

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.

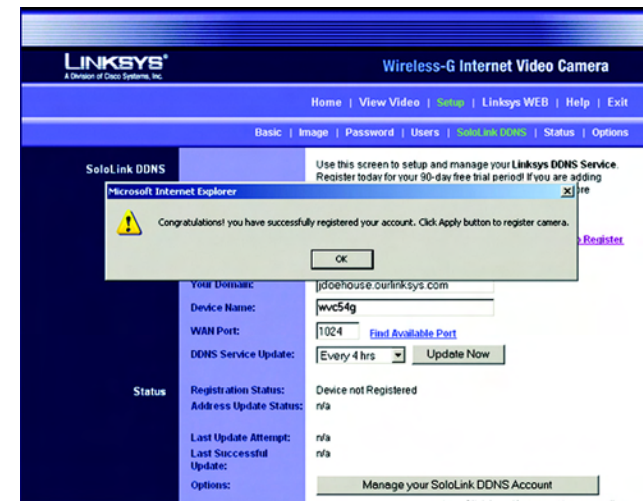


Figure 7-18: Successful Registration Screen

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.

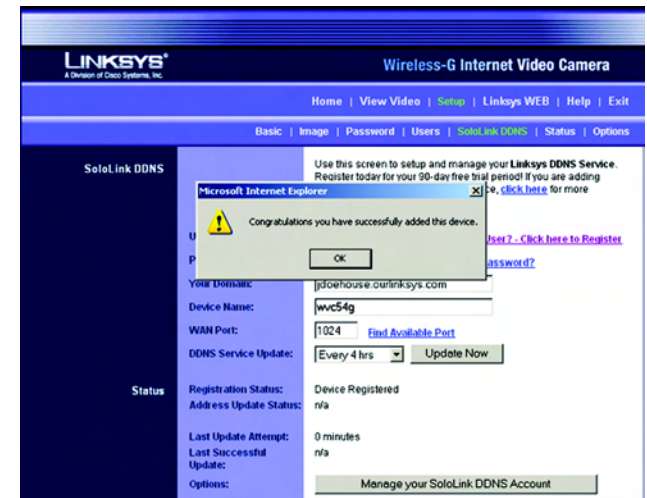


Figure 7-20: Successful Setup Screen

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](http://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](http://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.

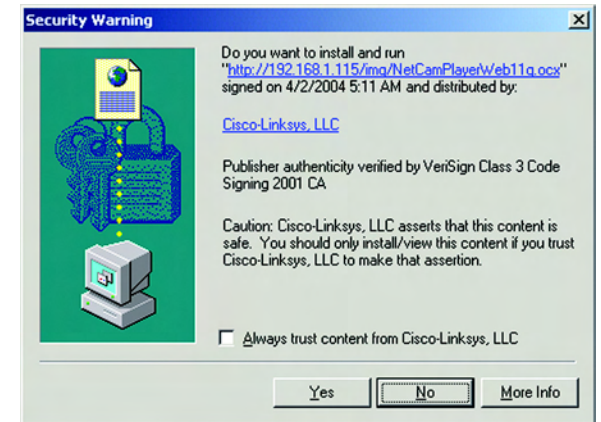


Figure 8-3: Security Warning Screen



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](http://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.

The screenshot shows the 'Basic' configuration page for a Linksys Wireless-G Internet Video Camera. The page has a blue header with the Linksys logo and navigation links like 'Home', 'View Video', 'Setup', 'Linksys WEB', 'Help', and 'Exit'. Below the header, there are sub-navigation links: 'Basic', 'Image', 'Password', 'Users', 'SoloLink DNS', 'Status', and 'Options'. The main content area is divided into three sections: 'Device Settings', 'LAN Settings', and 'Wireless Settings'. 'Device Settings' includes fields for Firmware Version, MAC Address, Device ID, Camera Name, Description, Date, Time, Time Zone, and Network Time Protocol options. 'LAN Settings' includes Configuration Type, IP Address, Subnet Mask, Gateway, Primary DNS, and Secondary DNS. 'Wireless Settings' includes SSID, Network Type, Channel No., and Security options. At the bottom, there are 'Apply', 'Cancel', and 'Help' buttons.

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.

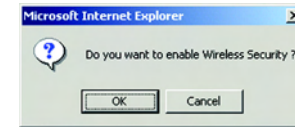


Figure 8-6: Confirmation Screen

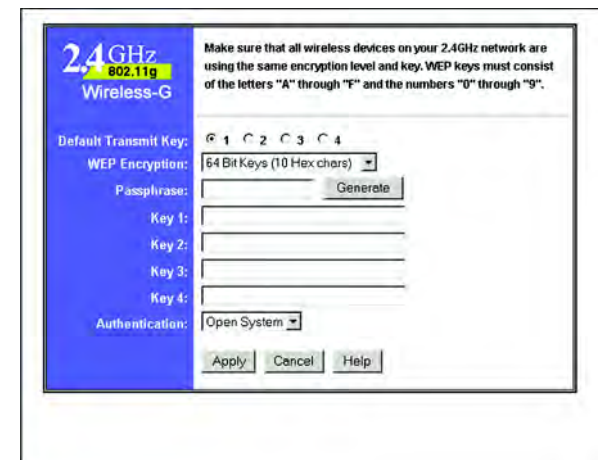


Figure 8-7: WEP Key Settings Screen



## 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

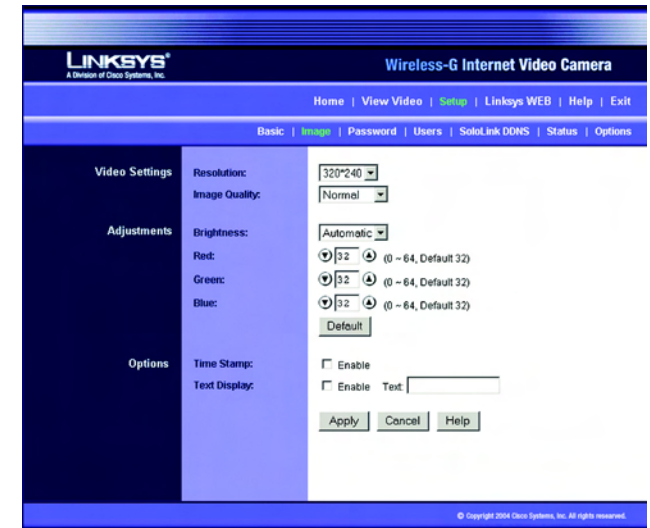


Figure 8-8: Image Screen



**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

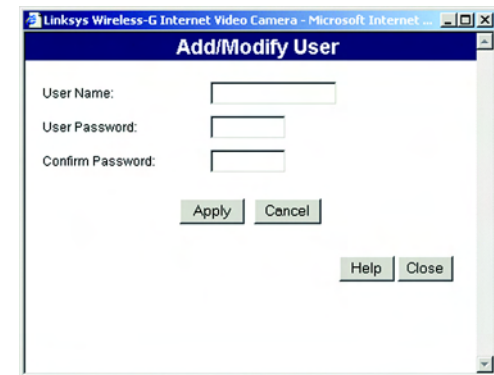


Figure 8-11: Add/Modify User Screen

## 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](http://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.

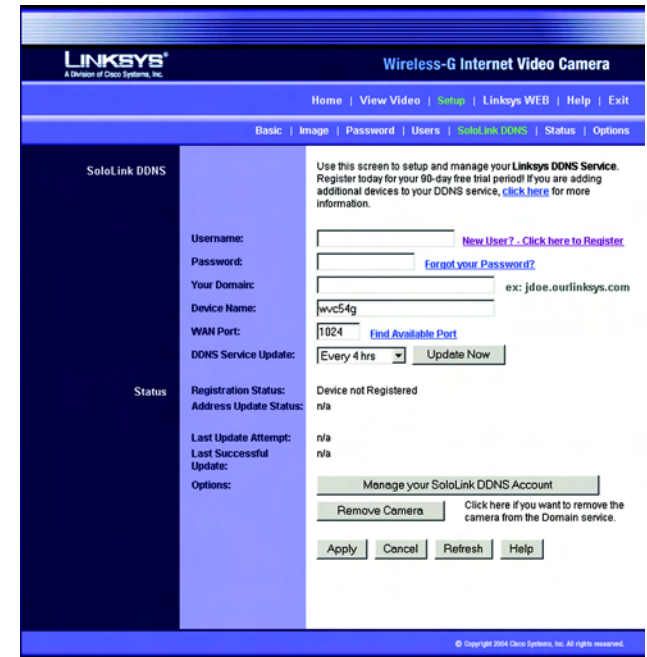


Figure 8-12: SoloLink DDNS Screen



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

## Wireless-G Internet Video Camera

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](http://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](http://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.

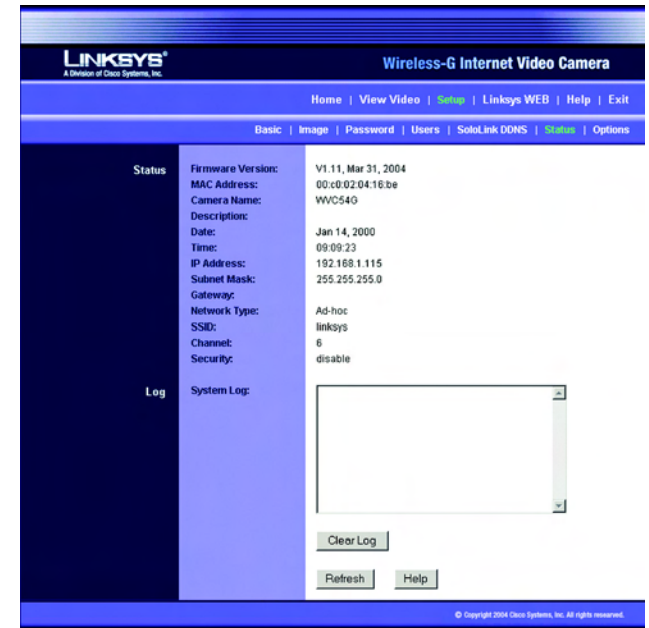


Figure 8-18: Status Screen

## 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](http://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.

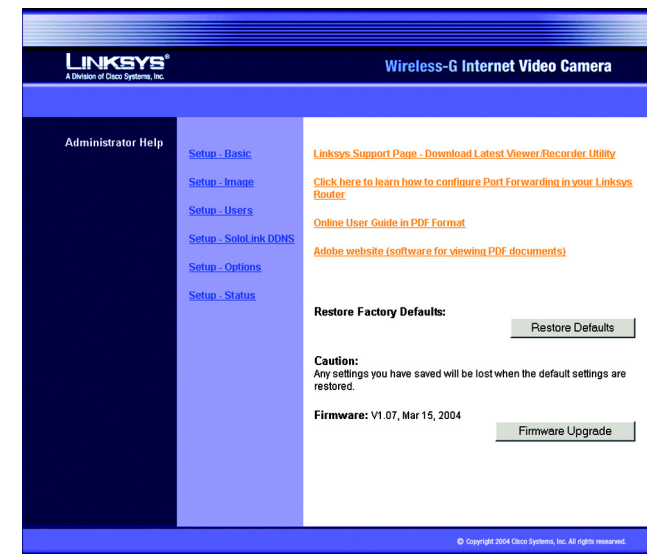


Figure 8-20: Administrator Help

**Firmware.** New firmware versions are posted at [www.linksys.com](http://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](http://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.

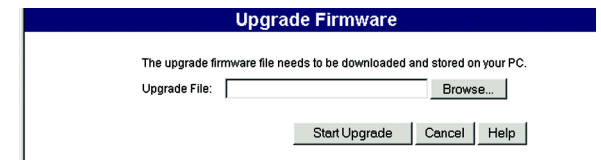


Figure 8-21: Upgrade Firmware Screen

# 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](http://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](http://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](http://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.

## Wireless-G Internet Video Camera

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](http://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.

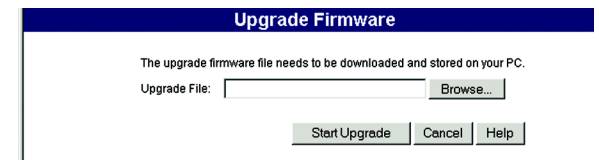


Figure C-1: Upgrade Firmware Screen

# 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 (Advanced Encryption Standard)** - 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.

## Wireless-G Internet Video Camera

**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 (Carrier Sense Multiple Access/Collision Avoidance)** - A method of data transfer that is used to prevent data collisions.

**CTS (Clear To Send)** - 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 (Dynamic Domain Name System)** - 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 (Dynamic Host Configuration Protocol)** - A networking protocol that allows administrators to assign temporary IP addresses to network computers by "leasing" an IP address to a user for a limited amount of time, instead of assigning permanent IP addresses.

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

**DNS (Domain Name Server)** - 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 (Digital Subscriber Line)** - An always-on broadband connection over traditional phone lines.

**DSSS (Direct-Sequence Spread-Spectrum)** - Frequency transmission with a redundant bit pattern resulting in a lower probability of information being lost in transit.

**DTIM (Delivery Traffic Indication Message)** - A message included in data packets that can increase wireless efficiency.

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

**EAP (Extensible Authentication Protocol)** - A general authentication protocol used to control network access. Many specific authentication methods work within this framework.

**EAP-PEAP (Extensible Authentication Protocol-Protected Extensible Authentication Protocol)** - A mutual authentication method that uses a combination of digital certificates and another system, such as passwords.

**EAP-TLS (Extensible Authentication Protocol-Transport Layer Security)** - 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 (File Transfer Protocol)** - 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 (HyperText Transport Protocol)** - The communications protocol used to connect to servers on the World Wide Web.

**IEEE** (The Institute of Electrical and Electronics Engineers) - An independent institute that develops networking standards.

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

**IP** (Internet Protocol) - A protocol used to send data over a network.

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

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

**IPSec** (Internet Protocol Security) - A VPN protocol used to implement secure exchange of packets at the IP layer.

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

**ISP** (Internet Service Provider) - A company that provides access to the Internet.

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

**LEAP** (Lightweight Extensible Authentication Protocol) - A mutual authentication method that uses a username and password system.

**MAC** (Media Access Control) **Address** - The unique address that a manufacturer assigns to each networking device.

**Mbps** (MegaBits Per Second) - 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** (Network Address Translation) - 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** (Network News Transfer Protocol) - The protocol used to connect to Usenet groups on the Internet.

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



## Wireless-G Internet Video Camera

**OFDM (Orthogonal Frequency Division Multiplexing)** - 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 (Packet INternet Groper)** - An Internet utility used to determine whether a particular IP address is online.

**POP3 (Post Office Protocol 3)** - A standard mail server commonly used on the Internet.

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

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

**PPPoE (Point to Point Protocol over Ethernet)** - A type of broadband connection that provides authentication (username and password) in addition to data transport.

**PPTP (Point-to-Point Tunneling Protocol)** - 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 (Remote Authentication Dial-In User Service)** - A protocol that uses an authentication server to control network access.

**RJ-45 (Registered Jack-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 (Request To Send)** - 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 (Simple Mail Transfer Protocol)** - The standard e-mail protocol on the Internet.

**SNMP (Simple Network Management Protocol)** - 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 (Small Office/Home Office)** - Market segment of professionals who work at home or in small offices.

**SPI (Stateful Packet Inspection) 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 (Service Set Identifier)** - 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 (Transmission Control Protocol)** - A network protocol for transmitting data that requires acknowledgement from the recipient of data sent.

**TCP/IP (Transmission Control Protocol/Internet Protocol)** - 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 (Trivial File Transfer Protocol)** - 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 (Temporal Key Integrity Protocol)** - a wireless encryption protocol that provides dynamic encryption keys for each packet transmitted.

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

**TX Rate** - Transmission Rate.

## Wireless-G Internet Video Camera

**UDP (User Datagram Protocol)** - 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 (Uniform Resource Locator)** - The address of a file located on the Internet.

**VPN (Virtual Private Network)** - A security measure to protect data as it leaves one network and goes to another over the Internet.

**WAN (Wide Area Network)**- The Internet.

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

**WPA (Wi-Fi Protected Access)** - 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 (W x H x D)	3.35" x 6.10" x 3.15" (85 mm x 155 mm x 80 mm)
Unit Weight	8.5 oz. (0.24 kg)
Power	5V DC, External
Certifications	FCC
Operating Temp.	0°C to 40°C (32°F to 104°F)
Storage Temp.	-10°C to 70°C (14°F to 158°F)
Operating Humidity	10% to 85%, Non-Condensing
Storage Humidity	5% to 90%, Non-Condensing

### Channel

The Wireless Channel sets the radio frequency used for communication.

- Access Points use a fixed Channel. You can select the Channel used. This allows you to choose a Channel which provides the least interference and best performance. In the USA and Canada, 11 channels are available. If using multiple Access Points, it is better if adjacent Access Points use different Channels to reduce interference.
- In "Infrastructure" mode, Wireless Stations normally scan all Channels, looking for an Access Point. If more than one Access Point can be used, the one with the strongest signal is used. (This can only happen within an ESS.)
- If using "Ad-hoc" mode (no Access Point), all Wireless stations should be set to use the same Channel. However, most Wireless stations will still scan all Channels to see if there is an existing "Ad-hoc" group they can join.

# 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.

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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.

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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.

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

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

## 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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# 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](ftp://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:  
Or fax your request in to:

800-546-5797 (LINKSYS)  
949-823-3002

If you experience problems with any Linksys product, you can call us at:

800-326-7114  
[support@linksys.com](mailto:support@linksys.com)

Don't wish to call? You can e-mail us at:

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:  
(Details on Warranty and RMA issues can be found in the Warranty Information section in this Guide.)

949-823-3000