the Camera.

- Appendix B: Wireless Security
  This appendix discusses security issues regarding wireless networking and measures you can take to help protect your wireless network.

- Appendix C: Upgrading Firmware
  This appendix explains how you can upgrade the Camera's firmware.

- Appendix D: Windows Help
  This appendix describes how you can use Windows Help for instructions about networking, such as installing the TCP/IP protocol.

- 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 Camera.

- Appendix G: Warranty Information
  This appendix supplies the warranty information for the Camera.

- Appendix H: Regulatory Information
  This appendix supplies the regulatory information regarding the Camera.

- Appendix I: Contact Information
  This appendix provides contact information for a variety of Linksys resources, including Technical Support.

# Chapter 2: Planning Your Wireless Network

## Introduction

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 and other devices, such as peripherals, in a WLAN share the same frequency channel and SSID, which is an identification name for wireless devices.

## Ad-Hoc and Infrastructure Modes

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 accessed 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. (A wireless router can also be used because a wireless router incorporates the capabilities of an access point.) 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 (wired) 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.

## Network Layout

The Wireless-G Internet Video Camera 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

*LAN (Local Area Network): the computers and networking products that make up the network in your home or office.*

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

*Infrastructure: configuration in which a wireless network is bridged to a wired network via an access point.*

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

Camera will also communicate with network adapters, such as the Wireless-B and Wireless-G Notebook 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 Internet Video Camera.

# Chapter 3: Getting to Know the Wireless-G Internet Video Camera

## Camera LCD Screen and Built-in Microphone

The Camera has a LCD screen that indicates the Camera's current IP address and whether it is a fixed or dynamic address. If the Camera uses a fixed IP address, then the screen will display the word "FIXED." If the Camera uses a dynamic IP address, then the screen will display the word "DHCP."

The built-in microphone is located approximately one inch below the LCD screen, in the middle of the Camera's front panel. It has a range of approximately 9 feet (3 meters), depending on environmental conditions.

## Camera LEDs

The Camera has four LEDs to let you know how the Camera is functioning.

| | |
|---|---|
| **READY** | Green. The **READY** LED lights up when the Camera is powered on. It flashes while the Camera is initializing and is steadily lit when the Camera is ready for use. |
| **ACT/LINK** | Green. The **ACT/LINK** LED flashes when there is activity. |
| **ETHERNET** | Green. The **ETHERNET** LED lights up when there is a connection to a wired network. It flashes when data is transmitted to or received from the wired network. |
| **WIRELESS** | Green. The **WIRELESS** LED lights up when there is a connection to a wireless network. It flashes when data is transmitted to or received from the wireless network. |

## Camera Head

The Camera head and its focus ring allow you to modify the aim and focus of the Camera.

To alter the Camera's aim, swivel the Camera head.

To adjust the Camera's focus, rotate the dark gray focus ring.



**Built-in Microphone**
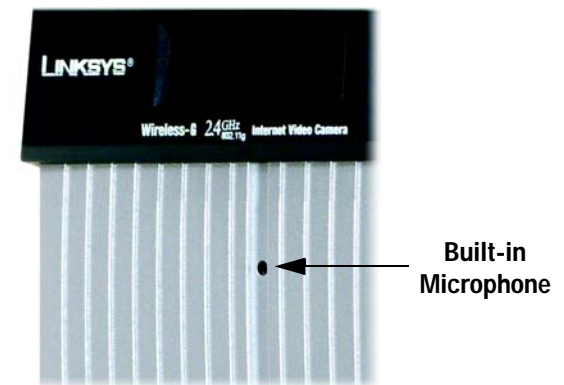
**Figure 3-1: Camera LCD Screen and Built-in Microphone**
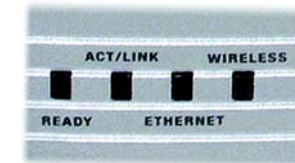


**Figure 3-2: Camera LEDs**



**Figure 3-3: Camera Head**

## Camera Ports
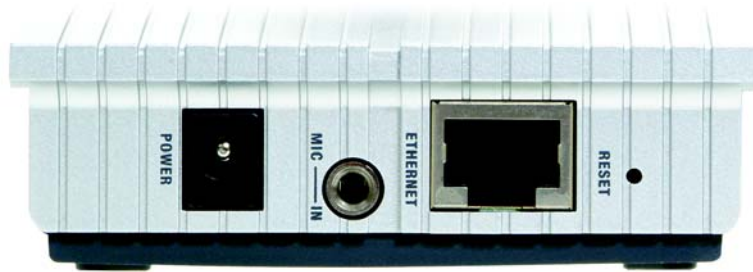


**Figure 3-4: Camera Ports**

The Camera features three ports and a Reset button on the bottom panel.

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

**MIC IN**           The **MIC IN** port is where you will connect the 2.5 mm input jack of your external microphone (optional).

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

**RESET**           The **RESET** button is what you will press if you need to reset the Camera. Insert a paper clip into the opening next to the Ethernet port. Then press the button and hold it in for five seconds.

**IMPORTANT:** Resetting the Camera will erase all of your settings, such as encryption information, and replace them with the factory defaults. Do not reset the Camera if you want to retain these settings.

# Chapter 4: Connecting the Wireless-G Internet Video Camera for Setup

## Overview

Before you set up the Camera, connect it to a wired or wireless network. Proceed to the appropriate section for your setup.

If you need to move the Camera from a wired network to a wireless network, or vice versa, go to this section, "Moving the Camera to a Different Network."

## Connection to a Wired Network for Setup

1. Attach the antenna.

2. Connect the Ethernet network cable to your router, switch, or computer.

3. Connect the other end of the cable to the Ethernet port on the Camera. See Figure 4-1.

4. Connect the power adapter to the Power port on the Camera.

5. Plug the power adapter into an electrical outlet.

   The Camera's Ready LED flashes while the Camera is initializing. The Camera is ready for use when the Ready and Ethernet LEDs are solidly lit.

   **Proceed to "Chapter 5: Setting up and Mounting the Wireless-G Internet Video Camera."**

## Connection to a Wireless Ad-Hoc Network for Setup

1. Make sure your computer has the following wireless settings:
   • SSID - linksys
   • Network Mode - Ad-Hoc
   • Channel - 6
   • WEP - Disabled

2. Attach the antenna.



**Figure 4-1: Connect the Ethernet Network Cable**

**NOTE:** You MUST connect the Camera to a PC, router, or switch using the Ethernet network cable BEFORE powering on the Camera. Otherwise, the Camera will not function.



**Figure 4-2: Connect the Power Adapter**

3. Connect the power adapter to the Power port on the Camera.

4. Plug the power adapter into an electrical outlet.

   The Camera's Ready LED flashes while the Camera is initializing. The Camera is ready for use when the Ready and Wireless LEDs are solidly lit.

   **Proceed to "Chapter 5: Setting up and Mounting the Wireless-G Internet Video Camera."**

## Moving the Camera to a Different Network

When you move the Camera from a wired network to a wireless network, or vice versa, you must power off the Camera before connecting to the new network. Proceed to the appropriate instructions.

To move the Camera from a wired network to a wireless network, follow these instructions:

1. Unplug the power adapter from the Camera.

2. Unplug the Ethernet network cable from the Camera.

3. Re-connect the power adapter to the Power port on the Camera.

   The Camera's Ready LED flashes while the Camera is initializing. The Camera is ready for use when the Ready and Wireless LEDs are solidly lit.

   **Proceed to "Chapter 5: Setting up and Mounting the Wireless-G Internet Video Camera."**

To move the Camera from a wireless network to a wired network, follow these instructions:

1. Unplug the power adapter from the Camera.

2. Connect the Ethernet network cable to your PC, router, or switch.

3. Connect the other end of the cable to the Ethernet port on the Camera.

4. Re-connect the power adapter to the Power port on the Camera.

   The Camera's Ready LED flashes while the Camera is initializing. The Camera is ready for use when the Ready and LAN LEDs are solidly lit.

   **Proceed to "Chapter 5: Setting up and Mounting the Wireless-G Internet Video Camera."**

# Chapter 5: Setting up and Mounting the Wireless-G Internet Video Camera

## Setup Wizard

The Wireless-G Internet Video Camera Setup Wizard will guide you through the installation and configuration procedure.

1. Insert the Setup CD-ROM into your CD-ROM drive. The Setup Wizard should run automatically, and the *Welcome* screen should appear. If it does not, click the **Start** button and choose **Run**. In the field provided, enter **D:\wvc54g.exe** (if "D" is the letter of your CD-ROM drive).

   • **Setup**. Click the **Setup** button to begin the installation process.

   • **Install Viewer & Recorder Utility**. Click this button to install the Camera's Viewer & Recorder Utility on your PC.

   • **Setup SoloLink DDNS Service**. Click the **Setup SoloLink DDNS Service** button to configure and use Linksys's Dynamic Domain Name System (DDNS) service.

   • **User Guide**. Click this button to open the PDF file of this User Guide.

   • **Exit**. Click the **Exit** button to exit the Setup Wizard.

2. To install the Camera, click the **Setup** button on the *Welcome* screen.

3. When you see the screen shown in Figure 5-2, make sure the Camera is properly connected to either a wired or wireless network. Then click the **Next** button to continue.



**Figure 5-1: Setup Wizard - Welcome Screen**
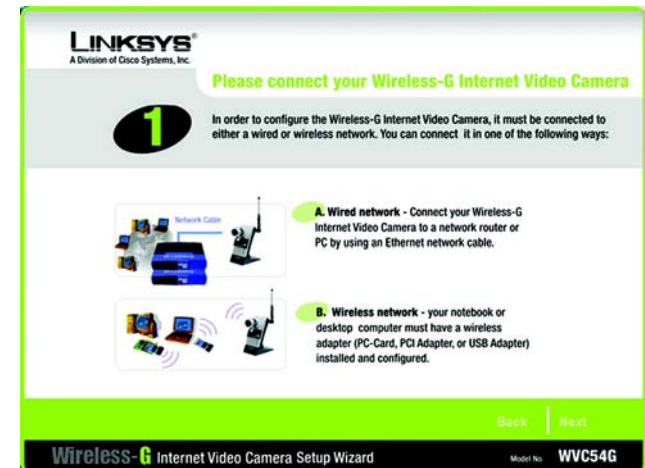


**Figure 5-2: Connection for Setup Screen**

4.  The screen shown in Figure 5-3 displays a list of Wireless-G Internet Video Cameras on your network, along with the status information for the Camera whose name is highlighted. In the *Selection* box, click the name of the Camera you are currently installing. Write down the IP address of the Camera, so you can use it to access the Web-based Utility later. Click the **Next** button.



**Figure 5-3: Cameras Found Screen**

5.  For security purposes, you will be asked to enter a name and password in order to have administrator access to the Camera. In lowercase letters, enter **admin** in the *Administrator Name* and *Administrator Password* fields (later you can change these through the Web-based Utility). Then click the **OK** button.



**Figure 5-4: Login Screen**

6.  On the *Basic Settings* screen, you can alter the following settings:

    •   **Camera Name**. You can give the Camera a unique name. Memorable names are helpful, especially if you are using multiple Cameras on the same network. It should have 15 characters or fewer.

    •   **Description**. You may enter additional information, such as location, in this field. It has a maximum length of 32 characters.

    •   **Time Zone**. Select the time zone for the Camera's location.

    •   **Date**. Enter today's date in the fields provided.

    •   **Time**. Enter the current time in the fields provided.

    When you have finished making your changes, click the **Next** button.



**Figure 5-5: Basic Settings Screen**

7.  If your network has a DHCP server, such as a router with DHCP enabled, click the **Automatic Configuration-DHCP** radio button. If you need to assign a static IP address to the Camera, keep the default setting, **Static IP address**.

    Then click the **Next** button.
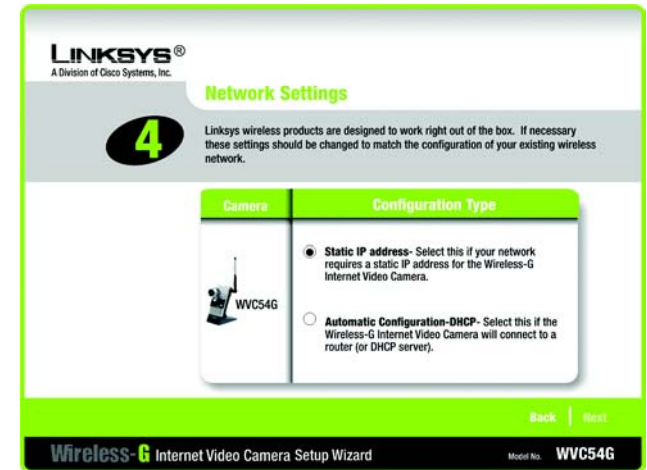


**Figure 5-6: Network Settings Screen**

8.  If you selected Automatic Configuration-DHCP in step 7, then proceed to step 9.

    If you selected Static IP Address, then the *IP Settings* screen will appear. Enter an IP Address, Subnet Mask, and Default Gateway appropriate for your network. You must specify an IP Address and Subnet Mask on this screen. If you are unsure about the Default Gateway, it is better to leave this field blank. Then complete the *Primary DNS* and/or *Secondary DNS* fields. You must enter at least one DNS address, which can be obtained from your ISP. Click the **Next** button.
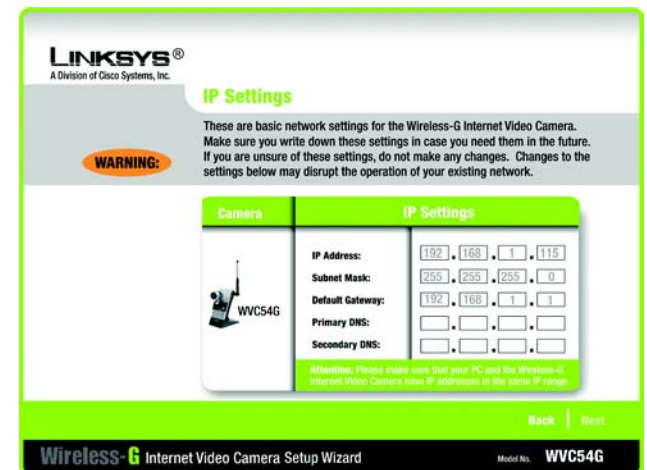


**Figure 5-7: IP Settings Screen**

9.  The *Mode Setting* screen will appear. Click the **Infrastructure** radio button if you want the Camera to communicate using an access point or wireless router. Click the **Ad-Hoc** radio button if you want the Camera to communicate without using an access point or wireless router. Click the **Next** button.
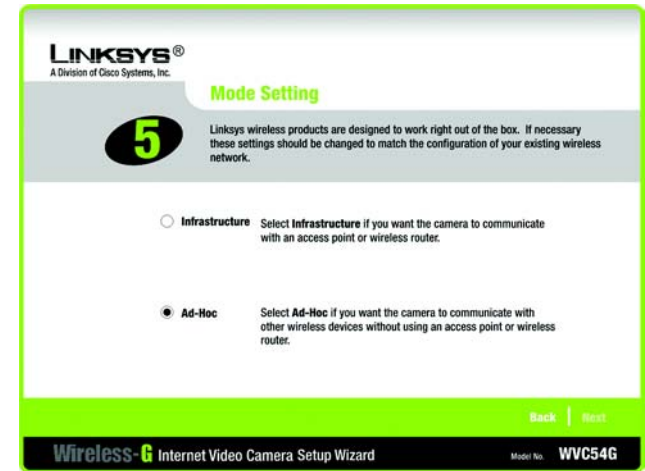


**Figure 5-8: Mode Settings Screen**

10. The *Wireless Settings* screen will appear, so you can change the wireless settings. Enter your wireless network's SSID or network name. If you chose Ad-Hoc mode, select the channel at which the network broadcasts its wireless signal.

    • **SSID**. The SSID must be identical for all devices in a wireless network. It is case-sensitive and should have 32 alphanumeric characters or fewer. (You can use any keyboard character, but do not use any spaces.)

    • **Channel**. If you set the Camera to Ad-Hoc mode, select the appropriate channel from the drop-down menu. All devices in your wireless ad-hoc network must use the same channel in order to function correctly.

    Then click the **Next** button.
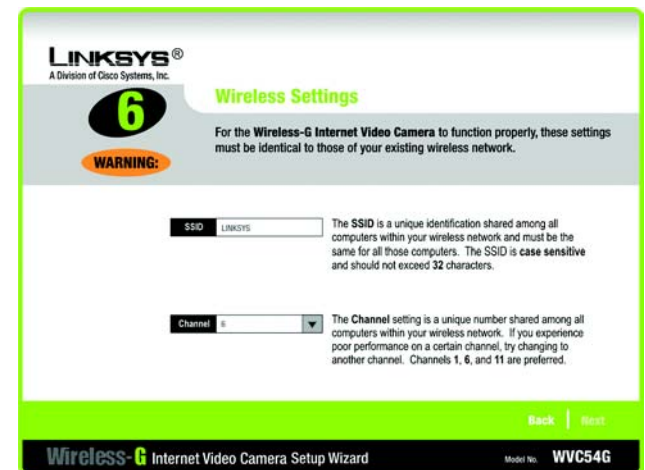


**Figure 5-9: Wireless Settings Screen**

11. The *Security Settings* screen will appear. If your network has WEP encryption enabled, then select the level of WEP encryption and enter a Passphrase. If you want to manually enter a WEP key, leave the *Passphrase* field blank, and enter the WEP key in the *Key 1* field. If your network doesn't have WEP encryption disabled, keep the default, **Disabled**.

• **WEP**. To enable WEP encryption, select **64-Bit Keys** or **128-Bit Keys** from the drop-down menu. Then enter a Passphrase. If you want to manually enter a WEP key, leave the *Passphrase* field blank.

• **Passphrase**. If you enabled WEP encryption, you can enter a Passphrase, so a WEP key will be automatically generated. If you want to manually enter a WEP key, leave the *Passphrase* field blank. The Passphrase is case-sensitive and should have 16 alphanumeric characters or fewer. 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.)

• **Key 1**. If you want to manually enter a WEP key, complete this 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 26 hexadecimal characters. Valid hexadecimal characters are "0" through "9" and "A" through "F".

Click the **Next** button.

12. Review your settings before the Setup Wizard starts to copy your files. Click the **Next** button to continue.
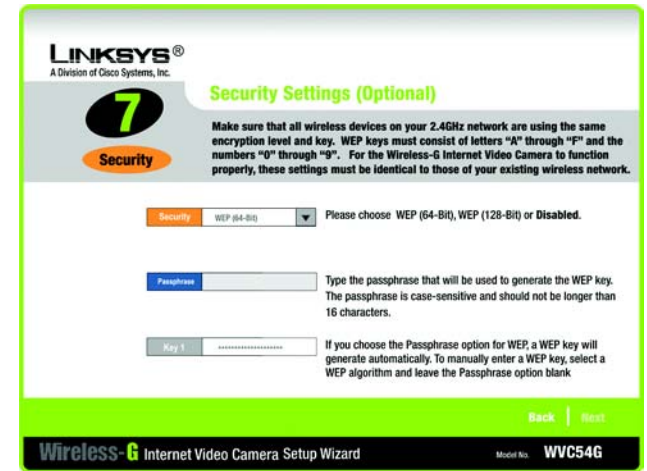


**Figure 5-10: Security Settings Screen**



**Figure 5-11: Review New Settings Screen**

13. If you want to save the new settings, click the **OK** button. If you want to cancel your changes, click the **Cancel** button.
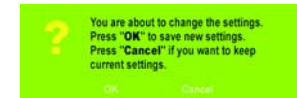


**Figure 5-12: Confirmation Screen**

14. After the files have been successfully copied, the *Congratulations* screen will appear.

- **Install Viewer & Recorder Utility**. Click this button to install the Camera's Utility on your PC.

- **Setup SoloLink DDNS Service**. Click the **Setup SoloLink DDNS Service** button to set up and configure the Linksys Dynamic Domain Name System (DDNS) service.

- **Exit**. Click the **Exit** button if you want to install the Camera's Utility later.

**Go to the "Placement Options" section.**



**Figure 5-13: Congratulations Screen**

## Placement Options

There are three ways to place the Camera. The first way is to place the Camera horizontally on a surface, so it sits on four small rubber feet. The second way is to stand the Camera vertically on a surface (see Figure 5-14). The third way is to hang the Camera on a wall (see Figure 5-16). The second and third options are explained in further detail below.

### Stand Option

1. The Camera includes a Camera Desktop Stand. Insert the bottom end into the Stand.

2. Place the Camera, and adjust its aim and focus accordingly.

### Wall Mount Option

The Camera has two wall-mount slots on its back panel. The distance between the slots is 80 mm (3.15 inches).

1. Determine where you want to mount the Camera. Attach two screws to the wall, so that the Switch's wall-mount slots line up with the two screws.

2. Maneuver the Camera so the screws are inserted into the two slots.

3. Adjust the Camera's aim and focus accordingly.

**Proceed to the next section, "Audio Option."**

## Audio Option

If you want to use your own microphone instead of the Camera's built-in microphone, then follow these instructions:

1. Connect the 2.5 mm input jack of your microphone to the Camera's MIC IN port on its bottom panel. The built-in microphone will automatically be disabled.

2. Place the external microphone in an appropriate location.

**The installation of the Wireless-G Internet Video Camera is complete. Go to "Chapter 6: Installing the Wireless-G Internet Video Camera Viewer & Recorder Utility."**

**If advanced users wish to access the Camera through its Web-based Utility, then proceed to "Chapter 8: Using the Wireless-G Internet Video Camera Web-based Utility."**

**Figure 5-14: Stand Option**

**Figure 5-15: Camera Desktop Stand**

**Figure 5-16: Wall Mount Option**

**Figure 5-17: Wall-Mount Slots**

# Chapter 6: Installing and Using the Wireless-G Internet Video Camera Viewer & Recorder Utility

## Overview

This chapter will instruct you on how to install and use the Wireless-G Internet Video Camera Viewer & Recorder Utility on your PC. The Utility allows you to easily view and record the Camera's video.

If the Wireless-B Internet Video Camera Viewer & Recorder Utility has already been installed on your PC, Linksys recommends that you uninstall it before you install the Wireless-G Internet Video Camera Viewer & Recorder Utility (this Utility will also work with Wireless-B Internet Video Cameras).

**NOTE:** To view video using a web browser, you must use Internet Explorer version 5.5 or higher. The View Video feature will not work with Netscape. Netscape users should use the Viewer & Recorder Utility instead.

## Installing the Viewer & Recorder Utility

1. On the *Welcome* or *Congratulations* screen of the Setup Wizard, click the **Install Viewer & Recorder Utility** button.



**Figure 6-1: Install Viewer & Recorder Utility Screen**

2. The *Welcome* screen will appear. Click the **Next** button to proceed.



**Figure 6-2: Install Viewer & Recorder Utility - Welcome Screen**

3. The *Choose Destination Location* screen will appear. To install the Viewer & Recorder Utility files in the default folder, click the **Next** button. To select a different folder, click the **Browse** button and follow the on-screen directions.

4. The *Select Program Folder* screen will appear. To add program icons to the default folder, click the **Next** button. If you wish, you can rename the default folder. To add program icons to an existing folder, select one from the Existing Folders listed, and then click the **Next** button.

5. After the OCX plug-in for video streaming has been installed, the screen shown in Figure 6-5 will appear. Click the **OK** button.

6. When the setup is complete, click the **OK** button.

**To learn how to use the Viewer & Recorder Utility, proceed to the next section, "Using the Viewer & Recorder Utility."**

**To set up the Linksys SoloLink Service, go to "Chapter 7: Setting up the Linksys SoloLink DDNS Service."**

**Advanced users: If you want to use the Camera's Web-based Utility, go to "Chapter 8: Using the Wireless-G Internet Video Camera Web-based Utility."**
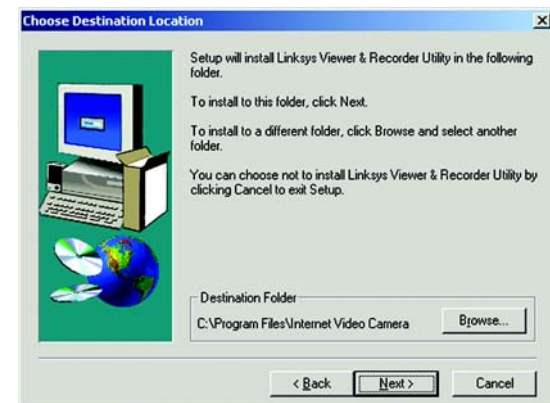


**Figure 6-3: Choose Destination Location Screen**
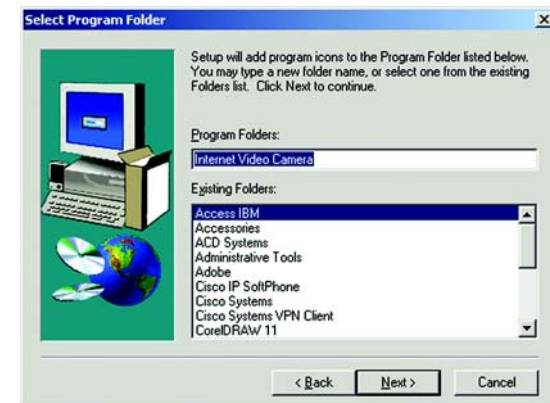


**Figure 6-4: Select Program Folder Screen**



**Figure 6-5: OCX Plug-in Screen**
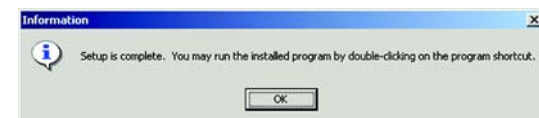


**Figure 6-6: Setup Complete Screen**

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Installing the Viewer & Recorder Utility

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## Using the Viewer & Recorder Utility

After the Viewer & Recorder Utility has been installed, the Viewer & Recorder Utility icon will be displayed in two locations, one on your desktop and one in the system tray of your desktop's taskbar.

There are two ways to open the Viewer & Recorder Utility:

• Double-click the icon on your desktop (the icon acts as a shortcut)

• Right-click the icon in the system tray, and then click **Main Program**.

You will see the Utility's main screen (see Figure 6-8).

It is divided into two sections, *Cameras* and *Scheduled Recordings in progress*. From this screen, you can control Cameras, view video, and schedule recordings.

To minimize any of the Utility's screens, click the **X** button in the upper right-hand corner. To request help information, click the **?** button in the upper right-hand corner. To close the Utility, right-click the Viewer & Recorder Utility icon in your desktop's system tray. Then click **Exit**.

**NOTE:** This Viewer & Recorder Utility is backward-compatible with the Wireless-B Internet Video Camera, so you can use this Utility to control Wireless-G and Wireless-B Internet Video Cameras on your network.

### Cameras

From the *Cameras* section, you can find or delete Cameras, change Camera settings, and view current video.

**Camera List**

**Default ID**. The identification name of the Camera used by the Camera and the Utility to exchange data.

**Camera Name**. The name you gave to the Camera.

**Status**. The status of the Camera.



**Figure 6-7: Viewer & Recorder Utility Icon**



**Figure 6-8: Main Screen**

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Using the Viewer & Recorder Utility

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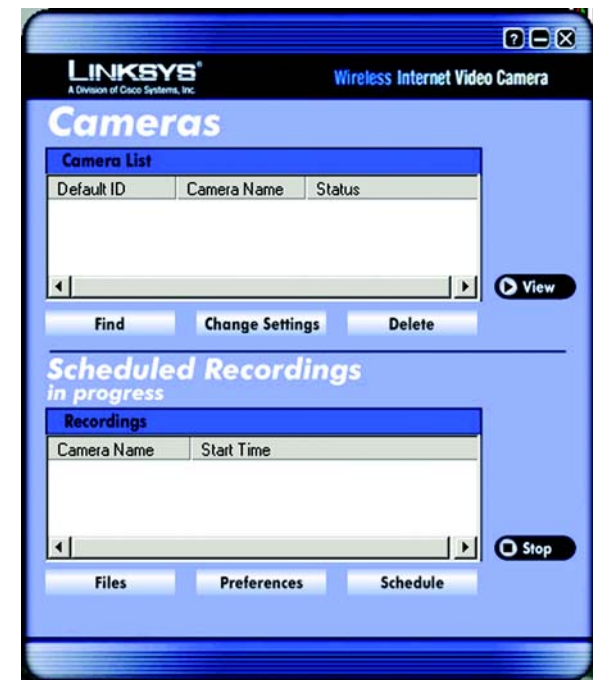
## Find

To find a Camera on your local network or the Internet, click the **Find** button. There will be two tabs available, LAN and Internet.

## LAN

The *LAN* screen shows the Cameras found on your local area network, along with the status information for each Camera.

**Cameras on LAN**

The Utility will search for Cameras on the local area network and display a list in the *Cameras on LAN* box. To run a new search, click the **Refresh** button.

For the Camera whose name is currently selected in the *Cameras on LAN* box, the following information will be displayed:

**Camera Info**

**Camera Name**. The name you gave to the Camera.

**Description**. The information about the Camera that you entered.

**Address**. The Camera's IP address.

**Port Number**. The port number the Camera uses for communication.

**Login**. If you set up the Camera with a name and password, then you will need to enter them here in order to access the Camera.

**Name**. Enter the login Name.

**Password**. Enter the login Password.

To add a Camera to the Utility's list, select the Camera you wish to add by clicking its name in the *Cameras on LAN* box.  Then click the **Add** button. You will be notified when the Camera has been added. Click the **OK** button.



**Figure 6-9: Find Camera from LAN Screen**



**Figure 6-10: Camera Added Successfully Screen**

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## Internet

The *Internet* screen shows the Camera found on the Internet, along with the status information for it.

**Test Results**

First, go to the *Camera Info* section. Enter the Camera's Address, Port Number, and login information (if required). Then click the **Test** button to find the Camera. The following information will be displayed:

**Camera Info**

**Camera Name**. The name you gave to the Camera.

**Description**. The information about the Camera that you entered.

**Address**. The Camera's IP address or SoloLink DDNS address.

**Port Number**. The port number the Camera uses for communication.

**Login**. If you set up the Camera with a name and password, then you will need to enter them here in order to access the Camera.

**Name**. Enter the login Name.

**Password**. Enter the login Password.

To add the Camera to the Utility's list, click the **Add** button. If you wish to clear a Camera, click the **Clear** button.

## Change Settings

To modify a Camera's settings, select its name in the *Camera List* box, and click the **Change Settings** button.

**Test Results**

First, make your changes to the Camera's *Address* and *Port Number* fields as needed. If you set up the Camera with a name and password, then you will need to enter them in the *Name* and *Password* fields in order to access the Camera. Click the **Save** button to save your changes.

Click the **Test** button to make sure the Utility is able to find the Camera using the new information.
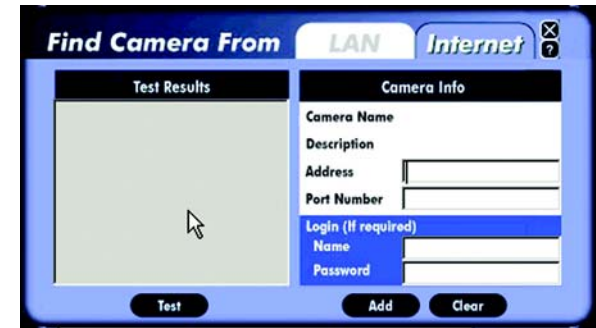


**Figure 6-11: Find Camera from Internet Screen**
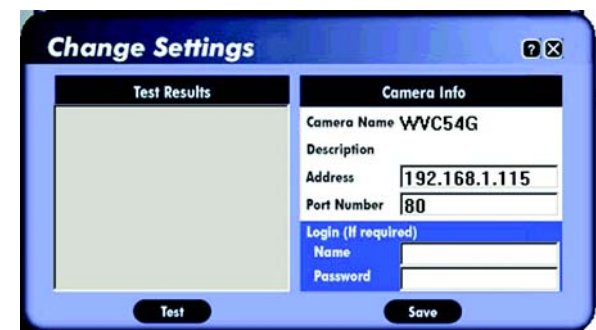


**Figure 6-12: Change Settings Screen**

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For the selected Camera, the following information will be displayed:

**Camera Info**

**Camera Name**. The name you gave to the Camera.

**Description**. The information about the Camera that you entered.

**Address**. The Camera's IP address or your SoloLink DDNS address.

**Port Number**. The port number the Camera uses for communication.

**Login**. If you set up the Camera with a name and password, then enter them here to access the Camera.

**Name**. Enter the login Name.

**Password**. Enter the login Password.

If you want to save any changes, click the **Save** button.

Delete

To delete a Camera from the list, select the Camera by clicking its name in the *Camera List* box, and then click the **Delete** button. When asked to confirm the deletion, click the **Yes** button.
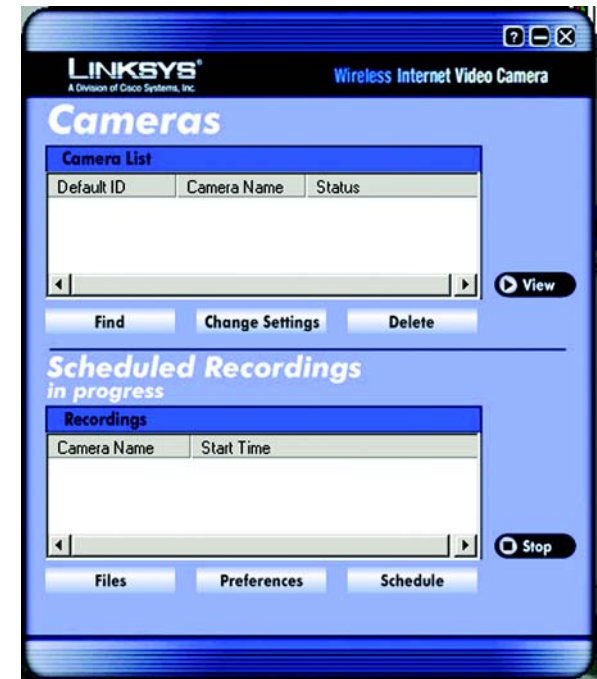


**Figure 6-13: Delete Camera Screen**



**Figure 6-14: Confirm Deletion of Camera Screen**

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View

To view the video seen by a Camera, select the Camera by clicking its name in the *Camera List* box, and then click the **View** button. You will see a screen similar to the one shown in Figure 6-15.

If you want to view video from a different Camera, return to the Utility's main screen. Select this Camera from the Camera List, and click **View**. Repeat this step for all the Cameras whose video you wish to view.

This screen provides six buttons:

- Play button (triangle) - Click this button to view video.

- Record button (circle) - Click this button to record the video. (You will see a rotating recording icon, which alternates between blue and green, in the desktop's system tray, as shown in Figure 6-16.)

- Stop button (square) - Click this button to stop recording or stop the video.

- Snapshot button (camera) - Click this button to take a snapshot of the current image.

- Audio button (speaker) - Audio is enabled by default. Click this button to disable it. When audio is disabled, then a red dash will appear on this button. If you have disabled audio through the Web-based Utility, then audio will not be available, and a red X will appear on this button.

  **NOTE:** If you are monitoring multiple Cameras and want to hear the audio from a single Camera, then disable the audio from the other Cameras.

- Magnification button (2X) - Click this button to view the video at twice its size. (This digital zoom feature is only available for 320 x 480 and 160 x 128.)
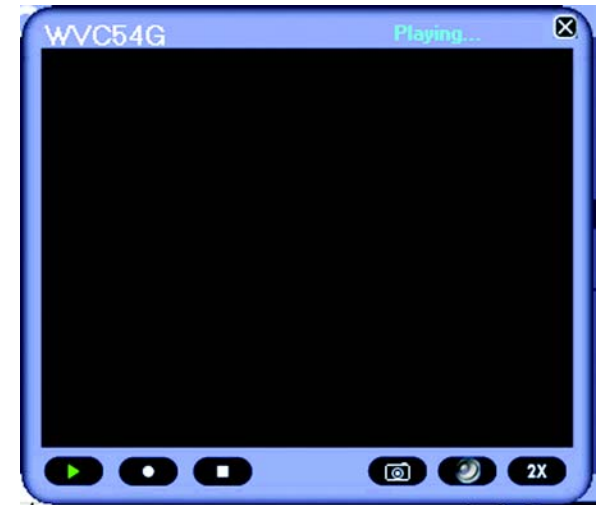


**Figure 6-15: View Video Screen**



**Figure 6-16: Recording Icon Screen**

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You may find it helpful to know how much memory is required to hold a video recording. The following tables list estimated bit rates and file sizes for a recording at each available resolution and video. The first table shows estimates for a typical video recording, while the second table shows estimates for an audio/video recording.

**Estimated Hard-Drive Memory Space Required for Video Recording per Hour**

| Resolution | Quality Level | Bit Rate | File Size |
|---|---|---|---|
| 640 x 480 | Very High | 900kbps | 270MB |
| 640 x 480 | High | 700kbps | 190MB |
| 640 x 480 | Normal | 500kbps | 130MB |
| 640 x 480 | Low | 200kbps | 117MB |
| 640 x 480 | Very Low | 40kbps | 105MB |
| 320 x 240 | Very High | 900kbps | 430MB |
| 320 x 240 | High | 500kbps | 330MB |
| 320 x 240 | Normal | 300kbps | 240MB |
| 320 x 240 | Low | 120kbps | 230MB |
| 320 x 240 | Very Low | 40kbps | 225MB |
| 160 x 120 | Very High | 800kbps | 380MB |
| 160 x 120 | High | 400kbps | 270MB |
| 160 x 120 | Normal | 200kbps | 230MB |
| 160 x 120 | Low | 100kbps | 220MB |
| 160 x 120 | Very Low | 40kbps | 210MB |

**NOTE:** The maximum length of a recording file is one hour. If a recording is more than one hour long, then multiple files will be saved.

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**Estimated Hard-Drive Memory Space Required for Audio/Video Recording per Hour**

| Resolution | Quality Level | Bit Rate | File Size |
|---|---|---|---|
| 640 x 480 | Very High | 900kbps | 340MB |
| 640 x 480 | High | 700kbps | 210MB |
| 640 x 480 | Normal | 500kbps | 160MB |
| 640 x 480 | Low | 200kbps | 140MB |
| 640 x 480 | Very Low | 40kbps | 130MB |
| 320 x 240 | Very High | 900kbps | 480MB |
| 320 x 240 | High | 500kbps | 380MB |
| 320 x 240 | Normal | 300kbps | 270MB |
| 320 x 240 | Low | 120kbps | 240MB |
| 320 x 240 | Very Low | 40kbps | 230MB |
| 160 x 120 | Very High | 800kbps | 460MB |
| 160 x 120 | High | 400kbps | 300MB |
| 160 x 120 | Normal | 200kbps | 260MB |
| 160 x 120 | Low | 100kbps | 250MB |
| 160 x 120 | Very Low | 40kbps | 240MB |

**NOTE:** The maximum length of a recording file is one hour. If a recording is more than one hour long, then multiple files will be saved.

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## Scheduled Recordings in Progress

From the *Scheduled Recordings in progress* section, you can schedule recordings, alter the recording preferences, and access recording files.

**Recordings**

The recordings listed here are scheduled ones that are currently in progress.

**Camera Name**. The name you gave to the Camera doing the recording.

**Start Time**. The time the recording began.

### Files

To play, delete, or explore recording files, click the **Files** button.

The *Files* screen shows two choices. Click the **Recorded Videos** button if you want to browse for video recordings. Click the **Snapshot Pictures** button if you want to browse for images.

### Recorded Files

The *Recorded Files* screen shows the recordings available and their respective information.

**Name**. The name of the file. It begins with "Ir" if it was an instant recording. It begins with "Sr" if it was a scheduled recording. The name ends with the date of the recording.

**Camera Name**. The name of the Camera.

**Start Time**. The time the recording began.

**End Time**. The time the recording ended.

**Play**

To play a recording file, select it by clicking its Name, and then click the **Play** button.

**Note:** Use Windows Media Player 7 or higher to view your recordings.
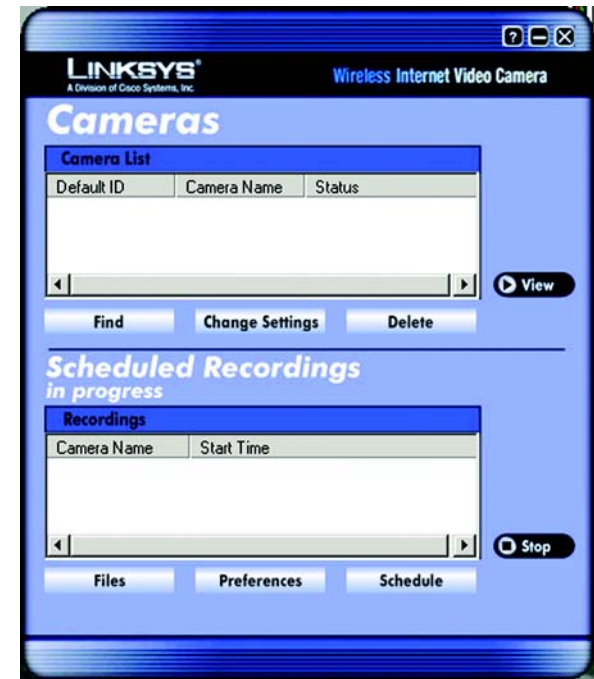
**Figure 6-17: Scheduled Recordings in Progress Screen**

**Figure 6-18: Files Screen**

**Figure 6-19: Recorded Files Screen**

**Delete**

To delete a recording file, select it by clicking its Name, and then click the **Delete** button.

**Explore**

If the recording file you want is not listed, click the **Explore** button to find the file.

To rename a recording file, click the **Explore** button. After you have found the file, you can rename it.

Snapshots

A window similar to the one shown in Figure 6-20 displays the available SnapShot folders. The name of each folder is the MAC address of the Camera that took that folder's snapshots. Double-click a folder to see a list of its images.

Preferences

To designate the folder where recording files are saved, click the **Preferences** button. You can also customize the time limit for unscheduled or instant recordings on the *Preferences* screen.

Recorded File Location

This shows the location where recording files are saved. You can enter a new location, or click the **Browse** button to look for one.

Time limit for unscheduled recordings

You can customize the maximum amount of time an instant or unscheduled recording is allowed. Select the appropriate amount of time from the drop-down menu. The default is one minute.

To save your changes, click the **Save** button.
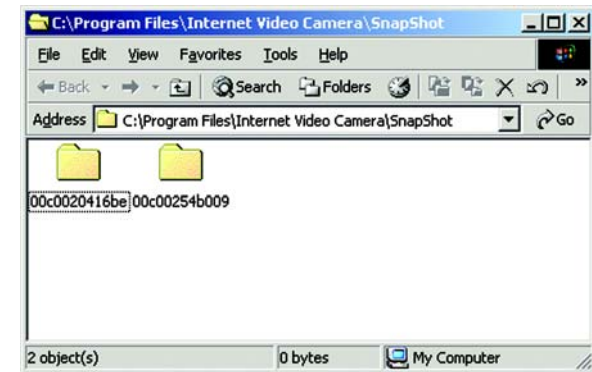


**Figure 6-20: Window Showing SnapShot Folders**



**Figure 6-21: Preferences Screen**

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Schedule

To view or modify the recording schedule, click the **Schedule** button.

The *Recording Schedule* screen shows the current recording schedule and each recording's information.

**Camera Name**. The name of the Camera.

**Date**. The date of the recording.

**Time**. The start time of the recording.

**Frequency**. How often the recording will occur.

Add

To schedule a new recording, click the **Add** button.

**Camera**. Select the Camera you want for this recording.

**Frequency**. Select how often you want this recording to be made.

**Start Date**. Enter the date you want this recording to start.

**Start Time**. Enter the time you want this recording to start.

**Duration**. Enter the number of hours and minutes you want this recording to last.

When you are finished, click the **Save** button.

Modify

To modify a scheduled recording, select the recording by clicking its Camera Name, and then click the **Modify** button.

**Camera**. This indicates the Camera that was selected for this recording.

**Frequency**. Alter how often you want this recording to be made.

**Start Date**. Alter the date you want this recording to start.

**Start Time**. Alter the time you want this recording to start.



**Figure 6-22: Recording Schedule Screen**



**Figure 6-23: Add to Recording Schedule Screen**

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**Duration**. Alter the number of hours and minutes you want this recording to last.

When you are finished, click the **Save** button.

Delete

To delete a scheduled recording, select it by clicking its Camera Name, and then click the **Delete** button.

Stop

To terminate a scheduled recording that is currently in progress, select it by clicking its Camera Name, and click the **Stop** button.

If you want to restart the scheduled recording, select the Camera you want by clicking its name in the *Camera List* box, and click the **View** button. You will see a screen similar to the one shown in Figure 6-25. Click the button with the circle to record the video. To stop recording, click the button with the square.

**To set up the Linksys SoloLink Service, go to "Chapter 7: Setting up the Linksys SoloLink DDNS Service."**

**If you want to use the Camera's Web-based Utility, go to "Chapter 8: Using the Wireless-G Internet Video Camera Web-based Utility."**
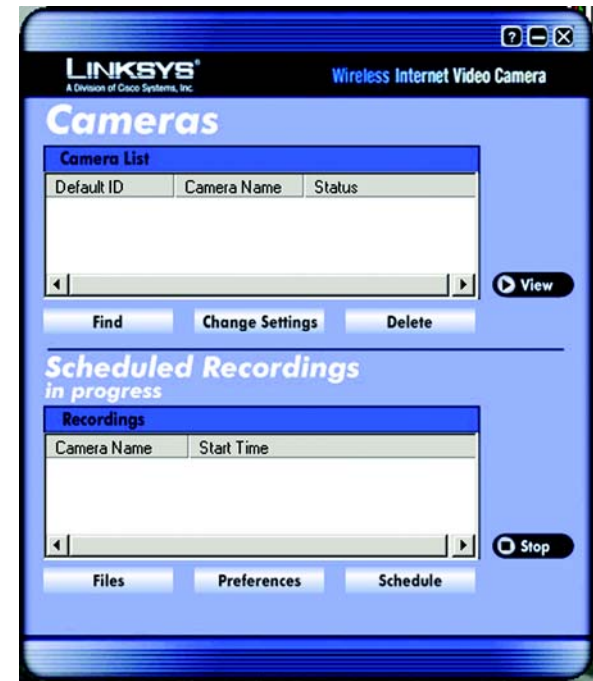


**Figure 6-24: Stop Scheduled Recording Screen**
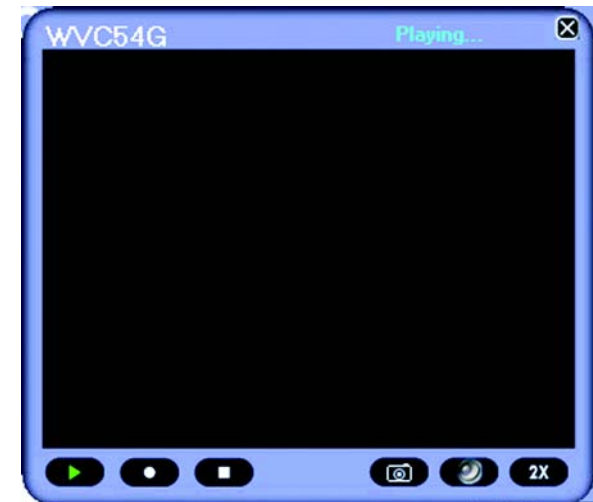


**Figure 6-25: View Video Screen**

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# Chapter 7: Setting up the Linksys SoloLink™ DDNS Service

## Overview

This chapter will briefly discuss the Linksys SoloLink DDNS Service, explain how to set up your SoloLink account, and describe how to register additional Cameras on your SoloLink account. You need only one SoloLink account. Once you have set up your account, you can register additional Cameras, one at a time, through each Camera's Web-based Utility. This way each Camera can take advantage of the SoloLink DDNS Service.

## Introduction

The SoloLink DDNS (Dynamic Domain Name System) Service lets you assign a fixed host and domain name to a dynamic Internet IP address. The instructions in this chapter will guide you through the setup needed for use of the SoloLink DDNS Service. For the most current information about the SoloLink DDNS Service, visit *www.linksys.com/sololink*. For a free, 90-day trial period of your SoloLink account, use the Access ID Card included with the Camera.

You may want to use the Linksys SoloLink DDNS Service if one of the following applies to you:

Dynamic IP Address - Your Internet service assigns you a dynamic IP address. Many Internet service providers (ISPs) assign a new IP address to your connection from time to time (for security purposes), or whenever you disconnect and reconnect. The SoloLink service keeps track of your network's address, even when it changes, so you can "find" the Camera.

Convenience - There are a couple of ways the SoloLink service can be convenient. If you have a static IP address, you can use the SoloLink service to enter a "name" and port number for remote access of the Camera via the Internet. There's no need to type an entire IP address. For example, you can give a Camera a "name" such as cam1.myhouse.ourlinksys.com.

Also, some DDNS services require your PC to continuously run software that lets them keep track of your IP address.  If your PC isn't powered on when your IP address changes, you won't be able to find the Camera on the Internet. The SoloLink service keeps track of where the Camera is.

## Setup Wizard for the SoloLink DDNS Service

1. On the *Welcome* or *Congratulations* screen of the Setup Wizard, click the **Setup SoloLink DDNS Service** button.



**Figure 7-1: SoloLink Service**



**Figure 7-2: SoloLink Welcome Screen**

2. The screen shown in Figure 7-3 explains why you would want to use the SoloLink DDNS Service if your network is using a dynamic IP address. Click the **Next** button.
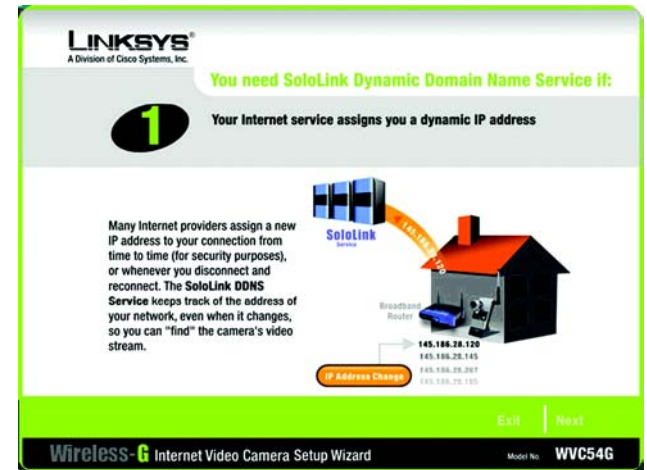


**Figure 7-3: SoloLink for Dynamic IP Address Screen**

3. The screen shown in Figure 7-4 explains why you would find the SoloLink DDNS Service convenient if you would prefer to access the Camera using a name rather than a series of numbers (its IP address). Click the **Next** button.
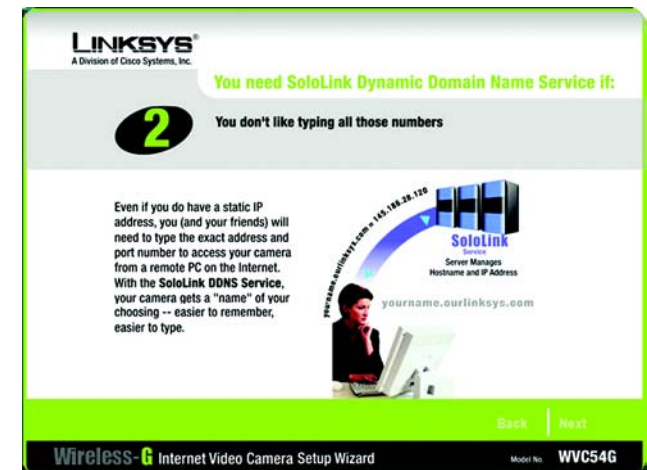


**Figure 7-4: SoloLink for Convenience Screen**

4. Make sure your network has an active Internet connection. Verify that your PC and Camera are connected to the network and the Camera is configured properly. Click **Next**.



**Figure 7-5: Check Connections Screen**

5. The screen shown in Figure 7-6 will display a list of Wireless-G Internet Video Cameras on your network and their status information. In the *Selection* box, click the name of the Camera you are currently setting up. Click **Next**.



**Figure 7-6: Cameras Found Screen**

6.  To ensure security, you will be asked to enter a user name and password before you can access the Camera. If you have not changed the Camera's user name and password, then enter **admin** in the *User name* and *Password* fields (**admin** is the default). Then click **OK**.



**Figure 7-7: Login Screen**

7.  Your web browser will automatically start up, and the *SoloLink DDNS* screen of the Camera's Web-based Utility will appear. Click **New User ? - Click here to Register**.
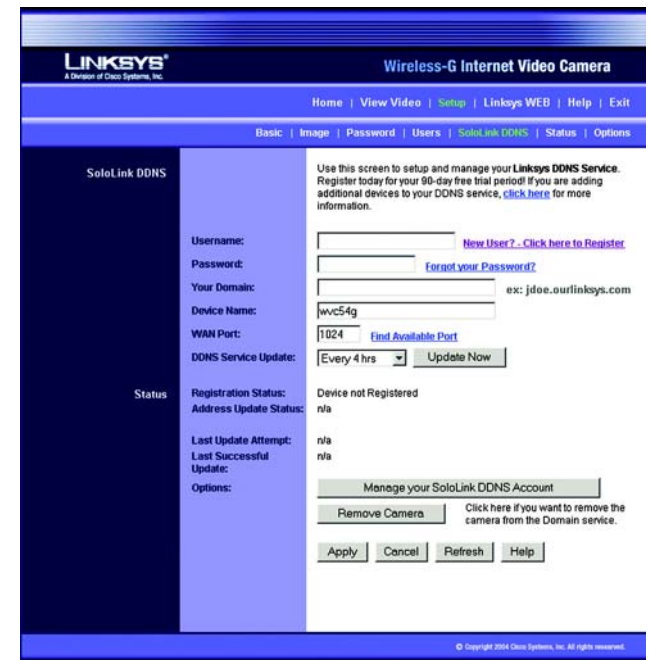


**Figure 7-8: SoloLink DDNS Screen**

8. The screen shown in Figure 7-9 will ask you to make sure your network has an active Internet connection. Click **Continue**.



**Figure 7-9: Confirm Active Internet Connection Screen**

9. On the *Welcome to the SoloLink DDNS Service* screen, click **Set up a NEW Account**.



**Figure 7-10: Welcome to the SoloLink DDNS Service Screen**

10. On the *Sign Up* screen, enter the Access ID for your free trial offer. It is provided on the Promotion Card included with the Camera. (If you don't have an Access ID, then leave the *Access ID* field blank.)

Then enter your account and user information. Enter a Username and Password for your account. Enter the Password again in the *Confirm Password* field.

Complete the following required fields: *First Name*, *Last Name*, *Phone*, and *Email*. You can also enter your postal address and choose to receive updates by e-mail. Then click **Continue**.



**Figure 7-11: Sign Up Screen**

11. Review your information on the *Confirmation* screen. If the new settings are correct, click **Continue**.



**Figure 7-12: Confirmation of New Settings Screen**

12. On the *Select a Location ID* screen, enter a Location ID, which can be a name describing your network's location. It will be combined with the Camera's Device Name and *ourlinksys.com* to create a convenient URL you can use to access the Camera. Click **Continue**.



**Figure 7-13: Select a Location ID Screen**

13. On the *Confirm your Location ID* screen, verify that the Location ID is correct. Then click **Continue**.



**Figure 7-14: Confirm Your Location ID Screen**

14. On the *Payment* screen, choose one of two payment plans, **Bill me now** or **Bill me later**. (If you did not enter an Access ID, then you have one choice, **Bill me now**.)

If you click *Bill me later*, go to step 15.

If you click *Bill me now*, you will see a screen asking for billing information. Follow the on-screen instructions and then go to step 15.



**Figure 7-15: Payment Screen**

15. Read the Terms of Service agreement on the *Verification* screen. Click **Create Account** to accept the terms of service.



**Figure 7-16: Verification Screen**

16. On the *Create Links* screen, click **Continue**. The SoloLink DDNS Service will send your account information to the Camera.



**Figure 7-17: Create Links Screen**

17. A pop-up screen, as shown in Figure 7-18, will inform you that you have successfully registered your account. Click **OK**.

At the bottom of the *SoloLink DDNS* screen, click the **Apply** button to register the Camera with your account.



**Figure 7-18: Successful Registration Screen**

18. A confirmation page will display the link or address you will use to access the Camera and the port number the SoloLink DDNS Service will use to find the Camera (see Figure 7-19). Click **Continue**.



**Figure 7-19: Account Confirmation of Camera Screen**

19. A pop-up screen, as shown in Figure 7-20, will inform you that you have successfully set up the SoloLink DDNS Service for the Camera. Click **OK**.

**NOTE:** Make sure you set up the port forwarding feature on your network router, so the SoloLink DDNS Service will be able to access the Camera.



**Figure 7-20: Successful Setup Screen**

20. Set up port forwarding on your network router, so the SoloLink DDNS Service will be able to track the Wireless-G Internet Video Camera. Go to *www.linksys.com/portfwd* for instructions on how to configure a Linksys router.

For other routers, refer to your router's documentation.

**The SoloLink DDNS setup is complete. If you want to register more Cameras with your SoloLink account, proceed to the "SoloLink Registration of Additional Cameras" section.**

**For more information about the Camera's Web-based Utility, proceed to "Chapter 8: Using the Wireless-G Internet Video Camera Web-based Utility."**

## SoloLink Registration of Additional Cameras

After you have set up your SoloLink account, you can add more Cameras to your SoloLink account using each Camera's Web-based Utility. Follow these instructions for each Camera you add:

1. To access a Camera's Web-based Utility, launch **Internet Explorer**, and enter the Camera's IP address in the *Address* field. (The default IP address is **192.168.1.115**.) Then press **Enter**.

2. The *Welcome* screen will appear. Click the **Setup** tab.

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

4. Click the **SoloLink DDNS** tab.



**Figure 7-21: Port Forwarding Information**



**Figure 7-22: Web-based Utility Welcome**



**Figure 7-23: Web Utility Login Screen**

5. In the *Username*, *Password*, and *Your Domain* fields, enter your SoloLink account information (see Figure 7-24).

6. In the *Device Name* field, give the Camera a unique name. The DDNS service will not work if multiple Cameras have the same Device Name.

7. In the *WAN Port* field, enter a unique port number. This is the number of the port you will use to access the Camera remotely. If you need to find an available port, click **Find Available Port** and follow the on-screen instructions (see Figure 7-25). The DDNS service will not work if multiple Cameras use the same WAN port.

8. Depending on how often you want the DDNS service to update the dynamic IP address, select the appropriate time interval from the *DDNS Service Update* drop-down menu. To update the dynamic IP address immediately, click the **Update Now** button.

9. Click the **Apply** button on the *SoloLink DDNS* screen. The Camera will automatically register itself with your SoloLink account.

10. Set up port forwarding on your network router, so the SoloLink DDNS Service will be able to track the Wireless-G Internet Video Camera. Go to *www.linksys.com/portfwd* for instructions on how to configure a Linksys router.

   For other routers, refer to your router's documentation.

   **The Camera has been added to your SoloLink account.**

   **For more information about the Camera's Web-based Utility, proceed to "Chapter 8: Using the Wireless-G Internet Video Camera Web-based Utility."**



**Figure 7-24: SoloLink DDNS Screen**



**Figure 7-25: Find Available Port Screen**

# Chapter 8: Using the Wireless-G Internet Video Camera's Web-based Utility

## Overview

Use the Camera's Web-based Utility to access and alter its settings. This chapter will describe each webpage in the Utility and its features. The Utility can be accessed via the web browser of a computer connected to the Camera.

## How to Access the Web-based Utility

To access the Utility, launch Internet Explorer, and enter the Camera's IP address in the *Address* field. (The default IP address is **192.168.1.115**.) Then press **Enter**.

The *Welcome* screen of the Web-based Utility will appear.

You have six tabs available:

- **Home**. To return to the *Welcome* screen, click the **Home** tab.

- **View Video**. To view the Camera's video, click the **View Video** tab. Go to the "View Video" section for more information.

- **Setup**. To alter the Camera's settings, click the **Setup** tab. Go to the "Setup" section for more information.

- **Linksys WEB**. To go to the Linksys website, *www.linksys.com*, click the Linksys WEB tab.

- **Help**. The *Help* screen allows you to get information about the various *Setup* screens, download the latest Viewer & Recording Utility, download this User Guide, download Acrobat Reader, restore factory defaults, and upgrade the Camera's firmware. Go to the "Help" section for more information.

- **Exit**. To close the Utility, click the **Exit** tab.

## View Video

Follow these instructions to view the Camera's video.



**Figure 8-1: Camera's Default IP Address**



**Figure 8-2: Web-based Utility Welcome**

1. Click the **View Video** tab on the *Welcome* screen.

2. A *Security Warning* screen about an OCX plug-in may appear (see Figure 8-3). To enable your computer to see the Camera's video, click the **Yes** button.

3. A screen will appear showing you the video from the Camera.

**NOTE:** To view video using a web browser, you must use Internet Explorer version 5.5 or higher. The View Video feature will not work with Netscape. Netscape users should use the Viewer & Recorder Utility instead.

## Setup

Click the **Setup** tab on the *Welcome* screen to alter the Camera's settings. A login screen, shown in Figure 8-4, will pop up. (Windows XP users will see a similar screen.) Enter **admin** (the default user name and password) in the *User Name* and *Password* fields. Then click the **OK** button.

**NOTE:** For added security, you should always change the Login Name and Password through the *Password* screen of the Utility.

The *Basic* screen will appear. You have six tabs available:

- **Basic**. To configure the Camera's basic, LAN, and wireless settings, use the *Basic* screen.

- **Image**. Customize the video settings on the *Image* screen.

- **Password**. Alter the Administrator name and password on the *Password* screen.

- **Users**. Designate users and their level of access to the Camera on this screen.

- **SoloLink DDNS**. Set up and manage the SoloLink DDNS Service. DDNS (Dynamic Domain Name System) lets you assign a fixed host and domain name to a dynamic Internet IP address.

- **Status**. Status information and a log are displayed on this screen.

- **Options**. The audio option, e-mail alert options, Universal Plug and Play (UPnP) setting, and Alternate Port settings are configured on the *Options* screen.

To save your changes, click the **Apply** button. To cancel any unsaved changes, click the **Cancel** button. To get additional information about a screen's features, click the **Help** button.
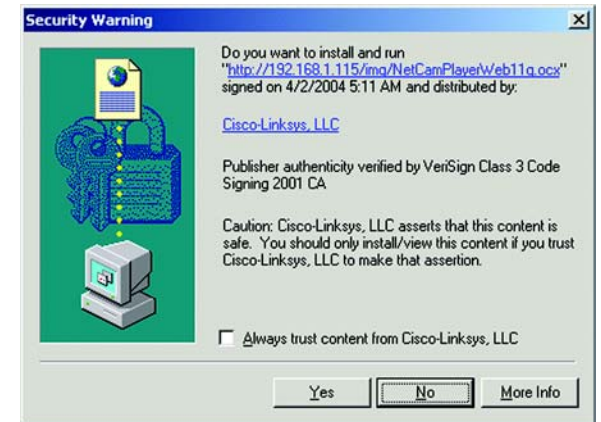


**Figure 8-3: Security Warning Screen**



**Figure 8-4: Web Utility Login Screen**

## Basic

The *Basic* screen allows you to alter the Camera's settings, including the network and wireless configuration.

### Device Settings

**Firmware Version**. The version number of the firmware currently installed is displayed here. Firmware should only be upgraded from the *Help* screen if you experience problems with the Camera. Visit *www.linksys.com* to find out if there is updated firmware.

**MAC Address**. The MAC Address of the Camera is displayed here.

**Device ID**. Displayed here is the Camera's identification name, which is used by the Camera and the Utility to exchange data.

**Camera Name**. You may assign any name to the Camera. Unique, memorable names are helpful, especially if you are using multiple Cameras on the same wireless network. You can enter up to 15 characters.

**Description**. Enter information about the Camera in this field. You can enter up to 32 characters.

**Date**. Enter the current date.

**Time**. Enter the current time.

**Time Zone**. Select the time zone for the Camera's location.

**Network Time Protocol**. If you want to update the Camera's time through an NTP (Network Time Protocol) server on the Internet, click the first checkbox. When the NTP feature is enabled, the daylight savings option will be available. If you want to adjust the Camera's current time for daylight savings, click the second checkbox.

### LAN Settings

**Configuration Type**. If the Bridge will obtain an IP address automatically from a DHCP server, then select **Automatic Configuration - DHCP**. If you will assign the Camera a static IP address, then select **Static IP Address**, and complete the *IP Address*, *Subnet Mask*, *Gateway*, and *DNS* fields.

**IP Address, Subnet Mask, Gateway, Primary DNS, Secondary DNS**. Complete these fields if the Camera will use a static IP address. You need to enter at least one DNS address.

### Wireless Settings

**SSID**. Enter the network's SSID or network name here.



**Figure 8-5: Basic Screen**

**Network Type**. Select the network's mode, **Infrastructure** or **Ad-hoc**.

**Channel No.** If the Camera is set to ad-hoc mode, select its channel setting from the drop-down menu.

**Security**. To use WEP encryption, click the **Enable** radio button. You will be asked to confirm that you want to enable wireless security for the Camera. Click the **OK** button. Then click the **Edit Security Settings** button. For more information, go to the "Security Settings" section. To disable WEP encryption, click the **Disable** radio button.

To save your changes, click the **Apply** button. To cancel any unsaved changes, click the **Cancel** button. To get additional information about the screen's features, click the **Help** button.

*Security Settings*

Configure the Camera's WEP encryption settings on this screen (see Figure 8-7). Make sure all devices on your wireless network use the same settings.

**Default Transmit Key**. Select which WEP key (1-4) will be used when your network's access point or wireless router sends and receives data.

**WEP Encryption**. Select the level of WEP encryption you wish to use, **64 Bit Keys (10 Hex chars)** or **128 Bit Keys (26 Hex chars)**.

**Passphrase**. Instead of manually entering WEP keys, you can use a Passphrase to generate them. It is case-sensitive and should not be longer than 16 alphanumeric characters. (This Passphrase is compatible with Linksys wireless products only. If you are also using non-Linksys wireless products, you will need to enter your WEP keys manually on those products.) After entering the Passphrase, click the **Generate** button to create WEP key(s).

**Key 1-4**. If you are used a Passphrase, the WEP keys will be displayed after you have generated them. If you are not using a Passphrase, manually enter a set of values in each field. (For 128-bit WEP, only one WEP key is permitted.) If you are using 64-bit WEP encryption, then each 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" through "9" and "A" through "F".

**Authentication**. The default is set to **Open System**, for which the sender and the recipient do NOT use a WEP key for authentication. You can also choose **Shared Key**, when the sender and recipient use a WEP key for authentication. This setting should match the one on your network's access point or wireless router.

To save your changes, click the **Apply** button. To cancel your changes, click the **Cancel** button. To get additional information about the screen's features, click the **Help** button.



**Figure 8-6: Confirmation Screen**
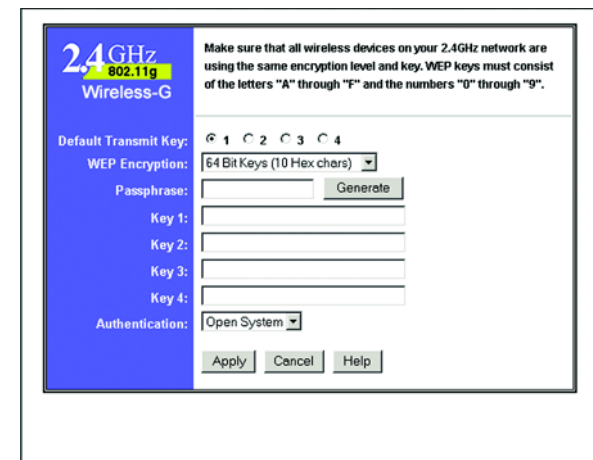


**Figure 8-7: WEP Key Settings Screen**

## Image

The *Image* screen allows you to alter the Camera's video settings.

### Video Settings

**Resolution**. Select the resolution you want for viewing or recording the Camera's video. Select **640 * 480** for the highest resolution, **320*240** for medium resolution, and select **160*120** for the lowest resolution.

**Image Quality**. Select the level of quality you want for viewing or recording the Camera's video. The range varies from **Very Low** to **Very High**.

You may find it helpful to know what the bit rates are for video viewing or recording at different resolutions and image quality levels. The following table lists these estimated bit rates.

### Estimated Bit Rates for Video Viewing or Recording

| Resolution | Quality Level | Bit Rate |
|---|---|---|
| 640 x 480 | Very High | 900kbps |
| 640 x 480 | High | 700kbps |
| 640 x 480 | Normal | 500kbps |
| 640 x 480 | Low | 200kbps |
| 640 x 480 | Very Low | 40kbps |
| 320 x 240 | Very High | 900kbps |
| 320 x 240 | High | 500kbps |
| 320 x 240 | Normal | 300kbps |
| 320 x 240 | Low | 120kbps |
| 320 x 240 | Very Low | 40kbps |
| 160 x 120 | Very High | 800kbps |
| 160 x 120 | High | 400kbps |
| 160 x 120 | Normal | 200kbps |
| 160 x 120 | Low | 100kbps |
| 160 x 120 | Very Low | 40kbps |
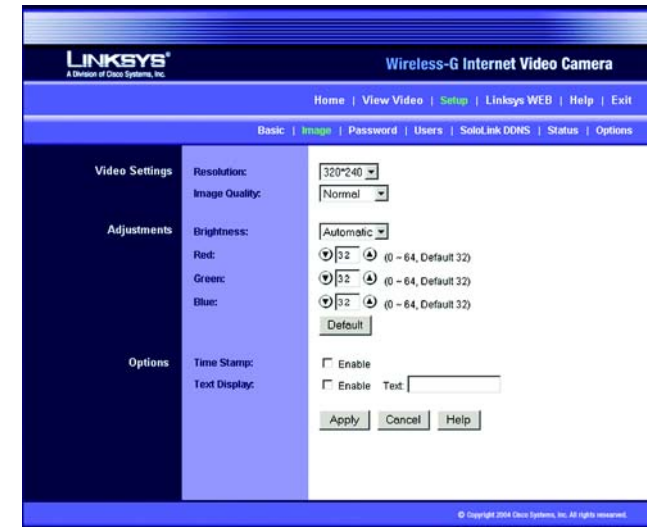


**Figure 8-8: Image Screen**

**NOTE:** Video quality and/or performance may be affected by the number of users connected to the Camera.

## Adjustments

**Brightness**. Select **Automatic** if you want the Camera to adjust the brightness level automatically. Select **Manual** if you want to adjust the brightness level on this screen. Then increase or decrease the brightness using the arrow buttons.

**Red, Green, and Blue**. Adjust the level of red, green, or blue using the arrow buttons. To return the settings to default levels, click the **Default** button.

## Options

**Time Stamp**. If you want a time stamp shown on the video, click the checkbox next to *Enable*.

**Text Display**. If you want text shown on the video, click the checkbox next to *Enable*. Then complete the *Text* field with up to 20 characters.

To save your changes, click the **Apply** button. To cancel any unsaved changes, click the **Cancel** button. To get additional information about the screen's features, click the **Help** button.

## Password

The *Password* screen allows you to change the name and password used for administrator login. Changing the default name and password is recommended to secure access to the Camera's settings.

### Administrator

**Login Name**. Complete this field with a name of your choice.

**Password and Verify Password**. Enter your new password in both fields. The password should have eight characters or fewer.

To save your changes, click the **Apply** button. To cancel any unsaved changes, click the **Cancel** button. To get additional information about the screen's features, click the **Help** button.



**Figure 8-9: Password Screen**

## Users

The *Users* screen allows you to designate access rights for Camera users.

### User Access

**Allow access by**. The default is **All users**. If you keep the default setting, then all users will be allowed to view the Camera's video. If you select **Only users in database**, then only the users you enter in the database will be allowed to view the Camera's video. They will be asked to log in using their user name and password whenever they request access to the Camera's video.

### User Database

Users are listed in the *User Database* box.

**Add**. To add a user, click the **Add** button. You will see the screen shown in Figure 8-11.

**Modify**. To modify a user's settings, click the **Modify** button. You will see the screen shown in Figure 8-11.

To add or modify a user, follow these instructions:

1. Complete the *User Name*, *User Password*, and *Confirm Password* fields.

2. To save your changes, click the **Apply** button. To cancel any unsaved changes, click the **Cancel** button. To get additional information about the screen's features, click the **Help** button. Click the **Close** button to exit this screen.

**Delete**. To delete a user, select the user listed in the *User Database* box, and then click the **Delete** button.

To save your changes, click the **Apply** button. To cancel any unsaved changes, click the **Cancel** button. To get additional information about the screen's features, click the **Help** button.



**Figure 8-10: Users Screen**
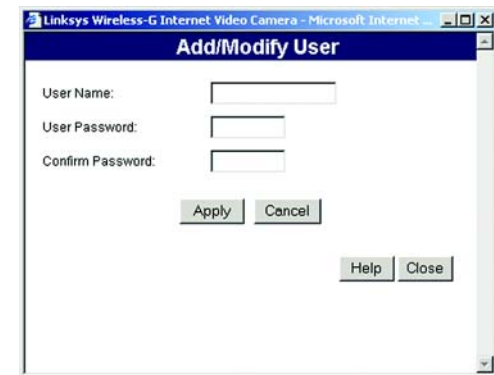


**Figure 8-11: Add/Modify User Screen**

## SoloLink DDNS

The *SoloLink DDNS* screen allows you to set up and configure your SoloLink DDNS Service. DDNS (Dynamic Domain Name System) lets you assign a fixed host and domain name to a dynamic Internet IP address. If you have already set up your SoloLink account, then you can use this screen to register additional Cameras. For instructions, go to the "SoloLink Registration of Additional Cameras" section on the following page.

**NOTE:** If you use the Camera's DDNS feature, then you must also configure the port forwarding feature on your network router. Go to *www.linksys.com/portfwd* for instructions on how to configure a Linksys router. For other routers, refer to your router's documentation.

### SoloLink DDNS

**Username**. Enter the username you have set up on your SoloLink account. If you are a new user, click **New User? - Click here to Register**. The *New User Registration* screen will appear, as shown in Figure 8-13. Click the **Continue** button, or click the **Back** screen to return to the previous screen. Your web browser will automatically start up, and you will visit a website to set up your SoloLink account. Follow the on-screen instructions. For more information, refer to "Chapter 7: Setting up the Linksys SoloLink DDNS Service," which will guide you through setup of your SoloLink account.

**Password**. Enter the password you have set up on your SoloLink account. If you have forgotten your password, click **Forgot your Password?**

The *Password Request* screen will appear, as shown in Figure 8-14. Complete the *Domain name* field. Click the **Request Password** button to request your username and password, which will be e-mailed to the e-mail address registered with your SoloLink DDNS account. Click the **Cancel** button to cancel your change. Click the **Back** button to return to the previous screen.

**Your Domain**. Enter the host and domain name you have set up on your SoloLink account. It should be in this format: *<Location ID>.ourlinksys.com.* For example, if *myhouse* is the Location ID, then the host and domain name would be *myhouse.ourlinksys.com*.

**Device Name**. Enter the name you have given the Camera.

**WAN Port**. Enter the number of the port you will use to remotely access the Camera. If you need to find an available port, click **Find Available Port** and follow the on-screen instructions.

**DDNS Service Update**. Depending on how often you want the DDNS service to update the dynamic IP address, select the appropriate time interval from the drop-down menu. To update the dynamic IP address immediately, click the **Update Now** button.
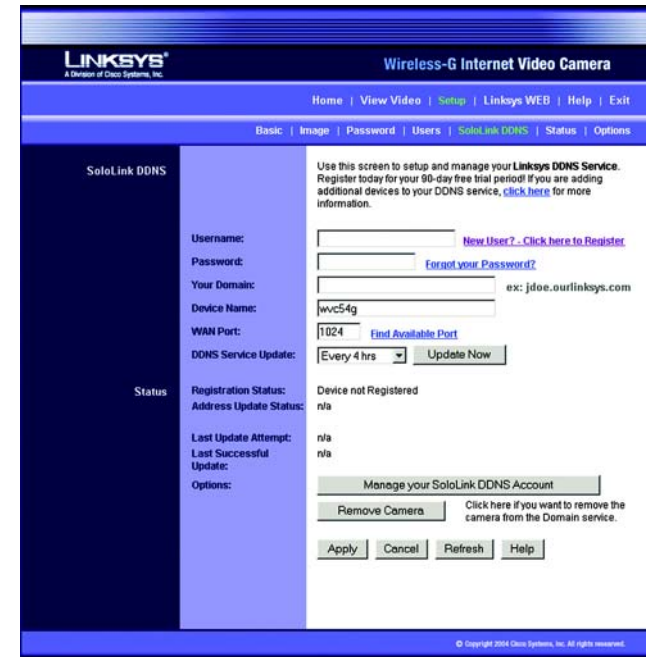


**Figure 8-12: SoloLink DDNS Screen**



**Figure 8-13: New User Registration Screen**

## Status

**Registration Status**. The status of the Camera's registration is displayed here. To use the SoloLink DDNS service for the Camera, it must be registered with your SoloLink DDNS account.

**Address Update Status**. The status of the most recent DDNS service update is displayed here. You will be informed if the username and password authentication has been  successful, as well as if the dynamic IP address has been updated.

**Last Update Attempt**. The date and time of the most recent IP address update attempt are displayed here.

**Last Successful Update**. The date and time of the most recent IP address update are displayed here.

**Options**. If you want to manage your SoloLink DDNS account, click the **Manage your SoloLink DDNS Account** button. Your web browser will automatically start up, and you will visit a website to manage your SoloLink account. (See Figure 8-15.) Follow the on-screen instructions.

If you want to remove the Camera from the DDNS service account, click the **Remove Camera** button. The *Device Removal* screen will appear, as shown in Figure 8-16. To remove the Camera, click the **Remove** button. Click the **Back** button to return to the previous screen.

To save your changes, click the **Apply** button. To cancel any unsaved changes, click the **Cancel** button. To display the most recent information, click the **Refresh** button. To get additional information about the screen's features, click the **Help** button.

### SoloLink Registration of Additional Cameras

After you have set up your SoloLink account, you can add more Cameras to your account, one at a time. Follow these instructions for each Camera you add:

1. On the *SoloLink DDNS* screen of the Camera's Web-based Utility, enter your SoloLink account information in the *Username*, *Password*, and *Your Domain* fields.

2. In the *Device Name* field, give the Camera a unique name. The DDNS service will not work if multiple Cameras have the same Device Name.



**Figure 8-14: Password Request Screen**



**Figure 8-15: Manage Your SoloLink DDNS Account**



**Figure 8-16: Device Removal Screen**

3.  In the *WAN Port* field, enter a unique port number. This is the number of the port you will use to access the Camera remotely. If you need to find an available port, click **Find Available Port** and follow the on-screen instructions. The DDNS service will not work if multiple Cameras use the same WAN port.

4.  Depending on how often you want the DDNS service to update the dynamic IP address, select the appropriate time interval from the *DDNS Service Update* drop-down menu. To update the dynamic IP address immediately, click the **Update Now** button.

5.  Click the **Apply** button on the *SoloLink DDNS* screen. The Camera will automatically register itself with your SoloLink account.

6.  Set up port forwarding on your network router, so the SoloLink DDNS Service will be able to track the Wireless-G Internet Video Camera. Go to *www.linksys.com/portfwd* for instructions on how to configure a Linksys router.

    For other routers, refer to your router's documentation.



**Figure 8-17: Find Available Port Screen**

## Status

The *Status* screen allows you to view the Camera's status information and log.

## Status

**Firmware Version**. The version number of the firmware currently installed is displayed here. Firmware should only be upgraded from the *Help* screen if you experience problems with the Camera. Visit *www.linksys.com* to find out if there is updated firmware.

**MAC Address**. The MAC Address of the Camera is displayed here.

**Camera Name**. The name you gave to the Camera is displayed here.

**Description**. The information about the Camera that you entered is displayed here.

**Date**. The current date is shown here.

**Time**. The current time is shown here.

**IP Address**. The Camera's IP Address is displayed here.

**Subnet Mask**. The Camera's Subnet Mask is shown here.

**Gateway**. The Camera's Gateway address is displayed here.

**Network Type**. The wireless network's mode is shown here.

**SSID**. The wireless network's SSID or name is shown here.

**Channel**. The wireless network's channel setting is displayed here.

**Security**. The wireless network's encryption level is shown here.

## Log

**System Log**. This shows the Camera's activities. To empty the log, click the **Clear Log** button.

To get the Camera's most up-to-date information, click the **Refresh** button. To get additional information about the screen's features, click the **Help** button.
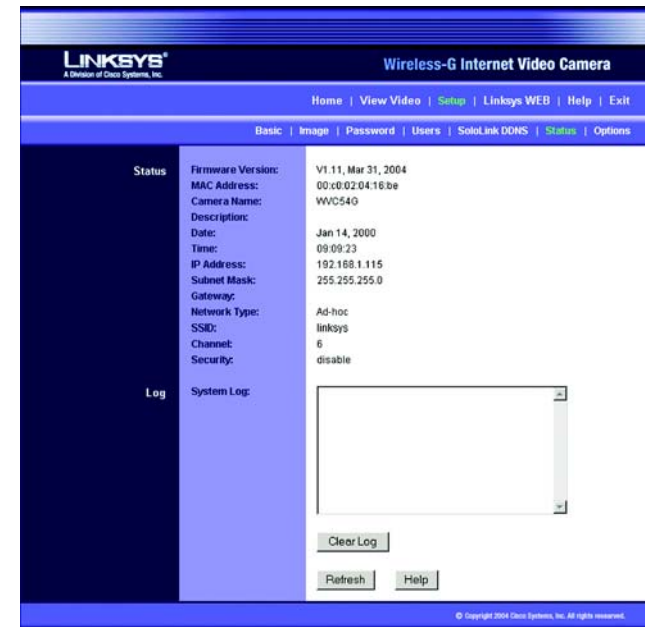


**Figure 8-18: Status Screen**

## Options

The *Options* screen allows you to alter the Camera's audio setting, e-mail alert features, UPnP configuration, and Alternate Port settings.

### Audio

If you want to hear or record audio, select **Enable** from the drop-down menu. Otherwise, select **Disable**.

### E-mail Alert

You can choose to be notified when the Camera detects motion in its field of view. You will be sent a text-only e-mail or an e-mail with video attached.

> **NOTE:** The Camera's motion sensitivity and range will vary depending on the light conditions of your environment.

**E-mail Alert**. If you want to be notified by e-mail when the Camera detects motion, then select **Enable** from the drop-down menu. Otherwise, select **Disable**.

**Send to**. In each field, enter an e-mail address that will receive e-mail alerts. (You can enter up to three e-mail addresses.)

**Show "From" as**. Enter the text that you want displayed in the *From* field of any e-mail alert message.

**Subject**. Enter the subject heading that you want to be used.

**Outgoing Mail SMTP Server**. Enter the IP address of the outgoing mail SMTP server. If it requires authentication, click the checkbox, and enter the account name and password in the *Account Name* and *Password* fields.

**E-Mail Video**. If you want e-mail sent with a video attachment, select **Enable** from the drop-down menu. Then select the length of video you want, up to a maximum of 5 seconds. The default is **2** seconds. If you want text-only e-mail sent to you, select **Disable** from the drop-down menu.

**Delay between E-mails**. Specify the minimum time interval between e-mail alerts. The default is **2** minutes.

**Motion Detection Sensitivity**. You have a choice of motion sensitivity levels for the Camera. Select the appropriate level from the drop-down menu.

You can also specify where the Camera should monitor for motion. The Camera's field of view is split into nine sections. Click the checkbox for each section you want monitored. Click the **Select All** button if you want the entire viewing area to be monitored. Click the **Clear All** button if you want to delete all checkmarks.



**Figure 8-19: Options Screen**

Other

**UPnP**. When enabled, the Camera's Universal Plug and Play (UPnP) feature allows a UPnP-enabled computer to easily detect the Camera. The Camera's UPnP feature is disabled by default. If your computer is UPnP-enabled, then click the checkbox next to *UPnP*.

**Alternate Port**. If you want the Camera to be able to use an alternate port for communications, click the checkbox. Then enter the port number you want in the *Port Number* field.

To save your changes, click the **Apply** button. To cancel any unsaved changes, click the **Cancel** button. To get additional information about the screen's features, click the **Help** button.

# Help

Through the *Help* screen, you'll find links to additional resources for the Camera and its Utility. If you click the Help tab directly from the *Welcome* screen, then you will see the *User Help* screen and will only be able to access these resources. If you first log in to access the Camera's Setup and then click the Help tab, you will see the *Administrator Help* screen and will be able to restore factory defaults and upgrade the Camera's firmware.

**NOTE:** The appearance and features of the *Help* screen will vary depending on whether you have logged in first to access the Setup.

**Setup**. Click any of the topics in the bar on the left to get help information.

**Linksys Support Page - Download Latest Viewer/Recorder Utility**. Click this link to download the most recent version of the Viewer & Recorder Utility from the Linksys website, *www.linksys.com*.

**Click here to learn how to configure Port Forwarding in your Linksys Router**. If you are going to use the SoloLink DDNS Service, you need to set up port forwarding on your router. For instructions on how to configure a Linksys router, click this link. If you have a different router, refer to your router's documentation.

**Online User Guide in PDF Format and Adobe website (software for viewing PDF documents)**. Click the **Online User Guide in PDF Format** link to view the latest version of the Camera's user guide. It will be in Adobe Acrobat Portable Document File (.pdf) format, so you will need Acrobat Reader to view this pdf. If you do not have the Acrobat Reader, click the **Adobe website** link to download it.

**Restore Factory Defaults**. To restore the Camera's factory default settings, click the **Restore Defaults** button.

**NOTE:** When you restore the Camera's factory defaults, you will lose the settings you have saved previously.



**Figure 8-20: Administrator Help**

**Firmware**. New firmware versions are posted at *www.linksys.com* and can be downloaded for free. If the Camera is functioning well, there is no need to download a newer firmware version, unless that version has a new feature that you want to use. Loading new firmware onto the Camera does not always enhance its performance.

Linksys recommends that you upgrade the Camera's firmware within your network; in other words, use a computer within the Camera's local network. If you attempt to upgrade the Camera's firmware from a remote location—using a computer outside of the Camera's local network—the upgrade will fail.

**NOTE:** When you upgrade the Camera's firmware, you may lose the settings you have saved previously.

To upgrade the firmware:

1. Go to the Linksys website, *www.linksys.com*, and download the firmware upgrade file for the Camera. Then extract the file.

2. From the *Help* screen, click the **Firmware Upgrade** button.

3. You will see the *Upgrade Firmware* screen. Click the **Browse** button to find the extracted file, and then double-click it.

4. Click the **Start Upgrade** button, and follow the on-screen instructions. To cancel the upgrade, click the **Cancel** button. For further help, click the **Help** button.

**Figure 8-21: Upgrade Firmware Screen**

# Appendix A: Troubleshooting

This appendix consists of two parts: "Common Problems and Solutions" and "Frequently Asked Questions." This appendix provides solutions to problems that may occur during the installation and operation of the Wireless-G Internet Video Camera. Read the description below to solve your problems. If you can't find an answer here, check the Linksys website at *www.linksys.com*.

## Common Problems and Solutions

1. *I can't view the Camera's video using Internet Explorer.*
   Make sure the OCX plug-in was correctly installed. If you're not sure, re-install the plug-in by following these instructions:
   • On the *Welcome* screen of the Camera's Web-based Utility, click the **View Video** button.
   • A screen mentioning a security warning about an OCX plug-in will appear. Click the **Yes** button to allow the plug-in to be installed.
   • You should then be able to view the Camera's streaming video.

   If you still cannot view the video, make sure you have the rights to install the plug-in in your PC's Internet Explorer. If not, log into your computer as an administrator and install the plug-in.

   Then you can check if the OCX plug-in has been installed. Follow these instructions:
   • From Internet Explorer, go to **Tools** and **Internet Options**.
   • On the General screen, click **Settings** under *Temporary Internet files.*
   • Click **View Objects**. You should see a file named NetCamPlayerWeb Control installed.

2. *The OCX plug-in is installed in Internet Explorer, but I cannot view any video.*
   Make sure you have Microsoft Internet Explorer 5.5 or higher installed. Then delete the OCX plug-in by following these instructions:
   • From Internet Explorer, go to **Tools** and **Internet Options**.
   • On the General screen, click **Settings** under *Temporary Internet files.*
   • Click **View Objects**.
   • You should see a file named NetCamPlayerWeb Control installed. Delete this file from the list.
   • The next time you click View Video from the web browser, you will be prompted to re-install the OCX plug-in.

3. *When powering on the Camera, I can't immediately access the Camera from my computer.*
   Make sure the Camera's Ready LED is continuously lit. When it is flashing, the Camera is initializing.

**4.  I'm not able to play my recording video files.**
Make sure you have Microsoft Windows Media Player 7 or higher. If you don't, you can download the latest version from *www.microsoft.com*.

**5.  When I view the video, it seems blurry.**
Adjust the Camera's focus by rotating its dark gray focus ring.

**6.  I don't hear any audio coming from the Camera.**
Follow these instructions until your problem is solved:
- Make sure that your computer speakers are powered on.
- Click **Start**. Select **Settings**. Click **Control Panel**. Double-click **Sound and Multimedia**. Click the **Audio** tab. In the *Sound Playback* section, click **Volume**. Make sure that Wave Volume has not been muted.
- Log in to the Camera's Web-based Utility (default IP address is **192.168.115**). Click the **Setup** tab. Then click the **Options** tab. Make sure audio has been enabled.
- If you are using the Viewer & Recorder Utility, make sure audio is enabled. If it is disabled, you will see a red dash on the audio button. Click the audio button to enable audio.

**7.  The built-in microphone is not picking up faraway sounds.**
The built-in microphone was designed to pick up sounds within 9 feet (3 meters) of the Camera. If you wish, you can connect an external microphone to the Camera's MIC IN port, and place the microphone in an appropriate location to extend the Camera's range.

**8.  Can I have the built-in microphone and an external microphone working at the same time?**
No. When you connect an external microphone, the built-in microphone will be automatically disabled.

**9.  When I am watching the video and listening to the audio, the audio is distorted.**
Bandwidth constraints can distort the audio feed. Log in to the Camera's Web-based Utility (default IP address is **192.168.115**). Click the **Setup** tab. Then click the **Image** tab. Lower the image quality or video resolution.

**10. The audio is producing an echo effect.**
Follow these instructions until your problem is solved:
- Try placing the Camera in a different location.
- Make sure your audio speakers are not feeding audio back to the Camera's microphone.

**11. I have two Cameras and see two WVC54Gs listed in my Viewer & Recorder Utility. When I click to view both Cameras, I see the video of only one Camera.**
Make sure that the Cameras have different camera or device names. You can change this by using the Web-based Utility or running the Setup Wizard. If you use the Web-based Utility, log in and click the **Setup** tab. Then on the *Basic* screen, change the Camera Name.

12. *I want to set up an account with the SoloLink DDNS Service, but I can't access the SoloLink website to sign up.*
Make sure the Camera is properly configured on your local network. Then check to see if your PC and Camera are properly connected and your network has an active Internet connection.

13. *When I view video remotely via the Internet, the video is very slow.*
Video performance is greatly affected by your Internet connection speed. You can lower the Camera's image quality to speed up the video. Through the Camera's Web-based Utility, click the **Setup** and **Image** tabs, and then lower the image quality on the *Image* screen.

14. *I cannot access the Setup tab of the Camera's Web-based Utility.*
Make sure you have administrator rights. Only an administrator can change the Camera's settings.

15. *I want to access the Camera when I'm away from home, but somehow I can't connect.*
If your network uses a dynamic IP address supplied by your ISP, then the IP address you use to reach the Camera will change as well. You need to use the Linksys SoloLink DDNS Service, so you can access the Camera using its domain name while the service keeps track of the IP address changes. To set up a Dynamic Domain Name Service (DDNS) account, click the **Setup** tab of the Camera's Web-based Utility. Click the **SoloLink DDNS** tab. If you are a new user, click **New User? - Click here to Register**. Follow the on-screen instructions.

You can also set up the Linksys SoloLink DDNS Service by inserting the Setup CD-ROM into your PC's CD-ROM drive. Click the **Setup SoloLink DDNS Service** button, and follow the on-screen instructions. For more information, see "Chapter 7: Setting up the Linksys SoloLink DDNS Service."

Important: To allow remote access to the Camera, you will also have to use the port forwarding feature on your network router.

16. *I already set up my SoloLink DDNS account, but I can't access the Camera from a remote location.*
Follow these instructions:
• When you enter the Camera's domain name, make sure it is in this format:
**http://<Device Name>.<Location ID>.ourlinksys.com**
The <Device Name> is the name you gave the Camera when you ran the Setup Wizard. The <Location ID> is the name you selected when you set up your SoloLink DDNS account.
• If the Camera is set to DHCP, make sure your local network is working properly and your router has an active Internet connection.
• If the Camera uses a static IP address, insert the Setup CD-ROM into your network PC's CD-ROM drive. Click the **Setup** button and follow the on-screen instructions. When you see the *IP Settings* screen, make sure the Camera's Default Gateway and Primary DNS addresses are correct. For more information, refer to "Chapter 5: Setting up and Mounting the Wireless-G Internet Video Camera."

17. **On the Status screen of the Camera's Web-based Utility, I see this message in the System Log, "NTP server:no server suitable for synchronization found."**
This message indicates that the Camera is unable to locate the Network Time Protocol (NTP) server to synchronize its time setting. The Camera will automatically try again. Verify the following:
  • If you have assigned a static IP address to the Camera, make sure you have completed at least one of the *DNS* fields on the *Basic* screen.
  • Make sure the Camera is properly connected to your network, and its Internet connection is active.

## Frequently Asked Questions

**Can I view video using a Macintosh or Netscape Navigator?**
The Camera is designed for computers running a Windows operating system and Internet Explorer 5.5 or higher. You cannot view video on a Macintosh. If you only have Netscape, you can view video using the Viewer & Recorder Utility. See "Chapter 6: Installing and Using the Wireless-G Internet Video Camera Viewer & Recorder Utility."

**Can I directly connect the Camera to wired and wireless networks at the same time?**
No. Before powering on the Camera, you should decide if you want to connect the Camera to a wireless network via an access point or to a wired network. If your wireless and wired networks are bridged, then you can access the Camera from any networked computer, but the Camera must be directly connected to only one of the networks.

To connect the Camera to a wireless network, power on the Camera with no network cable attached. The Camera will be ready for use when the Ready and Wireless LEDs are lit continuously.

To connect the Camera to a wired network, connect the network cable to the Camera, and then power it on. The Camera will be ready for use when the Ready and LAN LEDs are lit continuously.

**Can I install the Camera outdoors?**
No, the Camera was not designed for outdoors usage.

**Can I turn off the LCD screen on the Camera?**
No, the LCD screen will always display the Camera's IP address.

**I've recorded video for a few hours. Why do I see multiple files saved on my computer?**
The recording function saves video in chunks; each chunk is a maximum of one hour in duration. For example, if you have recorded five continuous hours, then you will see five files saved on your computer. This keeps files from getting too large.

*Do I need to install the Linksys Viewer and Recorder Utility?*
Installation is optional. You can view video using Microsoft Internet Explorer 5.5 or higher. If you don't want to use the recording function, then you don't need to install the Viewer and Recorder Utility.

*Where can I find more information about the Linksys SoloLink DDNS Service?*
You can go to *www.linksys.com/sololink* for more information.

*Can I specify who gets to view the Camera's video?*
Yes. Access the Camera's Web-based Utility, and click the **Setup** tab. After you log in, click the **Users** tab. You will be able to restrict access to users you have entered in the database. See "Chapter 8: Using the Wireless-G Internet Video Camera Web-based Utility."

*Can I add a time stamp to the video?*
Yes. Access the Camera's Web-based Utility, and click the **Setup** tab. After you log in, click the **Image** tab. You will be able to add a time stamp as well as descriptive text to the video. See "Chapter 8: Using the Wireless-G Internet Video Camera Web-based Utility."

*How many users can view the Camera's video at the same time?*
Users at four different PCs can simultaneously view the Camera's video.

*What is the IEEE 802.11b standard?*
It is one of the IEEE standards for wireless networks. The 802.11b standard allows wireless networking hardware from different manufacturers to communicate, provided that the hardware complies with the 802.11b standard. The 802.11b standard states a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.

*What is the IEEE 802.11g standard?*
It is one of the IEEE standards for wireless networks. The 802.11g standard allows wireless networking hardware from different manufacturers to communicate, provided that the hardware complies with the 802.11g standard. The 802.11g standard states a maximum data transfer rate of 54Mbps and an operating frequency of 2.4GHz.

*What IEEE 802.11b features are supported?*
The product supports the following IEEE 802.11b functions:
- CSMA/CA plus Acknowledge protocol
- Multi-Channel Roaming
- Automatic Rate Selection
- RTS/CTS feature
- Fragmentation
- Power Management

### *What IEEE 802.11g features are supported?*

The product supports the following IEEE 802.11g functions:

- CSMA/CA plus Acknowledge protocol
- OFDM protocol
- Multi-Channel Roaming
- Automatic Rate Selection
- RTS/CTS feature
- Fragmentation
- Power Management

### *What is ad-hoc mode?*

When a wireless network is set to ad-hoc mode, the wireless-equipped computers are configured to communicate directly with each other. The ad-hoc wireless network will not communicate with any wired network.

### *What is infrastructure mode?*

When a wireless network is set to infrastructure mode, the wireless network is configured to communicate with a wired network through a wireless access point or router.

# Appendix B: Wireless Security

Linksys wants to make wireless networking as safe and easy for you as possible. The current generation of Linksys products provide several network security features, but they require specific action on your part for implementation. So, keep the following in mind whenever you are setting up or using your wireless network.

## Security Precautions

The following is a complete list of security precautions to take (at least steps 1 through 5 should be followed):

1. Change the default SSID.

2. Disable SSID Broadcast.

3. Change the default password for the Administrator account.

4. Enable MAC Address Filtering.

5. Change the SSID periodically.

6. Use the highest encryption algorithm possible. Use WPA if it is available. Please note that this may reduce your network performance.

7. Change the WEP encryption keys periodically.

## Security Threats Facing Wireless Networks

Wireless networks are easy to find. Hackers know that in order to join a wireless network, wireless networking products first listen for "beacon messages". These messages can be easily decrypted and contain much of the network's information, such as the network's SSID (Service Set Identifier). Here are the steps you can take:

**Change the administrator's password regularly.** With every wireless networking device you use, keep in mind that network settings (SSID, WEP keys, etc.) are stored in its firmware. Your network administrator is the only person who can change network settings. If a hacker gets a hold of the administrator's password, he, too, can change those settings. So, make it harder for a hacker to get that information. Change the administrator's password regularly.

**SSID.** There are several things to keep in mind about the SSID:

**Note:** Some of these security features are available only through the network router or access point. Refer to the router or access point's documentation for more information.

1. Disable Broadcast

2. Make it unique

3. Change it often

Most wireless networking devices will give you the option of broadcasting the SSID. While this option may be more convenient, it allows anyone to log into your wireless network. This includes hackers. So, don't broadcast the SSID.

Wireless networking products come with a default SSID set by the factory. (The Linksys default SSID is "linksys".) Hackers know these defaults and can check these against your network. Change your SSID to something unique and not something related to your company or the networking products you use.

Change your SSID regularly so that any hackers who have gained access to your wireless network will have to start from the beginning in trying to break in.

**MAC Addresses.** Enable MAC Address filtering. MAC Address filtering will allow you to provide access to only those wireless nodes with certain MAC Addresses. This makes it harder for a hacker to access your network with a random MAC Address.

**WEP Encryption.** Wired Equivalent Privacy (WEP) is often looked upon as a cure-all for wireless security concerns. This is overstating WEP's ability. Again, this can only provide enough security to make a hacker's job more difficult.

There are several ways that WEP can be maximized:

1. Use the highest level of encryption possible

2. Use "Shared Key" authentication

3. Change your WEP key regularly

Implementing encryption may have a negative impact on your network's performance, but if you are transmitting sensitive data over your network, encryption should be used.

These security recommendations should help keep your mind at ease while you are enjoying the most flexible and convenient technology Linksys has to offer.

**Important:** Always remember that each device in your wireless network MUST use the same encryption method and encryption key or your wireless network will not function properly.

# Appendix C: Upgrading Firmware

**Note:** Linksys recommends that you upgrade the Camera's firmware within your network; in other words, use a computer within the Camera's local network. If you attempt to upgrade the Camera's firmware from a remote location—using a computer outside of the Camera's local network—the upgrade will fail.

The Camera's firmware is upgraded through the Web-based Utility's Help tab. Follow these instructions:

1. Download the firmware from Linksys's website at *www.linksys.com*. Then extract the file.

2. Access the Camera's Web-based Utility, and click the **Help** tab.

3. On the *Help* screen, click the **Firmware Upgrade** button.

4. You will see the screen shown in Figure C-1. Click the **Browse** button to find the extracted file, and then double-click the filename.

5. Click the **Start Upgrade** button, and follow the on-screen instructions. Click the **Cancel** button to cancel the firmware upgrade. For more information, click the **Help** button.



**Figure C-1: Upgrade Firmware Screen**

# Appendix D: Windows Help

Almost all wireless products require Microsoft Windows. Windows is the most used operating system in the world and comes with many features that help make networking easier. These features can be accessed through Windows Help and are described in this appendix.

## TCP/IP

Before a computer can communicate with an access point or router, TCP/IP must be enabled. TCP/IP is a set of instructions, or protocol, all PCs follow to communicate over a network. This is true for wireless networks as well. Your PCs will not be able to utilize wireless networking without having TCP/IP enabled. Windows Help provides complete instructions on enabling TCP/IP.

## Shared Resources

If you wish to share printers, folders, or files over your network, Windows Help provides complete instructions on using shared resources.

## Network Neighborhood/My Network Places

Other PCs on your network will appear under Network Neighborhood or My Network Places (depending upon the version of Windows you're running). Windows Help provides complete instructions on adding PCs to your network.

# Appendix E: Glossary

**802.11a** - An IEEE wireless networking standard that specifies a maximum data transfer rate of 54Mbps and an operating frequency of 5GHz.

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

**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.

**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.

**Adapter** - A device that adds network functionality to your PC.

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

**AES** (**A**dvanced **E**ncryption **S**tandard) - A method that uses up to 256-bit key encryption to secure data.

**Backbone** - The part of a network that connects most of the systems and networks together, and handles the most data.

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

**Beacon Interval** - Data transmitted on your wireless network that keeps the network synchronized.

**Bit** - A binary digit.

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

**Bridge** - A device that connects different networks.

**Broadband** - An always-on, fast Internet connection.

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

**Buffer** - A shared or assigned memory area that is used to support and coordinate different computing and networking activities so one isn't held up by the other.

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

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

**CSMA/CA** (**C**arrier **S**ense **M**ultiple **A**ccess/**C**ollision **A**voidance) - A method of data transfer that is used to prevent data collisions.

**CTS** (**C**lear **T**o **S**end) - A signal sent by a wireless device, signifying that it is ready to receive data.

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

**Database** - A collection of data that is organized so that its contents can easily be accessed, managed, and updated.

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

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

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

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

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

**Domain** - A specific name for a network of computers.

**Download** - To receive a file transmitted over a network.

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

**DSSS** (**D**irect-**S**equence **S**pread-**S**pectrum) - Frequency transmission with a redundant bit pattern resulting in a lower probability of information being lost in transit.

**DTIM** (**D**elivery **T**raffic **I**ndication **M**essage) - A message included in data packets that can increase wireless efficiency.

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

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

**EAP-PEAP** (**Ex**tensible **A**uthentication **P**rotocol-**P**rotected **E**xtensible **A**uthentication **P**rotocol) - A mutual authentication method that uses a combination of digital certificates and another system, such as passwords.

**EAP-TLS** (**Ex**tensible **A**uthentication **P**rotocol-**T**ransport **L**ayer **S**ecurity) - A mutual authentication method that uses digital certificates.

**Encryption** - Encoding data transmitted in a network.

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

**Finger** - A program that tells you the name associated with an e-mail address.

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

**Firmware** - The programming code that runs a networking device.

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

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

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

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

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

**Hardware** - The physical aspect of computers, telecommunications, and other information technology devices.

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

**IEEE** (The **I**nstitute of **E**lectrical and **E**lectronics **E**ngineers) - An independent institute that develops networking standards.

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

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

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

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

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

**ISM band** - Radio bandwidth utilized in wireless transmissions.

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

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

**LEAP** (**L**ightweight **E**xtensible **A**uthentication **P**rotocol) - A mutual authentication method that uses a username and password system.

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

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

**mIRC** - An Internet Relay Chat program that runs under Windows.

**Multicasting** - Sending data to a group of destinations at once.

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

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

**NNTP** (**N**etwork **N**ews **T**ransfer **P**rotocol) - The protocol used to connect to Usenet groups on the Internet.

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

**OFDM** (**O**rthogonal **F**requency **D**ivision **M**ultiplexing) - Frequency transmission that separates the data stream into a number of lower-speed data streams, which are then transmitted in parallel to prevent information from being lost in transit.

**Packet** - A unit of data sent over a network.

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

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

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

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

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

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

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

**Preamble** - Part of the wireless signal that synchronizes network traffic.

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

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

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

**Router** - A networking device that connects multiple networks together.

**RTS** (**R**equest **T**o **S**end) - A networking method of coordinating large packets through the RTS Threshold setting.

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

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

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

**Software** - Instructions for the computer. A series of instructions that performs a particular task is called a "program".

**SOHO** (**S**mall **O**ffice/**H**ome **O**ffice) - Market segment of professionals who work at home or in small offices.

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

**Spread Spectrum** - Wideband radio frequency technique used for more reliable and secure data transmission.

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

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

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

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

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

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

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

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

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

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

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

**Topology** - The physical layout of a network.

**TX Rate** - Transmission Rate.

**UDP** (**U**ser **D**atagram **P**rotocol) - A network protocol for transmitting data that does not require acknowledgement from the recipient of the data that is sent.

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

**Upload** - To transmit a file over a network.

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

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

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

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

**WINIPCFG** - A Windows 98 and Me utility that displays the IP address for a particular networking device.

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

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

# Appendix F: Specifications

| | |
|---|---|
| Standards | IEEE 8011.b, IEEE 802.11g, IEEE 802.3, 802.3u |
| Ports | One 10/100 Auto Crossover (MDI/MDI-X) port, Power port, 2.5mm MIC IN |
| Protocols | TCP/IP, HTTP, DHCP, NTP, SMTP, UPnP (Discovery only) |
| Button | One Reset Button |
| Cabling Type | RJ-45 |
| Indicators | LEDs: Ready, Act/Link, Ethernet, Wireless; LCD Display of IP Address |
| Security Features | User Authentication, WEP Encryption, Motion Detection |
| WEP Key Bits | 64/128 Bit |
| Image Sensor | CMOS, VGA, 644 x 484 pixels |
| Lens | Fixed Focus |
| Resolution | 640 x 480, 320 x 240, 160 x 128 |
| Relative Illumination | 65% |
| Effective Focus | 4.48 mm |
| Sensitivity | F1.5 |
| Field of View | 57 degrees |
| Compression Algorithm | MPEG-4 |

Record File Format    ASF

Brightness    Auto/Manual Adjustment

Audio    G.726 8K

Dimensions    3.35" x 6.10" x 3.15"
(W x H x D)    (85 mm x 155 mm x 80 mm)

Unit Weight    8.5 oz. (0.24 kg)

Power    5V DC, External

Certifications    FCC

Operating Temp.    0ºC to 40ºC (32ºF to 104ºF)

Storage Temp.    -10ºC to 70ºC (14ºF to 158ºF)

Operating Humidity    10% to 85%, Non-Condensing

Storage Humidity    5% to 90%, Non-Condensing

# Appendix G: Warranty Information

LIMITED WARRANTY

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

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

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

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

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

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

# Appendix H: Regulatory Information

FCC STATEMENT

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

Reorient or relocate the receiving antenna

Increase the separation between the equipment or devices

Connect the equipment to an outlet other than the receiver's

Consult a dealer or an experienced radio/TV technician for assistance

FCC Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.  This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

INDUSTRY CANADA (CANADA)

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
The use of this device in a system operating either partially or completely outdoors may require the user to obtain a license for the system according to the Canadian regulations.

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*Limited Warranty*.  The warranty terms and period specified in the applicable Linksys Product User Guide shall also apply to the Software.

*Disclaimer of Liabilities*.  IN NO EVENT WILL LINKSYS BE LIABLE FOR ANY LOST DATA, REVENUE OR PROFIT, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, REGARDLESS OF CAUSE

(INCLUDING NEGLIGENCE), ARISING OUT OF OR RELATED TO THE USE OF OR INABILITY TO USE THE SOFTWARE, EVEN IF LINKSYS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.  IN NO EVENT WILL LINKSYS' LIABILITY EXCEED THE AMOUNT PAID BY YOU FOR THE PRODUCT.  The foregoing limitations will apply even if any warranty or remedy under this Agreement fails of its essential purpose.  Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to You.

*Export*.  Software, including technical data, may be subject to U.S. export control laws and regulations and/or export or import regulations in other countries.  You agree to comply strictly with all such laws and regulations.

*U.S. Government Users*.  The Software and documentation qualify as "commercial items" as defined at 48 C.F.R. 2.101 and 48 C.F.R. 12.212.  All Government users acquire the Software and documentation with only those rights herein that apply to non-governmental customers.

*General Terms*.  This Agreement will be governed by and construed in accordance with the laws of the State of California, without reference to conflict of laws principles.  The United Nations Convention on Contracts for the International Sale of Goods will not apply. If any portion of this Agreement is found to be void or unenforceable, the remaining provisions will remain in full force and effect.  This Agreement constitutes the entire agreement between the parties with respect to the Software and supersedes any conflicting or additional terms contained in any purchase order or elsewhere.

# Appendix I: Contact Information

Need to contact Linksys?
Visit us online for information on the latest products and updates
to your existing products at:                                             http://www.linksys.com or
                                                                          ftp.linksys.com

Can't find information about a product you want to buy
on the web? Do you want to know more about networking
with Linksys products? Give our advice line a call at:                    800-546-5797 (LINKSYS)
Or fax your request in to:                                                949-823-3002

If you experience problems with any Linksys product,
you can call us at:                                                       800-326-7114
Don't wish to call? You can e-mail us at:                                 support@linksys.com

If any Linksys product proves defective during its warranty period,
you can call the Linksys Return Merchandise Authorization
department for obtaining a Return Authorization Number at:                949-823-3000
(Details on Warranty and RMA issues can be found in the Warranty
Information section in this Guide.)